THE IMPACT OF BLOOMZ APP ON PARENT–TEACHER INTERACTION IN MIDDLE

SCHOOLS SERVING LOW-SOCIOECONOMIC, RURAL COMMUNITIES

A Dissertation

Presented in Partial Fulfillment of the Requirements for the

Degree of Doctor of Education

with a

Major in Educational Leadership

in the

Department of Graduate Education

Northwest Nazarene University

by

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May 2019

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AUTHORIZATION TO SUBMIT

DISSERTATION

This dissertation of Fransisco Javier Castaneda, submitted for the degree of Doctor of Education with a major in Educational Leadership and titled "The Impact of Bloomz App on Parent Teacher Interaction in Middle Schools Serving Low Socioeconomic, Rural Communities," has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies.
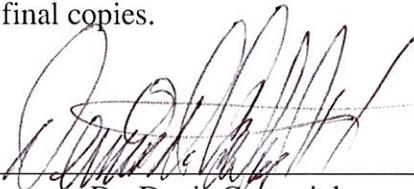
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ACKNOWLEDGMENTS

I would first like to thank the colleagues in my cohort. I have appreciated our collaboration as we have gone through this process and learned together. Dr. Studebaker and Dr. Curtis, thank you both for your time and support. They were invaluable. Dr. Cartwright, thank you for the gift of your time. I hope it was well spent. Your humor and expertise got me through this. A special thank-you to my children as well who were endlessly patient with a seemingly endless project.

DEDICATION

I would like to dedicate this work to my wife without whom it would not have been possible. Thank you for your patience with me as I was working. You're amazing!

ABSTRACT

The purpose of this mixed-methods study was to examine middle school parent–teacher communication through the Bloomz app as a means to increase student achievement and parent involvement in a low-socioeconomic, rural setting. Analysis of data gathered during parent focus groups and teacher interviews, as well as communication counts and student grades, indicated Bloomz's use was connected with increased communication but not increased student achievement in some settings. Parent focus groups and teacher interviews identified barriers to communication common to both parties: lack of time, relationship issues, lack of response, and language barriers. Based on the results from this study, Bloomz may help increase parent–teacher communication as a whole, but Bloomz was not effective for two-way communication at this time in the rural Idaho setting within the short implementation time frame of one quarter. Bloomz as an app has potential to be a useful communication tool that could help parents and teachers stay connected. With sustained parent involvement over time, increased student achievement could be possible.

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Chapter I

Introduction

Most parents, regardless of ethnicity or socioeconomic status (SES), feel that the

education of their children is their responsibility and that being involved in their child's

education is important (Bennett-Conroy, 2012; Gillies, 2006; Griffiths-Prince, 2009; McKenna

& Millen, 2013; Renth, Buckley, & Puchner, 2015; Rucker, 2014). Parent involvement

encompasses a great variety of methods, strategies, and behaviors and is widely accepted as

beneficial for increasing children's academic achievement (Froiland & Davison, 2014; Lam &

Ducreux, 2013; McNeal, 2015; Sheldon, Epstein, & Galindo, 2010).

Children do not benefit from parent involvement equally, however (Crowe, 2013; Hill et

al., 2004). In a recent longitudinal study of 1,364 children, Crowe (2013) found that children

living in poverty with the greatest risk for low scholastic achievement benefitted the most from

parent involvement. Unfortunately, the parents in these low-SES families struggle the most to be

involved in their children's education (Griffiths-Prince, 2009).

SES affects parents' ability and opportunity to be involved in their children's education

(Altschul, 2012; Finigan-Carr, Vandigo, Uretsky, Oloyede, & Mayden, 2015; Renth et al., 2015;

Schafft, 2005; Yoder & Lopez, 2013). All parents encounter challenges to being involved, but

parents living in poverty are faced with additional unique issues that also inhibit their

involvement (Altschul, 2012; Finigan-Carr et al., 2015; Renth et al., 2015; Schafft, 2005; Yoder

& Lopez, 2013). For example, low-SES families have higher transiency rates and may spend

more time out of the home working more than one job, which can lead to less time at home and

cause higher levels of stress than experienced by parents with high SES (Altschul, 2012;

National Alliance for Public Charter Schools & Center on School Turnaround [NAPCS & CST],

2015; Núñez et al., 2015; Rothstein, 2013). These two barriers, lack of time and stress, can lead low-SES parents to spend less time helping their children with homework and participating in learning activities (Altschul, 2012; Bennett-Conroy, 2012; Núñez et al., 2015). Challenges such as these can also keep low-SES parents from being involved at their children's school (Bennett-Conroy, 2012). The challenges these barriers represent can be significant because the parents in low-SES families may lack the abilities, strategies, resources, or time to overcome them (Bornstein & Bradley, 2002; Griffiths-Prince, 2009).

Another consideration that affects parent involvement beside SES is the age and grade of the child. At its highest during elementary years, parent involvement has been shown to decrease during the middle school years (Lam & Ducreux, 2013). Even so, parents remain the most significant influence in their middle school child's academic success and desire to achieve (Song, Bong, Lee, & Kim, 2015). Many parents, regardless of their SES, will continue to be involved in their children's education in various ways. Low-SES parents, however, may need additional help and invitations to overcome challenges to be involved in their children's education.

New modes of involvement may help parents overcome barriers and involve themselves in their children's education. Technology, for example, has added new dimensions to parent involvement (Patrikakou, 2015). Smartphone applications, more commonly known as and referred to hereafter as "apps," for example, may be one of the newest ways that parents can be involved in their children's education. Of the millions of apps available on Android and iOS platforms as of 2017, tens of thousands of them are geared toward education—many of which are designed to facilitate parent–teacher communication (Apple Inc., 2014; Nekilan, 2018; Statistica, 2017).

Many parents prefer email to communicate with teachers about objective topics, such as attendance or homework over traditional methods of communication (Thompson, Mazer, &

Flood Grady, 2015). Texting, however, is the favorite mode of communication of many parents, although this method may be underutilized (Thompson et al., 2015). If communication through a smartphone app could facilitate an increase in effectiveness or amounts of communication between parents and teachers, perhaps this could be a bridge to help low-SES parents be more involved. Researchers' studies have suggested, in fact, that satisfaction with communication is one of the key indicators for parent engagement at their child's school (Hodges & Yu, 2015).

Parent involvement has been repeatedly associated with increased student achievement (Froiland & Davison, 2014; Lam & Ducreux, 2013; McNeal, 2015; Sheldon et al., 2010). The purpose of this current study was to build on the association between higher parent involvement and student achievement and examine the use of the classroom communication app, Bloomz, as a method of increasing parent involvement in terms of parent–teacher communication. The context of the study will be middle school level in rural Idaho.

The inclusion of rural in this study is important because rural schools comprise 88% of the 116 school districts in Idaho (Idaho State Department of Education [ISDE], 2017). Furthermore, rural Idaho is typified by higher poverty rates, which is part of the focus of this study as well (Dearien & Salant, 2015; Proctor, Semega, & Kollar, 2016; Salant & Porter, 2005).

Statement of the Problem

Research has shown that most parents, without respect for SES, value their children, want them to be educated, and understand they as parents play a role in their children's success (Bennett-Conroy, 2012; DePlanty, Coulter-Kern, & Duchane, 2007; Poza, Brooks, & Valdés, 2014; Schafft, 2005). When it comes to parent involvement in their children's academic careers at school and at home, however, families dealing with poverty struggle (Altschul, 2012; Payne, 2013; Renth et al., 2015; Schafft, 2005; Yoder & Lopez, 2013). These parents need assistance to help their children succeed academically.

The amount that parents have been involved and the methods and behaviors they have exhibited historically in their children's education in America have varied greatly. During the early years in Colonial America, parents had significant control over the details of the education of their children (Hiatt, 1994; Stetson, 2013). It was, in fact, primarily the parents' responsibility to ensure the education of their children, with schools and churches acting only as a supplement to the parents' instruction (Altenbaugh, 1999). Over time this gradually changed to teachers, schools, and lawmakers determining most aspects of American children's education (Hiatt, 1994; Stetson, 2013). During the last several decades, a resurgence in parent involvement has started the pendulum of parent involvement headed back toward increased levels (Center for Education Reform [CER], 2017; Hiatt, 1994).

The degree of involvement of parents in their children's education is positively correlated with their SES (the higher the SES, the higher the involvement and vice versa); parent involvement is also positively correlated with the scholastic success of their children (Altschul, 2012; Finigan-Carr et al., 2015; Renth et al., 2015; Schafft, 2005; Yoder & Lopez, 2013). This relationship between parent involvement and student scholastic success has been recognized repeatedly (Froiland & Davison, 2014; Lam & Ducreux, 2013; McNeal, 2015; Sheldon et al., 2010). Engle and Black (2008) indicated that parents' influence can ameliorate the negative effects of poverty on their children. As described by Engle and Black, the family investment model suggests that parents with higher levels of education or higher levels of financial stability typically devote more time to the academic development of their children. Without their parents' involvement, children in low-SES families bear the full brunt of the effects that poverty brings.

One barrier to involvement that low-SES parents deal with is lack of time, which may result from multiple jobs or lack of transportation (Erdener, 2016; Griffiths-Prince, 2009; Poza et

al., 2014). Because low-SES parents' resources of time and money may be limited, they may need assistance in their efforts to be involved in their children's education.

Lack of time experienced by low-SES parents may be ameliorated by the efficiency of communicating via technology. Although research examining the use of smartphone classroom communication apps, such as Bloomz, to facilitate parent–teacher communication is limited, precedence has been set for the success of text communication between teachers and parents in increasing student achievement. One British study performed by researchers from the University of Bristol and Harvard University, and analyzed independently by researchers from the Queen's University Belfast, regarding the relationship between parent–teacher texts and student achievement, reported that students whose parents received the weekly texts were one month advanced in their math progress versus the students whose parents had not received texts (S. Miller et al., 2016).

Texting, especially through an app such as Bloomz, and its use as a communication tool between parents and teachers is a new phenomenon (Rogers & Bohling, 2015). The first text, a simple Short Messaging Service (SMS), was sent in 1992 from a computer to a phone that did not have the capacity to respond (Fingas, 2017; Gayomali, 2012). From that humble beginning, the SMS went from about 35 texts a month by the average American in 2000 to about 2,300 per month on average in the United States in 2013, with about 83% of adults owning a cell phone (Cocotas, 2013; Fingas, 2017; Smith, 2011). About 77% of American adults have smartphones and 92% of individuals within the 18–29 age bracket own a smartphone (Smith, 2017). Texting is most popular for young adults 18–24 years old who texted about 4,000 times a month in 2013 followed by adults aged 25–34 years old with about 2,200 texts per month in 2013 (Cocotas, 2013). Generally speaking, research has shown that the older the population, the less texts that are sent and received (Cocotas, 2013).

As it developed, texting branched out and new messaging platforms were developed, such as Apple's iMessage, Google's Hangout, and Facebook's Messenger (Cocotas, 2013; Fingas, 2017). Bloomz is one such iteration of texting that combines the functionality of texting with other classroom organization tools (Bloomz, 2016). As for its use between parents and teachers, texting is a relatively recent but growing trend (Rogers & Bohling, 2015). Even as late as 2005, texting was not mentioned as a form of communication in an oft-cited journal article discussing methods of parent–teacher communication (Graham-Clay, 2005). According to a Gallup poll, in 2014 texting was the most popular form of communication for Americans under the age of 50 (Newport, 2014). In fact, in the United States, individuals with smartphones are more than five times more likely to text than to call (Informate, 2016).

The purpose of this study was to examine the use of the classroom communication app Bloomz by rural, low-SES, middle school parents and middle school teachers as a tool to increase student achievement and assist low-SES parents to become more involved. A clearer picture of the relationships between parent involvement through text communications via Bloomz and parent involvement through more traditional communication methods can be achieved through a combination of quantitative and qualitative research approaches. Qualitative data gathered through parent focus groups and teacher interviews will add depth and allow for better understanding of the quantitative data gathered through student quarterly grades and communication counts, facilitating a more complete understanding of parent involvement through the smartphone app Bloomz by rural, low-SES, middle school parents (Rich & Ginsburg, 1999).

Parents can make a difference in their children's educational careers, especially within low-income families (Crowe, 2013; Martin, 2009; Mayo & Siraj, 2015). The purpose of this study was to increase understanding of one way that low-SES parents of rural middle school

children can be involved in their children's education. With better understanding, these parents may be able to recognize the best ways to invest their time into their children's education and possibly benefit their children for the rest of their academic careers.

Background

Hiatt (1994) found that parent involvement in their children's educational careers has waxed and waned over the years. Throughout history, the education of children has, for the most part, been considered the responsibility of parents (Altenbaugh, 1999; Hiatt, 1994). Education of children has historically included morals and religious doctrine, academic skills, and occupational skills (Altenbaugh, 1999). Over time, after Colonial America, parents were gradually replaced with professional educators in formal school settings as children's primary educators (Altenbaugh, 1999; Stetson, 2013).

In the last half-century, parent involvement in children's education has been increasing. Direct instruction by parents or homeschooling, for example, has dramatically increased in popularity (United States Department of Education [USDE] National Center for Education Statistics, 2014a). By 2014 there were about double the number of homeschooled children than there were 20 years or so ago (USDE National Center for Education Statistics, 2014a). Charter schools, which have increased in number and attendance, are known for their increased parent involvement (Smith, Wohlstetter, Kuzin, & De Pedro, 2011; USDE National Center for Education Statistics, 2016). Although the way children have been taught has shifted over time, parents are still very much involved in their children's education.

The academic achievement of children is often affected by the income level and social level of their parents (Allington et al., 2010; Altenbaugh, 1999; Bornstein & Bradley, 2002; Cowan et al., 2012; Organization of Economic Co-operation and Development [OECD] 2011; Renth et al., 2015). Researchers have found that students from high-income families are

generally more academically successful than children from low-income families (Allington et al., 2010; McNeal, 2015; Renth et al., 2015). Historically, the affluent have had greater access to a better education (Altenbaugh, 1999; Porter, 2015; Tienken & Zhao, 2013).

The connection between SES and academic achievement has been studied since early in the 20th century (Allington et al., 2010; Altenbaugh, 1999; Cowan et al., 2012; OECD, 2011; Renth et al., 2015). A historic study involving 60,000 teachers and 570,000 students in 4,000 public schools called the Coleman Report in 1966 indicated a strong connection between SES and scholastic success (Altenbaugh, 1999).

SES is a category that bears further examination. To begin with, it has different meanings to different people. SES is generally understood as a measure of the economic, social, and cultural resources available to an individual (Cowan et al., 2012). Education level attained and occupation are also sometimes included (American Psychological Association, 2018). The American Psychological Association Task Force on Socioeconomic Status (2007) stated that on the most basic level, SES is a consideration of assets available to individuals.

Historically speaking, the three parts that have typically been used when determining the SES of an individual are income, occupation, and education (Cowan et al., 2012; Kronenfeld, 2012). Engle and Black (2008) described in their study how poverty has been defined solely in monetary terms by some, while others include social, physical, and community measures. For research purposes in the United States, however, it is currently more common to use income and education to determine SES rather than occupation (Kronenfeld, 2012).

Poverty is a widespread issue in the United States, with about 20% of children or about 14.5 million children living in poverty and is increasing (Payne, 2013; Proctor et al., 2016). Payne (2013) defines poverty in terms of a lack of resources such as: financial, emotional, mental/cognitive, spiritual, physical, support systems, relationships/role models, knowledge of

hidden rules, and language/formal register. Although poverty is usually defined in terms of financial resources, the other resources, according to Payne (2013), are more important factors on whether the person is able to leave poverty. This means that simply increasing the amount of money available to a family will not necessarily help them leave poverty, but increasing their cognitive resources, role models or knowledge of hidden rules might.

Poverty creates barriers for children's academic success on multiple levels (Payne, 2013). For one thing, the rules of behavior at school, for example how to self-govern, are usually middle-class expectations and different than the unspoken rules of poverty (Payne, 2013). Poverty can affect children's ability to plan, understand cause and effect, and control impulsiveness (Payne, 2003). In physical terms, the health of children living in poverty is often compromised to a greater degree than children from high-SES families which can affect their attendance at school and their education generally (Ciula & Skinner 2015; Finigan-Carr et al., 2015; Renth et al., 2015; Rothstein, 2013; Tandon et al., 2012). Furthermore, children living in poverty may not have enough nourishing foods available or access to medical care (Engle & Black, 2008; Finigan-Carr et al., 2015).

The area where the family resides is another piece in the poverty puzzle. In Idaho, as with all of America, rural areas tend to have higher levels of poverty (Dearien & Salant, 2015; Proctor et al., 2016; Salant & Porter, 2005). Just over 30% of the population in Idaho is rural (Barnhill, 2013). This said, 70% of Idaho's counties are rural and 102 of Idaho's 116 school districts, or 88%, are rural (ISDE, 2017). Of the rural population in Idaho, 16.7% are living in poverty as compared with only 15% of the urban population (Dearien & Salant, 2015).

Several factors combine to create higher poverty rates in rural areas. One factor is that wages in rural areas of Idaho average about $5,000 less per year than in urban areas (Dearien & Salant, 2015; United States Department of Agriculture (USDA) Economic Research Service,

2016). Additionally, the workforce in rural areas is smaller, and individuals are typically less educated (Salant & Porter, 2005).

In 2009 Dearien, Gray, and Salant reported that rural students of Idaho had similar or better success on the Idaho State Achievement Test (ISAT) and the National Assessment on Educational Progress and that graduation rates of rural students were higher than those of urban students. In 2017, however, rural students, according to the ISDE were not achieving at the same level as urban students on the ISAT. The ISDE (2017) reported that rural students performed an average of eight percentage points less than urban school districts on the English language arts ISAT and an average of seven percentage points less on mathematics. Success on the state test appears to be falling for rural students.

Although parent involvement has been shown to support student academic success, there are many barriers that inhibit parents in low-SES families from being involved in their children's education. Bennett-Conroy (2012) indicated that parents who were not involved at school shared examples of barriers to involvement, such as inability to drive, distance from school, evening meetings or sibling's events clashing with school events, late notification of events, and working two jobs. Erdener (2016) reported that the perception of educators was that low SES itself was a barrier to parent involvement. Another factor that can affect parents' involvement is the high transiency rates, which are common among low-SES families (NAPCS & CST, 2015). Emotionally and cognitively speaking, there are typically more stressors in the lives of low-SES families, as well as a lack of cognitive stimulation (Engle & Black, 2008; Finigan-Carr et al., 2015). Lack of housing stability (transiency) can make it more difficult for parents to form relationships with teachers and staff, become familiar with school routines, and become involved at their children's school (McNeal, 2015; Schafft, 2005).

Despite the many barriers to involvement, many parents persist and continue to be involved in their children's education in many ways, both tangible and intangible. Some forms of involvement can be considered tangible or overt forms because they are more visible to those outside the family, while other forms of involvement may be considered more covert or intangible. A complete list of parent involvement methods would be extensive and will not be included here, but some examples of parent involvement that could be considered overt, or tangible, are helping with homework, volunteering at school, providing needed resources and structure, attending meetings and events, and choosing a school for their children (Gillies, 2006; Howard & Reynolds, 2008; Kim & Fong, 2014; Mayo & Siraj, 2015; McGregor & Knoll, 2015; Noel, Stark, & Redford, 2015; O'Sullivan, Yung-Chi, & Fish, 2014; Sheldon et al., 2010; Tang & Davis-Kean, 2015). Parent involvement also includes more covert or intangible methods and behaviors, such as the attitudes parents share with their children about education, the creation of a space and time to complete homework, socialization, encouragement and nurturing relationships, and communicating their educational aspirations they have for their children; these are all intangible ways that parents involve themselves in their children's academic careers (Choi, Chang, Kim, & Reio, 2015; Crowe, 2013; Lam & Ducreux, 2013; Mayo & Siraj, 2015; Noel et al., 2015; O'Sullivan et al., 2014; Song et al., 2015).

Parent involvement continues to be important at the middle school level, although the nature of the involvement may change (Hill & Tyson, 2009). DePlanty, Coulter-Kern, and Duchane (2007) found that once children are middle schoolers, parent involvement at home, such as providing help with homework, was more critical to academic achievement than parent involvement at school. O'Sullivan, Yung-Chi, and Fish (2014) stated that parent involvement in terms of providing structure for middle school children's math homework and practice was connected slightly with learning and academic achievement in math. During adolescence,

successful parents encourage their children's autonomy while remaining emotionally supportive (Grolnick, Raftery-Helmer, Flamm, Marbell, & Cardemil, 2015; Mayo & Siraj, 2015).

The decrease in parent involvement during middle school and high school years may reflect the unique challenges to parent involvement during these years (Hill & Tyson, 2009). Researchers have found that as children transition from elementary to middle and then high school, their parents struggle to walk the line between supporting their children's autonomy and higher levels of personal responsibility and being overcontrolling as they monitor their children's academic careers (Hill & Tyson, 2009; McNeal, 2012; Robbins & Searby, 2013). Another challenge to parent involvement during adolescent years that parents may face is helping with increasingly difficult homework (DePlanty et al., 2007; Gillies, 2006; Hornby & Lafaele, 2011).

In addition to traditional forms of involvement, such as volunteering and helping with homework, current forms of involvement in terms of parent–teacher communication include texting, emailing, accessing student portals online, and other forms of electronic methods that were previously unavailable (Şad, Konca, Özer, & Acar, 2016). Şad, Konca, Özer, and Acar (2016) suggested that technology can help parents and teachers communicate better at a higher frequency, which can facilitate parent involvement. Some of the benefits of electronic forms of communication are that they are inexpensive, less time consuming than meeting in person, and easy to use for the parents and teachers (Kosaretskii & Chernyshova, 2013). Electronic conversations can occur over time as it is convenient to the participants; for example, in an email conversation, each person responds at their convenience.

Use of electronic media to communicate is universal for low- and high-SES parents, although there are differences in modes and amounts (Thompson, 2008). There are benefits and drawbacks or barriers to e-communication (Kosaretskii & Chernyshova, 2013; Thompson,

2008). One drawback to electronic forms of communication, such as texting or emailing, is that miscommunication can occur without the contextual clues of tone or body language.

Şad et al. (2016) coined the phrase "parental e-nvolvement" to describe all the ways that parents are involved in their children's education technologically (p. 165). They included methods of involvement that use technology in various aspects of communication, instruction, assessment, or monitoring (Şad et al., 2016). Kosaretskii and Chernyshova (2013) reported that 73% of middle school teachers in the United States use forms of electronic communication to communicate with parents. Texting is another mode of electronic communication for teachers and parents to utilize that is becoming more prominent (Thompson, 2008).

Researchers have shown that electronic parent–teacher communication can improve students' learning and reduce their absenteeism and drop-out rates (Kraft & Rogers, 2015; S. Miller et al., 2016). According to some research, parents with mobile devices used technology to communicate with others (with some preferring that over other communications methods), but few used technology to communicate with their children's teachers (Flowers, 2015; Thompson, 2008). Another theme in the research was that comfort level when using technology affected its use for communication (del Valle, 2011, Flowers, 2015; Olmstead, 2013; Thompson, 2008). The intent of this study was to look at some of these areas where research is lacking. Classroom communication apps, such as Bloomz, could be a low-cost yet potentially highly beneficial communication tool.

Research Questions

The following four questions will guide this study:

1. Does the use of the classroom communication app Bloomz by parents and teachers have an impact on the academic performance of lower SES, rural, middle school students?

2. Was the Bloomz app easy, effective, and sufficient as a mode of communication from the parents' and teachers' perspectives?

3. Does the use of the classroom communication app Bloomz increase parent–teacher communication as compared with traditional email, face-to-face, or telephone contacts?

4. What, if anything, deterred parents or teachers from communicating?

Description of Terms

For the purpose of clarity and precision of language, an in-depth look at the meaning of the critical terms, strategies, and techniques that are within the scope of this study follows. Many of the terms have multiple definitions, such as academic involvement or SES. A well-based rich and nuanced understanding of these and other related terms is critical for substantive synthesis of the research.

Academic involvement. Activities parents do at school and at home, with a focus on academics, that support their children's scholastic endeavors at school (Hill et al., 2004). For the purpose of this study, academic involvement refers to involvement by parents.

Academic performance. Defined for this study as relating to the grades or marks the student achieves.

Academic socialization. Conversations, future planning, strategies for learning, verbal reinforcement, and dialogues that occur in families with a focus on the child's current schooling, future academic career, and learning goals (Hill & Tyson, 2009).

Application, app. Used interchangeably; refers to software available for use on smartphones (Android and iOS), web browsers, or on desktop computers (Karch, 2018). For the purpose of this study, apps will refer to software programs that are utilized on smartphones.

Asynchronized communication. Text-based communication that does not have a time restraint on response (Asynchronism, n.d.; Giesbers, Rienties, Tempelaar, & Gijselaers, 2014).

Bloomz. A free app that is available for smartphones. Bloomz provides a forum for parent–teacher communication through class updates, calendars, reminders, requests, and video and photo sharing via text messages. Premium paid versions of the app are available that include captions for pictures posted and translating capabilities. District-level plans are also available for a monthly fee, but for teachers using Bloomz at the classroom level, neither they nor the parents incur any cost (Bloomz, 2016).

Charter schools. Schools founded by a group of individuals, often including parents, with a specific focus for their students' educations (Smith et al., 2011). Charter schools are publicly funded and known for their increased parent involvement.

Classroom communication app. A term frequently used to describe an app designed for use by teachers to communicate with their students or their students' parents. Classroom communication apps usually have multiple functionalities, such as communication via text or email between parents and teachers in group or private conversations, scheduling, reminders, and requests. Bloomz, Class Dojo, Edmodo, and Remind are some examples of classroom communication apps.

Edmodo. A worldwide education network designed to provide a safe virtual place for administrators, teachers, parents, and students to collaborate and communicate (Edmodo, 2018). Edmodo also has resources available to its members, such as professional development and lesson plans. Edmodo allows teachers to post assignments, quizzes, and updates for parents via a free app about student completion.

Education vouchers. Program designed to give parents the choice on where their children attend school. Available in 14 states, parents are given a voucher or scholarship that

designates that the school they choose will receive all or some of the money the state has set aside for the education of their children at a public school (Turner, 2016).

Email. An electronic form of communicating that can include text, documents, pictures, and so forth that are sent electronically to addresses unique to a group or individual (Computer Hope, 2018; Maxwell, n.d.).

Family investment model. How parents with enhanced educational backgrounds or financial capital invest in their children's academic success through providing books and time spent reading. This investment promotes academic achievement and negates the potential ill-effects of poverty on student academic success (Engle & Black, 2008).

Homeschooling. Form of educating children at home versus in a public setting, which has experienced a huge upsurge of popularity during the last two decades in the 20th century and continuing through the present (Altenbaugh, 1999).

Intangible. For the purpose of this study, a category for methods of parents' involvement in their children's education, such as parent aspirations, academic/child socialization, encouragement and nurturing relationships, and communicating with their children. Intangible is also used to categorize barriers that inhibit parents from participating in their children's education, such as marginalization and jumping through hoops.

Magnet schools. Public schools that operate within and are governed by a school district with a specific academic focus or teaching method, for example, a dual-immersion magnet school (ISDE, n.d.).

Media richness theory. Describes modes of communication in terms of depth or richness (Daft & Lengel, 1986). This theory is useful in describing the merits of text as compared with other forms of communication.

Messaging. Sending text messages through software either web-based or via an app on a smartphone. Pictures, videos, audio, and so on are often also able to be sent, depending on the messaging service (Hoyos, 2016a, 2016b).

Messaging service. Service or platform that enables participants to communicate via texts. Google Hangouts, Facebook Messenger, Apple iMessage, WhatsApp, and Slack are all messaging platforms (Brisson, 2016; Fingas, 2017).

Middle school. School including grades 5 or 6 through grade 8 (Middle school, n.d.). For the purpose of this study, grades 7 and 8 were included.

Parent. For the purpose of this study, the adult responsible for the child, whether that person is a grandparent, parent, guardian, and so on.

Parental Academic Support Scale. A scale to measure how often different forms or modes of parent–teacher communication occurs. There are five different topics concerning students included in the scale: grades, behavior, preparedness of child socially or academically, negative interactions with classmates, and physical condition as it affects instruction (Thompson & Mazer, 2012).

PowerSchool. Secure system designed to digitally handle student and staff information for schools. Used globally, PowerSchool can be utilized to manage behavior records, attendance, fees, grades, gradebooks, and student progress among other resources. PowerSchool has a free app for parents that can be used to track their student's information (PowerSchool, n.d.).

Reactive hypothesis. Developed in the late 1980s to explain why some research found negative correlations between parent involvement and student achievement (McNeal, 2012). That is, some research has indicated that increased parent involvement is related to decreased student achievement.

Remind. Free app that is available for smartphones. Based in California, it is designed to allow teachers to communicate via text to groups, individuals, or whole classes. Teachers can schedule texts in advance, receive texts, send files, see who has opened the texts, and facilitate group discussions (Remind, n.d.).

Rural. Defined as of or being from the country (Rural, n.d.). The United States Census Bureau has adjusted its definition of rural over time but during the beginning of the 20th century adopted an official definition of urban being incorporated cities and towns with at least a population of 2,500 and rural being everything else (Ratcliffe, Burd, Holder, & Fields, 2016). The University of Idaho and Idaho Commerce and Labor in their publication "Profile of Rural Idaho" utilized a slightly different definition (Salant & Porter, 2005). By their definition, rural counties are those where the biggest city has a population less than 20,000. The United States Department of Agriculture Economic Research Service indicated there are more than 20 different definitions of rural but offers nine commonly used definitions based on population, proximity to metropolitan areas, and so on (Cromartie & Bucholtz, 2018). They indicated that the best choice for which rural definition to use is dependent on how the definition is to be used. Because this study is regarding schools, for the purpose of this study, rural is a classification of schools or school districts as defined by Rural School Districts—Rural Public Charter Schools (2009). Schools districts and charter schools are considered rural if they either (1) have less than 20 enrolled students per square mile within their attendance boundaries or (2) if they are located in a county with less than 25,000 residents according to the most recent U.S. census. Rural is further defined as pertaining to charter schools if the school is physically located within the boundaries of a rural school district.

School choice programs. Initially proposed in 1955 by Milton Friedman to create a free market within the sphere of education and give parents more freedom to choose which

school their children would attend (Altenbaugh, 1999). Fundamentally, the public education funds allocated by the government are given to the school or program that best fits the child's needs as determined by the parents—whichever school or program chosen (EdChoice, 2018). In one type of school choice program, parents are given vouchers or coupons for the amount the state will pay per student to give to the state-approved (as having met certain criteria) school, public or private, of their choice. The idea has been tried on a small and large scale but has not been widely accepted (Altenbaugh, 1999).

Smartphone. A mobile phone with a touch screen that has the capability to take pictures, access the internet, email, use apps, and so forth (Smartphone, n.d.).

Socialization. Process by which individuals are prepared to interact socially within a social setting (Socialization, n.d.).

Socioeconomic status (SES). At its most basic level, a measure of assets available to an individual (American Psychological Association Task Force on Socioeconomic Status, 2007). Cowan et al. (2012) defined SES as a measure of economic, social, and cultural resources available to a person. Usually used in terms of low SES and high SES, it is often used synonymously as a measure of financial capital (Engle & Black, 2008). In the United States, SES most often includes measures of income and education level (Kronenfeld, 2012). For the purpose of this study, level of SES was determined as a whole-school percentage. Although some researchers have questioned the use of free-and-reduced lunches as a measure of SES because of changes made in who can qualify, the process of change has been slow (Greenberg, 2018; Harwell & LeBeau, 2010). In Idaho the criteria for those individuals receiving free-and-reduced lunch were still based on family income. For this reason, the schools selected were those which met the qualifications of a school-wide Title I program, that being 40% or more of their students qualify for free-and-reduced lunch (Ybarra, 2017).

Synchronized communication. Communication that occurs back and forth instantly, such as in a face-to-face conversation (Giesbers et al., 2014). Synchronized communication can be through texting or messaging, phone conversations, or face-to-face conversations. Some benefits of synchronized communication are the inclusion of body language and intonation during face-to-face conversations and intonation during phone conversations, which can facilitate understanding.

Tangible. For the purpose of this study, a category for modes of parents' involvement in their children's education such as helping with homework, volunteering at school, providing needed resources and structure, attending meetings and events, and choosing a school for their children. Tangible also is used to categorize barriers that inhibit parents from participating in their children's education, such as lack of financial resources, transportation issues, or lack of access to physical resources, such as computers or language or cultural barriers.

Text messaging (texting). Sending short electronic messages, usually sent and received by cell phone (Text messaging, n.d.). Texting can be either asynchronous or synchronous communication. For the purpose of this study, texting and text messaging will be used interchangeably to denote short electronic messages either over messaging platforms or cell phones.

Traditional communication methods. For the purpose of this study, phone calls, handwritten or typed notes sent with students, face-to-face conversations, or emails used for communication between parents and teachers.

Transiency. When families or individuals live briefly in an area (Transient, n.d.). Transiency is associated with low SES and can inhibit parent academic involvement (NAPCS & CST, 2015).

Significance of the Study

Research involving parents' involvement through a classroom communication app Bloomz and possible effects on their children's academic performance is significant for several reasons. Texting as a form of parent–teacher communication is just beginning to be explored, yet electronic forms of communication are becoming more prominent (Thompson, 2008). Understanding the nature of using an app such as Bloomz may help staff and schools decide whether to implement this form of communication as a way to facilitate parent involvement. Some struggles that low-SES, rural parents face in being involved in schools may be mediated through the use of a classroom communication app. The findings from this study may assist schools in developing practices and policies that will help all parents, but especially low-SES parents, be more involved. This research explored the effectiveness of the Bloomz app as a form of communication between parents and teachers and as a method to increase parent involvement in the form of parent–teacher communication.

Not enough is known about classroom communication apps as a mode of parent–teacher communication and their possible benefits to advise educators on their use. Classroom communication apps, and in the case of this study—Bloomz, could potentially be a significant boon to low-SES families at the middle school level. In the process of completing the literature reviews, the researcher found there was conflicting, partial, and missing research regarding texting as a form of parent–teacher communication, and research regarding classroom communication apps was almost nonexistent. This study sought to increase understanding of the use of the classroom communication app Bloomz as a method of communication between parents and teachers. Classroom communication apps involve more than just direct texting and include whole-class teacher-to-parent communication, sign-ups, calendaring, picture sharing, and so on.

Low-SES parents struggle financially, often holding down multiple jobs. In addition to a lack of financial resources, their time is severely limited and does not lend itself to researching this topic for themselves. This study could help guide rural school district educators toward strategies that may help facilitate parent involvement and higher student academic performance.

Overview of Research Methods

A mixed-method approach was chosen as the best methodology. Incorporating a quantitative quasi-experimental research design allowed for broad picture data collection. The qualitative open-ended interview and focus groups part of the study helped to determine the perceptions of the teachers and parents about communication via the Bloomz app. The three factors focused on were effectiveness, ease of use, and sufficiency (whether additional forms of communication were necessary). Quasi-experimental design was chosen because it could be utilized to test causalities (White & Sabarwal, 2014). The comparison group included seventh and eighth grade math and English classes from two low-SES middle schools.

During the first quarter (Q1), the parents and teachers communicated as they normally would via email, texts, paper notes, and face-to-face conversations. During the second quarter (Q2), Bloomz was added as a communication tool for parents and teachers to use if they so desired. Each quarter, the students' final grades were collected, as well as a count of the number of communications. The communication counts were compared, as well as the means of the students' grades each quarter.

A qualitative research methodology was added to the quantitative research design to add richness and depth to the quantitative data. Semistructured open-ended interviews and focus groups based on the quantitative data facilitated a deeper understanding of issues connected with involvement, especially within the rural setting. The Parental Academic Support Scale developed by Thompson and Mazer (2012) was the basis for the interviews and focus groups. The

qualitative data helped extend understanding of the quantitative data, facilitating a more complete understanding of parent involvement in the form of parent–teacher communication through Bloomz, a classroom communication app used by rural, low-SES parents of middle school children.

Chapter II

Review of Literature

Introduction

The purpose of this literature review was to examine the research conducted relevant to the link between parent involvement in the form of communication between parents and teachers, especially through a classroom communication app, and the academic achievement of students in rural middle schools from low-SES families.

The relationship between parent involvement and children's academic achievement within families with low SES is a complex one. The review will begin by considering the historical context of parent involvement in education in the United States, especially within the rural setting. Next, the focus of the review will turn to recent research on how poverty can affect children's academic achievement, especially within the rural context. Then, the barriers that inhibit parent involvement in low-SES families were examined, followed by ways that parents were involved in their children's education both at home and at school. Finally, the literature review will synthesize research concerning the success of the varied forms of parent involvement and demonstrate the exigency for this study.

Historical Context of Parent Involvement

Historically speaking, parents have been responsible for moral, academic, and occupational education (Altenbaugh, 1999; Hiatt, 1994). Over time, however, the degree to which parents have been involved has fluctuated. In early Colonial America, schools were first formed around social class lines and varying religious beliefs (Hiatt, 1994). The schools taught religion, reading, and writing, and parents were directly involved in curriculum choice, teacher selection, and the school board makeup (Hiatt, 1994). In short, parents were very involved.

As early as 1642, communities began considering laws to ensure the education of all children (Altenbaugh, 1999; Hiatt, 1994). The Massachusetts colony put a law into effect dictating that all parents must educate their children about their religion, literacy, and an occupation, but it was not until later that laws of this nature gained traction across America. Many notable historic figures of the time, such as George Washington, Benjamin Rush, and Thomas Jefferson, supported a national public education system financed with taxes to provide educational equality for all. Many individuals, however, remained in opposition to a public school system, maintaining that education was a responsibility of parents, and some politicians ran on that platform (Altenbaugh, 1999; Neem, 2016). Gradually, school attendance became the norm, and by the 1860s, there was a public school system in place in every state in America, although attendance was not required by law in all states until the early 20th century (Altenbaugh, 1999; Hiatt, 1994; Neem, 2016). Women and men worked to provide opportunities for boys and girls of all races to be educated (Rauscher, 2015).

Compulsory attendance at school was subject to public school availability and laws restricting children in the workforce (Altenbaugh, 1999). Even with child labor laws in place, parents often had their children work in mines and factories or on family farms to make ends meet (Hiatt, 1994). Compulsory attendance laws did increase school attendance, especially for children from low-SES families (Rauscher, 2015). Attendance also increased when local community members had a voice in the school through the school board (Zimmerman, 2009). By the 1950s, children ages 6 to about 16 were required to attend school typically for an entire school year, or about 180 days (Altenbaugh, 1999).

The one-room, one-teacher schoolhouse was attended by over half the population into the mid-1930s (Zimmerman, 2009). Zimmerman (2009) wrote that over the next 30 years, schools transitioned away from one-room schoolhouses with only one teacher toward larger schools with

multiple teachers. At the same time, education shifted out of parents' personal realm of responsibility as public schools became the place where children were educated. Child labor and compulsory attendance laws gradually led to all children attending school and heralded the end of most parents' direct control over their children's education (Hiatt, 1994).

American schools slowly became institutionalized through a process of bureaucratization and professionalization (Hiatt, 1994). As more community members joined school boards and began directing schools, more children were sent to school, people became more committed to schools, and public schools garnered more acceptance and gradually became the norm (Neem, 2016). By the 1900s, parents depended on schools to educate their children (Altenbaugh, 1999). At this point, some parents began to feel a loss of control over aspects of their children's education as schools became "official" with more formally educated teachers (Hiatt, 1994). Teachers, board members, politicians, and other stakeholders worked to further spread public schools (Altenbaugh, 1999; Neem, 2016).

Regardless of the level of involvement of "official" stakeholders, parents have always remained an integral part of the education of their children and have continued to seek involvement. For example, the beginnings of parent–teacher associations were organized late in the 19th century and have continued through the present as a way for parents to be involved in the school of their children (Hiatt, 1994). Altenbaugh (1999) suggested that parents join the parent–teacher association in order to have greater influence in their children's education. Programs like Project Head Start and the Elementary and Secondary Education Act, which required parent involvement on school boards and in the classrooms, were instituted in the mid-1960s. In the years that followed, the Head Start program continued to encourage parent involvement and actively advocated this in their promotional information.

A school restructuring movement of the 1980s strengthened the power of local school boards. School boards, comprised mostly of parents, govern at the school level (Hiatt, 1994). The concept was that the board (and thus local parents) would have school-level control over curriculum, budgeting, hiring of teachers and administrators, and school organization.

This call for restructuring to improve public education has continued in different ways up to present-day. Homeschooling, charter schools, magnet schools, and school choice programs, such as education vouchers, are other educational models that are part of a trend toward more parent involvement. Each educational model has its benefits and drawbacks and differing degrees of parent involvement.

Homeschooling, of course, has the highest level of parent involvement and includes models such as virtual online schools (parent or child directed) and blends of online, public school, and at-home teaching. The number of children being homeschooled increased dramatically in the last half of the 20th century. In 1970 the number of children being homeschooled in the United States was 15,000 and surged to around one million by 1997 (Altenbaugh, 1999). The United States Department of Education (USDE) National Center for Education Statistics (2014b) reported that in 2012 the number had almost doubled with about 1,773,000 children being homeschooled.

Charter schools and private schools may also be associated with higher levels of parent investment versus traditional public schools because the parents must understand the enrollment process and take extra steps to apply for their children to attend (NAPCS & CST, 2015). According to some charter school leaders, charter schools are perceived as being more open to parent involvement and have less barriers to parents being involved when compared with the openness of traditional public schools (Smith et al., 2011).

Charter schools often have specific ways to encourage parent involvement. For example, in some charter schools, parents are required to help their children with homework or read to them for a specific amount of time (Smith et al., 2011). Some charter schools' commitment to parent involvement in the decision-making processes of the school have gone so far as to provide training for the parents on involvement. Other charters encourage the parents to join their children when they are tutored or come and observe the classroom until they are comfortable enough to help. Although charter schools can be started by parents, educators, or school districts, they are still regulated by the state, governed by and accountable to school boards and the state, and because of the increased levels of accountability, are easier to shut down than traditional public schools if proven ineffective (CER, 2017).

The number of charter schools has grown dramatically since 1990 (CER, 2017). In 1999 the number of charter schools was 1,524 but had increased to 6,747 charter schools in 2014 (USDE National Center for Education Statistics, 2016). The number of children attending charter schools has grown significantly as well from 339,678 children in 1999 to 3.2 million children attending charter schools during the 2017–2018 school year (David & Hesla, 2018; USDE National Center for Education Statistics, 2016). In Idaho, the number of students enrolled in charter schools has also increased in the last several years. During the 2017–2018 school year, nearly 22,000 students, or 7.2% of students, in Idaho were enrolled in charter schools of the roughly 300,000 students statewide (ISDE, 2018a).

Another recent movement connected with increased parent involvement is parent trigger laws. Parent trigger legislation allows parents of children in underperforming schools, per specific qualifications, to request intervention from their state through a petition signed by the parents (Feuerstein, 2015; National Conference for State Legislators [NCSL], 2013). Of the school choice movement and parent trigger laws, the National Conference for State Legislators

(2013) declared that one of the fundamental underlying concepts for the school choice movement is to give parents the right to choose the best education for their children. Sometimes the best choice involves authorizing parents to make changes in the underperforming school where their children attend, or sometimes it necessitates giving parents the means to have their child attend a higher performing school (NCSL, 2013).

In summary, the degree of parent involvement in American education has fluctuated over the years. In Colonial America, parents had considerable control over the details of the education of their children (curriculum, teacher, etc.); gradually this changed to parents having little say during the early 20th century (schools determined curriculum, chose teachers, etc.). The last several decades have witnessed a resurgence in parent involvement (Hiatt, 1994; CER, 2017).

Poverty and Education

In 2016 nearly 13.3 million U.S. children, or about 18%, were living in poverty (Semega, Fontenot, & Kollar, 2017). Education has always been affected by income level and social level (Allington et al., 2010; Altenbaugh, 1999; Cowan et al., 2012; OECD, 2011; Renth et al., 2015). The affluent have had a greater access to a better education both historically and currently (Altenbaugh, 1999; Porter, 2015; Tienken & Zhao, 2013). Tienken and Zhao (2013) declared,

> The single most important factor affecting educational achievement are inequalities of wealth and poverty. Since the inception of testing under No Child Left Behind, students from poor or economically disadvantaged families have never scored higher than their better-off peers—not at any age, nor in any state. (p. 112)

One measure of this disparity can be found in standardized tests. Children living in poverty have standardized test scores four to seven points lower than those not living in poverty (Hair, Hanson, Wolfe, & Pollak, 2015). The academic disparity between children from low-SES families and high-SES families begins early. Children from low-SES families start kindergarten

over a year behind their high-SES counterparts despite early childhood education programs (Porter, 2015).

The gap between the achievement of those living in poverty and those living above poverty levels has widened significantly (Porter, 2015; Reardon, 2011; Renth et al., 2015; Tienken & Zhao, 2013). Furthermore, the academic achievement and mental abilities of students increasingly correspond to higher wages in adulthood (Reardon, 2011). That is to say, the scholastic achievement and mental capacity of students are related more than ever to the earning power of those individuals when they become adults. This is significant because living in poverty is correlated with decreased academic achievement, which in turn is ever more strongly tied with SES as an adult. It seems to be a vicious cycle, but some children can and do break free (OECD, 2011).

Children from low-SES families have to work harder to achieve than those from high-SES families for many reasons. They often lack proper nutrition, medical care, and cognitive stimulation, and experience higher levels of stressors and rates of health issues, as well as have poorer attendance (Engle & Black, 2008; Finigan-Carr et al., 2015; Kronenfeld, 2012; Porter, 2015; Renth et al., 2015). Rothstein (2013) put it bluntly:

> Children who can't see well can't read as well as those who can, and lower-class children, on average, have poorer vision than middle-class children. Lower-income children have a higher incidence of lead poisoning, poorer nutrition, and higher rates of iron-deficiency anemia, which result in impaired cognitive ability. They have greater exposure to environmental toxins, air pollution, and smoke, and therefore greater incidence of asthma. Lower-class children have less adequate pediatric care, resulting in more frequent absences from school.…The lack of affordable housing for low-income families is another social class characteristic that has a demonstrable effect on average

achievement. Children whose families have difficulty finding adequate housing move frequently, and student mobility is an important cause of low achievement. Teachers cannot work as effectively with children who are in their classrooms for a short time as with those who stay longer. (p. 62)

Another important factor explaining why children living in poverty struggle academically is that children's brains develop differently depending on their environment, significantly enough that it can affect their ability to succeed at school (Hackman, Gallop, Evans, & Farah, 2015; Hair et al., 2015; Mackey et al., 2015). The physical structure of the brain of a child raised in poverty from a very early age differs from that of a child raised in nonpoverty (Hackman et al., 2015; Mackey et al., 2015). The cerebral cortex, the part of the brain densely packed with neurons, is thicker in children from high-SES families (Mackey et al., 2015). The difference in brain structure has been shown to have a significant effect on school readiness abilities, working memory, and standardized test scores (Hackman et al., 2015; Hair et al., 2015; Mackey et al., 2015).

Setting the physical brain structure and its effects aside, other studies have demonstrated that the SES of a family, and its effect on academic achievement, could be positively impacted by a quality education (Rindermann & Baumeister, 2015). Parents can influence the degree to which poverty affects their children for better or worse (Engle & Black, 2008). One study found that when mothers were less nurturing or when children had a stressful homelife, the effects of poverty were greater (Katsnelson, 2015). Parents who are struggling themselves to survive are less able to fill the mental, physical, and emotional needs of their children (Engle & Black, 2008; Rothstein, 2013).

The reverse has also been indicated through research. The family investment model demonstrates that parents with higher levels of education or higher levels of financial stability

typically devote more time to the academic development of their children and can keep them from the cognitive effects of poverty (Engle & Black, 2008). The research conducted by Neville et al. (2013) indicated that the brain function of young children (three–five years old) can be affected positively through parent intervention, even within a short 8-week time frame.

The timing of parent involvement is as important as the amount and type of parent involvement. Crowe (2013) indicated that the most significant time for parents to be involved in their child's education is before the child has even entered school. Success throughout middle school should begin early with cognitive stimulation and excellent parent–child interactions. For children from low-SES families, enduring parent involvement (length of involvement) also appears to be especially important.

Children can be affected from low-SES parent behaviors, as well as physical, mental, and social factors connected with low SES (Engle & Black, 2008; Gordon & Cui, 2014; Kronenfeld, 2012; Porter, 2015; Rothstein, 2013). Research has indicated that SES and parent–child interaction are highly connected (Hackman et al., 2015). Although the effects of poverty can cause children to be less able to achieve, the good news is that to some extent, with intervention ranging from family-based training targeting selective attention to an increased quality of home environment, the issues that stem from poverty can be reversed (Hackman et al., 2015; Neville et al., 2013). The brain is very resilient, especially in children (Katsnelson, 2015).

Rural as a Setting for Education in Idaho

The quality and nature of education in rural Idaho are an important consideration. Because Idaho's population is not spread evenly, the majority of the land in Idaho is rural with only a few pockets of high population areas. More specifically, although only about one third of the population is rural, more than two thirds of the counties are rural, and almost 90% of the

school districts are rural (Barnhill, 2013; ISDE, 2017). This makes rural education a significant piece of education discussions (Rural Opportunities Consortium of Idaho, 2014).

Rural areas, Idaho included, tend to have higher levels of poverty (Dearien & Salant, 2015; Proctor et al., 2016; Salant & Porter, 2005). For one thing, wages are lower than in urban areas by about $5,000 per year (Dearien & Salant, 2015; USDA Economic Research Service, 2016). With funding for schools based on enrollment and local levies, it means that for rural areas a combination of higher rates of poverty, lower property values, and a smaller population explains why rural schools often struggle financially. Furthermore, about two thirds (63.09%) of the state of Idaho is controlled by federal government agencies and thus is not privately owned and would not generate the same revenue for the state or for education by extension (Idaho Association of Counties, 2011). The U.S. Federal Government does provide some funds through the Payments in Lieu of Taxes program and the Secure Rural Schools program, but both programs are mostly funded on a year-to-year basis (Shuffield, 2019a, 2019b; Taylor et al., n.d.).

According to the ISDE (2017), rural students in Idaho are not achieving at the same level as urban students on the ISAT. In fact, rural students performed an average of seven to eight percentage points less than urban students on the math and English language arts ISATs. Success on the state test appears to be falling for rural students.

Ryan and McClennen (2018) indicated that at the national level, rural schools in America are often unable to provide the same opportunities to students as urban schools provide. For example, only about half of rural districts offer advanced placement classes for their students (Ryan & Hill, 2017). Rural students are as likely or more likely to graduate from high school but are less likely to continue to a college education than urban students.

Barriers Inhibiting Low-SES Parent Involvement

According to data collected by the USDE National Center for Education Statistics (2014b), statistically speaking, higher SES parents are more likely to be involved in their children's education. The center found that as income increased, so did the percentage of parents who participated in their children's education. The difference between the amount parents were involved clearly correlated with the income of the parents: the higher the SES, the higher the parent involvement (see Figure 1; USDE National Center for Education Statistics, 2014b).

Figure 1

Parent Involvement Percentage by Income Bracket in 2012
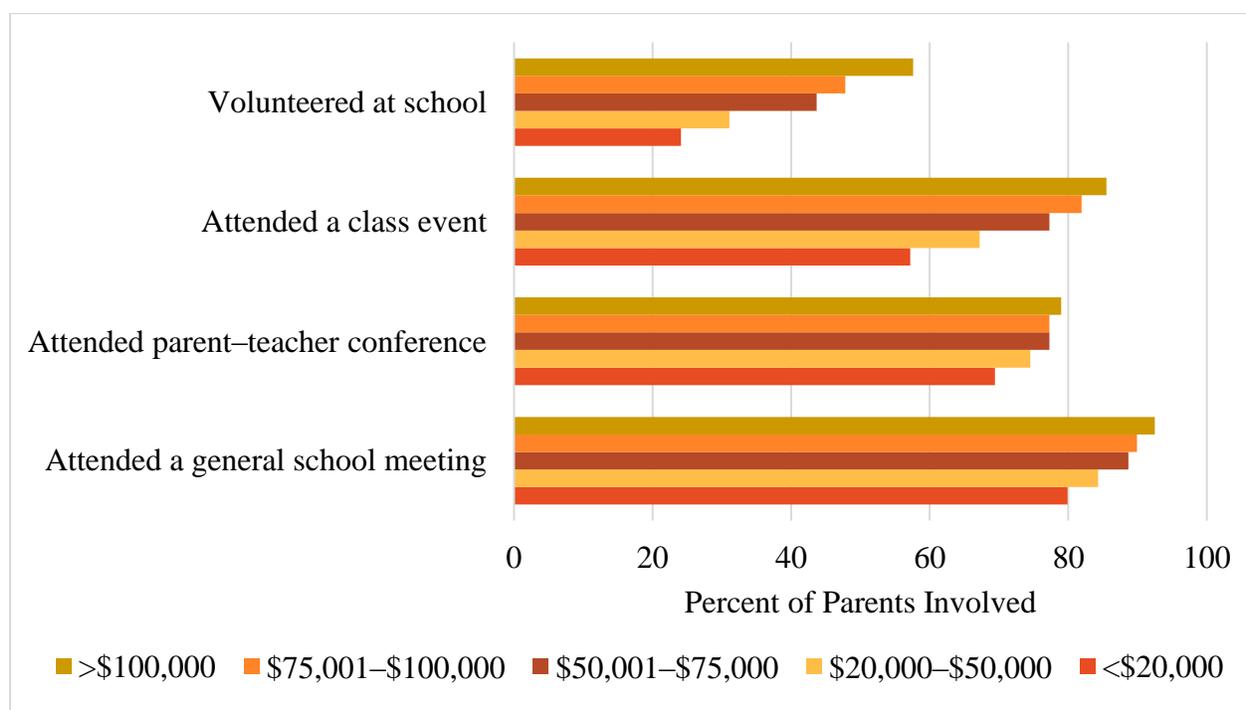
Note. Graph of elementary and secondary school student's parents self-reported involvement by income bracket in 2012. Adapted from "Percentage of Elementary and Secondary School Children Whose Parents Were Involved in School Activities, by Selected Child, Parent, and School Characteristics: 2003, 2007, and 2012," in Digest of Education Statistics, by USDE National Center for Education Statistics, 2014, Retrieved from https://nces.ed.gov/programs/digest/d14/tables/dt14_207.40.asp.

Despite this difference in involvement, research has also shown that parents, regardless of SES, value their children and their education and are aware that parent involvement is helpful in their child's education (Bennett-Conroy, 2012; Crea, Reynolds, & Degnan, 2015; DePlanty et al., 2007; Griffiths-Prince, 2009; McKenna & Millen, 2013; Renth et al., 2015; Rucker, 2014). Of note, along with the data collected by the USDE National Center for Education Statistics (2014b), which indicated a strong correlation between income and parent participation, some research has indicated a connection between parent *value* of involvement and the degree to which they were involved (DePlanty et al., 2007). In other words, DePlanty et al. (2007) found that the parents who felt it was more important to be involved, the more involved they were. Perhaps, however, the lower level of parent involvement found in low-SES families is not a reflection of their value of parent involvement, but rather of the larger number of barriers that inhibit their involvement.

In a qualitative study performed in New York by Bennett-Conroy (2012), researchers interviewed parents of seventh and eighth graders from low-SES families. Parents who were not involved at school shared reasons such as inability to drive, distance from school, evening meetings or sibling's events clashing with school events, late notification of events, and working two jobs (Bennett-Conroy, 2012; Renth et al., 2015). High transiency rates are common among low-SES families (NAPCS & CST, 2015). This may make it more difficult for parents to form relationships with teachers and staff, become familiar with school routines, and become involved at their children's school.

Other research has indicated that some parents struggle to be involved in their middle school students' education because they have a hard time figuring out how to help their children become responsible for their own education and still be successful (Robbins & Searby, 2013). That is, the parents have a hard time balancing being helpful but not too helpful, monitoring

students' academics without being controlling, and letting the students be responsible for their

own academic success while still maintaining acceptable grades, especially when, as Kaplan

Toren and Seginer (2015) suggested, the middle school children do not want their parents to be

involved.

Parents of middle school students also feel inadequately prepared skill-wise to assist their

students with homework (McGregor & Knoll, 2015; O'Sullivan et al., 2014). Other parents lack

the social skills, confidence, or even awareness of opportunities to be involved at their children's

schools (Reece, Staudt, & Ogle, 2013; Renth et al., 2015). Some parents, in an effort to help their

children learn responsibility, only step in to help once there is a problem and their children are

struggling (Robbins & Searby, 2013).

Another study has suggested three areas that can hinder parents' involvement in their

children's education: physical or absolute barriers, marginalization, and jumping through hoops

(Yoder & Lopez, 2013). The first classification includes physical realities that can inhibit parent

involvement and the second two classifications involve feelings or perceptions that inhibit parent

involvement. Each of these barriers is examined in this section.

Tangible barriers are described as lack of financial resources; transportation issues; lack

of access to physical resources, such as computers; or language or cultural barriers (Yoder &

Lopez, 2013). For low-SES families who may work multiple jobs in order to survive, the parents

may be unable to attend school functions because of logistical timing and child-care issues

(Erdener, 2016; Renth et al., 2015). Lack of time also falls under this section. When parents

work evenings or early mornings, it can interfere with their ability to help with their children's

homework or interactions with their children's teachers (Bennett-Conroy, 2012; Erdener, 2016).

Another barrier that can interfere with parent involvement is lack of communication

between parents and schools (Kaplan Toren & Seginer, 2015; Renth et al., 2015). The nature of

middle schools is one factor that can affect communication with parents. Middle schools are generally larger than elementary schools, with an increased number of staff and more complex procedures. With the increased teacher to parent ratio, communication and relationships with parents can be affected for the worse (Hill & Tyson, 2009). Goldkind and Farmer (2013) reported in their study that parents felt that larger schools were less welcoming and their communication with the school was negatively affected because they felt less welcomed. Parents' past experiences with schools or perception of schools or teachers could affect their communication with their child's teachers. Lack of technology can also affect communication between low-SES families and schools. For example, parents without access to the internet do not have the same degree of access to communication with the school or digital information, such as grades (Renth et al., 2015).

Another intangible barrier to parent involvement occurs when parents want to be involved, but the high number of steps necessary or complex nature of the steps inhibits participation. Yoder and Lopez (2013) categorized this kind of barrier, when the process of redress is so involved as to be overwhelming, as fitting within the jumping through hoops classification. For example, parents may have a school-related issue they feel must be addressed on behalf of their child. Perhaps the child needs to be transferred midterm due to a family situation. In order for the child to retain credit, the parent must communicate multiple times with the school counselors, registrars, and principals at both schools. At times like this, the solution to the problem is an involved, multistep process, so much so that the parent may sometimes be unsuccessful despite their best efforts. Furthermore, when parents try to follow the proper steps to resolution and their problem is still not resolved, it is very frustrating and disheartening, especially if they have expended a lot of time and energy. Yoder and Lopez indicated that

situations like this discourage parents and lead to them having stronger feelings of helplessness and marginalization.

Marginalization is an intangible barrier to involvement and is, according to some research, the most significant barrier to parent involvement (Yoder & Lopez, 2013). Marginalization is characterized by belonging to the nondominant group (Hunt, 2006), and embodies the feelings of being treated inequitably, unfairly, or being exploited (Brown & Strega, 2005). Yoder and Lopez (2013) further extended their definition of marginalization to include feelings of helplessness regarding a child's education as well as feeling a lack of importance or feeling ignored. For example, one parent in their study spoke of transferring her child from an affluent school to a closer school because of transportation issues (Yoder & Lopez, 2013). Her child, a kindergartener, went from reading and writing to tracing alphabet letters. When she called the school to discuss the issue, she felt dismissed. Yoder and Lopez also reported that another parent shared she felt she was ignored and treated as though she were unimportant because her family was low-income. Feelings of being unwelcome, unwanted, uninvited, or teachers acting superior is very discouraging to parent involvement (Crea et al., 2015; Day, 2013; Kavanagh & Hickey, 2013; Olmstead, 2013) When parents feel marginalized, it can stop their efforts to be involved in their children's education (Yoder & Lopez, 2013).

Poza et al. (2014) offered the perspective that parent involvement has its own set of rules and expectations, and when parents are not involved in the ways expected by teachers and schools, they are excluded and may feel marginalized. In this study by Poza et al. (2014), the perception of the school staff was that the parents were not involved. Teachers expected parents to ask for help, be physically present in the school, and advocate for their child to be enrolled in a school program that would benefit their child. However, contrary to the perception from the schools, parents were involved and invested by involving themselves in what Poza et al.

categorized into three groups: asking questions, attending, and altering/augmenting. Of all the

parent involvement inhibitors, marginalization seems the most difficult to overcome (Yoder &

Lopez, 2013). Some parents, for example, in the study by Yoder and Lopez (2013) felt

stigmatized because of their SES, powerless against the schools to effect change. Parents want to

be involved; they care about their children and can be very creative in their ways to continue

involvement despite barriers (Bennett-Conroy, 2012; Yoder & Lopez, 2013). Yoder and Lopez

(2013) found that parents reached out to extended family and neighbors, sought help from

community programs or resources, and juggled schedules to enable them to overcome physical

barriers and be involved as much as possible. The barrier of marginalization, however, is more

complex and therefore more difficult to overcome. Table 1 shows a variety of barriers parents

face when seeking to be involved in their child's education. As mentioned previously, these

barriers can be either physical or intangible (see Table 1).

Table 1

Barriers to Parent Involvement

Physical Barriers	Intangible Barriers
Transiency	Marginalization
Transportation issues (lack of vehicle, distance to school)	Jumping through hoops
Lack of child care	
Lack of resources (computer, reference material)	
Lack of time or energy	
Scheduling conflicts with work or other children's activities	
Language or cultural barriers	
Lack of skill (to help with homework, etc.)	

Note. Adapted from "Engaging Parents of Eighth Grade Students in Parent-Teacher Bidirectional Communication," by Bennett-Conroy, 2012, *School Community Journal, 22*(2), pp. 87–110; "Exploring Parental Involvement Strategies Utilized by Middle School Interdisciplinary Teams," by Robbins & Searby, 2013, *School Community Journal*, *23*(2), pp. 113–136; "Parent's Perceptions of Involvement in Children's Education: Findings From a Qualitative Study of Public Housing Residents," by Yoder & Lopez, 2013, *Child & Adolescent Social Work Journal, 30*(5), pp. 415–433.

Ways Parents Are Involved in Their Children's Education

A large body of researchers have conducted studies that have suggested that parent involvement in their children's academic careers has a strong connection to improved academic performance (Choi et al., 2015; Grolnick, 2015; Grolnick et al., 2015; Hill & Tyson, 2009; Lam & Ducreux, 2013; Mayo & Siraj, 2015; McNeal, 2015; O'Sullivan et al., 2014; Rucker, 2014; Sheldon et al., 2010; Song et al., 2015; Tang & Davis-Kean, 2015). Parents, regardless of SES, are aware of the importance of being involved in their children's education, as mentioned earlier (Bennett-Conroy, 2012; DePlanty et al., 2007; Griffiths-Prince, 2009; McKenna & Millen, 2013;

Poza et al., 2014; Renth et al., 2015; Rucker, 2014; Schafft, 2005). Although there is a myriad of

ways parents are involved in their children's education, both tangible and intangible, they are not

all equally effective in helping children increase their academic achievement (see Table 2; Hill &

Tyson, 2009). In Table 2, the reader can see there are a variety of ways that parents can be

involved in their child's education. This table lists both tangible involvement, requiring some

overt physical evidence as a result of the parent's activity, and intangible involvement, which is

difficult to measure in terms of physical effects.

Table 2

Ways Parents Are Involved in Their Children's Education

Tangible Involvement	Intangible Involvement
Provide location and time for homework (structure)	Provide emotional support
Provide educational resources and experiences	Socialize
Volunteer at school	Motivate
Assist with homework	
Communicate with teacher(s)/school	
Attend school events	
Choose school	

Note. Adapted from "A Structural Model of Parent Involvement With Demographic and Academic Variables," by Choi et al., 2015, *Psychology in the Schools, 52*(2), pp. 154–157; "A Longitudinal Investigation of Parent Educational Involvement and Student Achievement: Disentangling Parent Socialization and Child Evocative Effects Across Development," by Crowe, 2013, *Journal of Educational Research & Policy Studies*, *13*(3), pp. 1–32; "Mothers' Motivation for Involvement in Their Children's Schooling: Mechanisms and Outcomes," by Grolnick, 2015, *Motivation and Emotion, 39*(1), pp. 63–73; "Parental Influence and Academic Achievement Among Middle School Students: Parent Perspective," by Lam and Ducreux, 2013, *Journal of Human Behavior in the Social Environment*, *23*(5), pp. 579–590; "Parenting Practices and Children's Academic Success in Low-SES Families," by Mayo and Siraj, 2015, *Oxford Review of Education, 41*(1), pp. 47–63; "*Parent and Family Involvement in Education, From the National Household Education Surveys Program of 2012*," by Noel et al., 2015, (Report No. NCES 2013-028.REV) retrieved from National Center for Education Statistics website: http://nces.ed.gov/pubsearch; "Parental Mathematics Homework Involvement of Low-Income Families With Middle School Students." By O'Sullivan et al., 2014, *School Community Journal*, *24*(2), pp. 165–187; "Not Just Numbers: Creating a Partnership Climate to Improve Math Proficiency in Schools," by Sheldon et al., 2010, *Leadership & Policy in Schools*, *9*(1), pp. 27–48; "Longitudinal Investigation Into the Role of Perceived Social Support in Adolescents' Academic Motivation and Achievement," by Song et al., 2015, *Journal of Educational Psychology*, *107*(3), pp. 821–841; "The Association of Punitive Parenting Practices and Adolescent Achievement," by Tang and Davis-Kean, 2015, *Journal of Family Psychology*, *29*(6), pp. 873–883.

The tangible ways parents interact with their children and are involved in their education include provision of educational resources and experiences, structure for homework, help with homework, volunteering at school, attending meetings with teachers, attending school events, and school choice (Mayo & Siraj, 2015; Noel et al., 2015; O'Sullivan et al., 2014; Sheldon et al., 2010; Tang & Davis-Kean, 2015).

On the other hand, parent aspirations, academic/child socialization, encouragement and nurturing relationships, and communication with their children are all intangible ways that parents involve themselves in their children's academic careers (Choi et al., 2015; Crowe, 2013; Lam & Ducreux, 2013; Mayo & Siraj, 2015; Song et al., 2015). Mayo and Siraj (2015) divided parent involvement a little differently—into emotional and practical involvement. Some of the forms of parent involvement do not fall neatly into either of those two categories, for example, socialization. Socialization is more than just an emotional involvement; it incorporates intellectual support and encouragement as well. The divisions of tangible and intangible perhaps better encompass all kinds of involvement, so for the purpose of this paper, those are the two types of parent involvement discussed.

Whichever kind of parent involvement discussed, and despite what popular culture might have one believe, a study of middle school students suggested that parents remain the strongest influence (more than peers or teachers) over their children's desire to succeed and their actual academic success, although their impact is lessened in the middle school years (Song et al., 2015). Some parent involvement strategies that were disciplinary in nature did not have a positive academic correlation, however. Tang and Davis-Kean (2015) found that students had lower levels of academic success in math and reading later in their academic career when their parents supported involvement strategies that were punitive in nature. Disciplinary methods parents utilized, such as verbal reprimands or limiting after-school activities, were ineffective

ways to bolster student achievement because they did not help resolve the underlying reason for the child's low level of achievement.

There are many tangible ways that parents help their children succeed academically. The basic ones, such as providing for the physical needs of the child and ensuring appropriate school attendance, are critical but should be considered a baseline for parent involvement. Educational resources, such as books, music, and educationally enriching materials and experiences, have been connected with higher levels of achievement with middle school students (Tang & Davis-Kean, 2015). This finding is important because it illustrates the need for continued cognitive stimulation into the middle school years. Furthermore, Grolnick's (2015) study suggested that as parents recognize the importance of being involved in school activities, they are more likely to provide their children opportunities to participate in cognitively stimulating activities that boost their children's self-confidence. Such programs, either after school or during the summer, can be cost-prohibitive for low-SES families.

Parents of academically successful children encourage autonomy as the children grow older while still maintaining emotional support (Mayo & Siraj, 2015). O'Sullivan et al. (2014) found that encouraging their children was one of the main ways parents of low-SES families were involved in their child's education. Encouraging autonomy while still providing academic support is a delicate line for parents to tread. A parent's academic support (checking homework, reviewing schedules, etc.) can either hinder or help student motivation for academic success (Song et al., 2015). Encouraging autonomy is difficult, as well; Song et al. (2015) hypothesized that it may be difficult because there is a fine line between support and pressure or control. This finding is supported in part by the research conducted by Lam and Ducreux (2013), who did not find any significant connection between parental pressure (support) and scholastic success. Providing academic support in the form of assisting with homework directly was not a predictor

of the children's math grades in the research performed by O'Sullivan et al. (2014). Lam and Ducreux's (2013) research did not find a significant link connecting direct academic assistance or monitoring scholastic performance with improved academic performance.

Within low-SES families, one of the main ways that parents are involved in their children's education is to provide structure for their children to do their homework (O'Sullivan et al., 2014). In the study conducted by O'Sullivan et al. (2014) for both low- and high-achieving math students, parent involvement in terms of providing more structure (specific location, time, etc.) for math homework and practice was connected slightly with learning and academic achievement in math. For low-SES families, the structure parents can provide for homework is more positively impactful than for other children because their environment may be more chaotic because of the parent's extra work schedules, multiple families living within the same household, and so forth (O'Sullivan et al., 2014). Mayo and Siraj (2015) found parents with children who were academically successful despite a low SES were more likely to set boundaries for computer games to make sure they did not interfere with homework. This was in contrast to the parents of underperforming children, also from low-SES situations, who felt like they could not control how much their children played and thus did not provide the same amount of structure for homework completion.

Another way parents can be involved in their children's education is through school choice. Yoder and Lopez (2013) described how the opportunity and power to choose which school their children attend can help parents overcome feelings of marginalization and powerlessness, both significant barriers to parent involvement. With choice, the parents may become active stakeholders and more invested participants in their children's education (NAPCS & CST, 2015).

Children need to see that their parents are involved at school to recognize their parents care if they succeed at school (Bennett-Conroy, 2012). Bennett-Conroy (2012) found that parent involvement at school worked best when teachers and parents communicate about the child's needs and work together to meet them. Robbins and Searby (2013) noted that the most effective teachers were characterized by their openness and interest in parent involvement, were available to meet with parents, and work as a team with parents to support their children. Tang and Davis-Kean (2015) suggested that one way that communication between parents and teachers could help was if teachers communicated possible reasons why students might be struggling academically to the parents to guide their involvement (Tang & Davis-Kean, 2015). Bennett-Conroy's (2012) research suggested that most parents are interested in being involved, and schools can increase that involvement by initiating bidirectional communication with parents (Mitchell, Foulger, & Wetzel, 2009). In their study, many of the teachers and parents felt that the other should initiate conversations; however, when schools made an effort to communicate with parents, many of the barriers to parent involvement were resolved.

There are many intangible ways that parents help their students achieve academically as well. Socialization, which has been defined as the way parents extend their attitudes, beliefs, experiences, and abilities with their children by being involved in their education, impacts children's academic performance (Crowe, 2013). Parents socialize their children very naturally during normal everyday occurrences that help shape what is normal for their children, such as sharing stories about their time in college or how they studied for tests. Specifically speaking of socialization, one study found a robust connection between parental socialization efforts and how children perceived their ability and success in math (Sheldon et al., 2010). This was important because these perceptions guided career choices in their later lives.

Parents' aspirations are a part of the beliefs and attitudes that parents impart through socialization. Hill and Tyson (2009) called it academic socialization. Aspirations encompass the hopes and desires of the parent for the child's education and future life. On a specific level, some research has found connections between parents' aspirations for their children and the children's mathematical success (Choi et al., 2015). Parents in another study, whose children succeeded academically despite low SES, frequently talked with their children specifically about their hopes for their children's futures, how education was an important part of a successful future, and what they expected from their children academically (Mayo & Siraj, 2015). The adolescent children from the study felt encouraged and wanted to succeed academically and at life because of the support of their parents. Froiland and Davison (2014) indicated that academic socialization in the form of parent expectations were more connected with academic success for children than income, education level, SES, or ethnicity.

Emotional support is another intangible way that parents can be involved in their children's lives. Parent involvement through emotional support can help students develop a greater desire to succeed, have less anxiety about tests, and increase scholastic performance levels (Song et al., 2015). For the academically successful, low-SES, middle school children in the study conducted by Mayo and Siraj (2015), the emotional support they received from their parents facilitated their positive feelings about school and learning and helped them develop a desire of their own to succeed academically. Emotional support, though, is not always connected with higher academic performance levels. Some low-SES, middle school children who were unsuccessful academically, likewise had warm and emotionally supportive parents. The emotional support given by the parents, however, was aimed at helping their children jump through the hoops necessary to get through school versus fostering positive school experiences.

One mode of socialization that requires individual discussion is parent–child communication. Through direct parent–child communication, parents can share aspirations, lend emotional support, and provide motivational direction. One study conducted by Lam and Ducreux (2013) indicated a weak correlation between increased amounts of student–parent communication and increased scholastic success. Hill and Tyson (2009) found that academic socialization was the most effective form of parent involvement for middle school parents to practice. Bhargava and Witherspoon (2015) found that although other forms of parent involvement decreased, socialization increased during middle school years. In the Mayo and Siraj (2015) study, the parents of the academically successful children talked with their children about school every day. The parents talked specifically about hopes for their children's future, what they expected from their children academically, and so forth (Mayo & Siraj, 2015). These children were successful academically despite being from low-SES families.

When parents and school staff feel like a team and work together, the students benefit and their academic success increases (Sheldon et al., 2010). Research further has indicated that a strong climate of collaboration between teachers and parents is an indicator for school-level math success (Sheldon et al., 2010). For parents of students at a typical middle school who must develop relationships with multiple teachers (versus one to two elementary teachers), developing this sense of collaboration may be difficult, which may act as a barrier to parent involvement and student achievement (Lam & Ducreux, 2013). Furthermore, these kinds of involvement at school may be more difficult for low-SES families because of frequent relocation, and feelings of marginalization may inhibit development of relationships and collaboration on behalf of their children.

Parent involvement and beliefs vary among low-SES families. Among two groups of low-SES families, one with academically successful children and the other with underperforming

children, one difference between the two sets of children's parents was the perception of whose job it was to help the child succeed academically (Mayo & Siraj, 2015). The majority of the parents whose children were exceeding academic expectations felt the education of their children was their responsibility while the other set of parents felt it was the school's job (Mayo & Siraj, 2015). Mayo and Siraj (2015) additionally found that within the families with children whose academic success was lower, there was less emphasis on scholastic success. The parents in those families were as encouraging and supportive, but it was more directed toward skill development that would lead to a career later in life rather than academic success (Mayo & Siraj, 2015).

The aspirations that parents in low-SES families have for their children are noticeably different than those of nonpoor parents (Noel et al., 2015). For example, 30% of nonpoor families expected their child in grades 6–12 to finish a four- or five-year college degree while only 17% of poor families had that expectation. Closer but still important to note, 32% of the poor families anticipated their child to earn a graduate or professional degree, while 37% of the nonpoor families had that same expectation.

Children living in poverty, and thus at greatest risk for low achievement, benefit the most from parent involvement (Crowe, 2013; Mayo & Siraj, 2015). However, there is hope for children in low-SES families. Much research has indicated that educating parents in low-SES families is key to increasing parent involvement and their children's academic success (Bennett-Conroy, 2012; DePlanty et al., 2007; Lam & Ducreux, 2013; Tang & Davis-Kean, 2015). DePlanty et al. (2007) suggested that parent workshops and pamphlets, along with communication with parents during parent–teacher conferences, could be used to share with parents the best ways to be involved in their children's education. Parents need to be educated on effective ways to assist their children improve elements of their academic achievement directly linked to the reason for their lack of success (Tang & Davis-Kean, 2015). Lam and Ducreux

(2013) suggested that parent involvement needs to be encouraged to a greater degree at the middle school level because the level of parent involvement tends to decrease for middle school students. Bennett-Conroy's (2012) findings also suggested that staff at schools would most likely benefit as much as parents from training on effective parent–teacher communication roles.

Discovering the most effective methods for parent involvement is critical and yet very difficult to accomplish because of the number of studies, differences in their conclusions, methods, ambiguity of terms, and analysis (see Table 3). This is a real problem. The parents of children who need the most parent involvement in order to succeed academically have significant barriers to their involvement, both tangible and intangible. If more parents were taught the research-based most effective ways to be involved, it could be important for them and their children's academic career.

Table 3

Comparison of Parent Behaviors and Effect on Children

Parent Behavior	Relationship with Academic Achievement
Involvement at school	None
Parent aspirations	Increased math achievement
Motivation	Increased reading grade
Monitoring, pressure, homework help	None
Parent–child communication	Weak correlation
Emotional and practical involvement	Significant
Parent–child communication	Significant
Structure provision for homework	Significant
Emphasis on academic success	Significant
Structure provision for homework/practice	Slightly connected with math achievement
Direct homework help	None
School-wide math event attendance, Teamwork climate	Connected with increased math achievement at school level
Emotional support	Increased, greater desire to succeed, less anxiety about tests
Academic support (monitoring/scheduling)	Increase or decrease
Verbal reprimand, after-school activity limitations	Lower levels of math and reading achievement in later grades
Educational resource provision (books, music, educational activities)	Higher levels of academic achievement

Note. Adapted from "A Structural Model of Parent Involvement With Demographic and Academic Variables," by Choi et al., 2015, *Psychology in the Schools, 52*(2), pp. 154–157;

Table 3 *Note Continued*

"A Longitudinal Investigation of Parent Educational Involvement and Student Achievement: Disentangling Parent Socialization and Child Evocative Effects Across Development," by Crowe, 2013, *Journal of Educational Research & Policy Studies*, *13*(3), pp. 1–32; "Mothers' Motivation for Involvement in Their Children's Schooling: Mechanisms and Outcomes," by Grolnick, 2015, *Motivation and Emotion, 39*(1), pp. 63–73; "Parental Influence and Academic Achievement Among Middle School Students: Parent Perspective," by Lam and Ducreux, 2013, *Journal of Human Behavior in the Social Environment*, *23*(5), pp. 579–590; "Parenting Practices and Children's Academic Success in Low-SES Families," by Mayo and Siraj, 2015, *Oxford Review of Education, 41*(1), pp. 47–63; "*Parent and Family Involvement in Education, From the National Household Education Surveys Program of 2012*," by Noel et al., 2015, (Report No. NCES 2013-028.REV) retrieved from National Center for Education Statistics website: http://nces.ed.gov/pubsearch; "Parental Mathematics Homework Involvement of Low-Income Families With Middle School Students." By O'Sullivan et al., 2014, *School Community Journal*, *24*(2), pp. 165–187; "Not Just Numbers: Creating a Partnership Climate to Improve Math Proficiency in Schools," by Sheldon et al., 2010, *Leadership & Policy in Schools*, *9*(1), pp. 27–48; "Longitudinal Investigation Into the Role of Perceived Social Support in Adolescents' Academic Motivation and Achievement," by Song et al., 2015, *Journal of Educational Psychology*, *107*(3), pp. 821–841; "The Association of Punitive Parenting Practices and Adolescent Achievement," by Tang and Davis-Kean, 2015, *Journal of Family Psychology*, *29*(6), pp. 873–883.

Electronic Forms of Parent–Teacher Communication

Within the larger historical context of education, electronic modes of communications are relatively new additions to how parents and teachers communicate (Thompson, 2008). Along with the increase in modes of parent involvement, Thompson (2008) noted a corresponding expansion in research surrounding electronic modes of parent involvement as well. A full 93% of the parents involved in his study reported having a cell phone, but only 44% of those who had cell phones, however, used the cell phones to contact teachers. The teachers in the study suggested that one barrier to parents using the cell phones to communicate with teachers is the cost of minutes and not wanting to use their minutes for school. The study by Thompson, however, was completed in 2008, and lack of minutes may not be an issue any longer. Other barriers Thompson reported were lack of experience with technology, lack of internet access, and

lack of an email account. The parents in this study, in fact, reported a desire for more face-to-face time with the teachers (versus electronic communication). Thompson suggested that in order for communication technology to be effective, both parents and teachers need to want to communicate via those modes. Thompson further suggested that technology may facilitate parent involvement while supporting the child's move toward autonomy occurring during adolescence.

Beecher and Buzhardt (2016) tested a beta version of a smartphone app with disadvantaged families of preschool children to see if it would encourage parent involvement. They found that additional functionality was necessary for the app they were testing to be an effective tool—functions such as capacity for parents to check on the progress of their child and help them know how to use the information to interact positively with their child. Beecher and Buzhardt (2016) proposed that an app needs to be developed that can allow for parent–teacher communication as well as student progress monitoring.

Olmstead (2013) focused on the parents' and teachers' perceptions of email use. Teachers and parents alike felt that using technology to communicate between parents and teachers was very important. All the teachers in this study used email to communicate or share information with the parents of their students. The teachers reported one barrier to communicating with parents through technology was a lack of time. Olmstead suggested, however, that technology supports various measures of proactive parent involvement.

Most research regarding communication has focused on email use with only a very few considering texting, classroom communication apps, or social media. Thompson, Mazer, and Flood Grady (2015) directed their study toward examining how parents choose between electronic mediums. They chose the media richness theory as a framework to examine parents' modes of communication choices. On its most basic level, the media richness theory posits that communicators choose methods appropriate for the depth of information they need to convey.

For example, many parents prefer to use email to communicate about objective topics because emails are easy and readily accessible through their smartphones but better at conveying tone and meaning than a text. For more sensitive or involved conversations, parents and teachers tend to choose face-to-face conversations or telephone calls, again depending on the situation (Palts & Harro-Loit, 2015). Thompson et al. (2015) also found that although few parents used texting to communicate with teachers, many listed it as their favorite mode of communication. They suggested that this may indicate parents would use text if it were more readily available.

The focus of Flowers' (2015) study was to look for connections between parents' familiarity with mobile device use (with no differentiation between email, texting, or calls) and how they used a cell phone to communicate in general and with their children's teachers specifically. Flowers found that although about 66% of the parents had a mobile device, not very many of the parents took advantage of the ease of communicating via cell phone with their children's teachers. The percentage of parents having a mobile device seems low, especially when compared with the 93% of parents with mobile devices in Thompson's (2008) study. Similar to Thompson, however, Flowers (2015) also reported only a small fraction of the parents involved in the study, less than 23%, used electronic methods of communication, such as iMessage, emailing, texting, or other social media platforms like Facebook to communicate with their children's teachers. Flowers suggested there may have been barriers that prevented parents from using mobile devices to communicate with teachers because the parents used their mobile devices to communicate with other individuals but not with the teachers. One suggestion Flowers made was that perhaps parents did not communicate through that mode because the teachers were not initiating the email or text conversations.

Other research performed conjointly by teams from the University of Bristol and Harvard University looked at texting by seventh-, ninth-, and 11th-grade teachers to communicate with

their students' parents (S. Miller et al., 2016). The study involved about 16,000 students and found that students whose parents received the texts had lower rates of absenteeism and were one month advanced in their math progress versus their peers whose parents had not received the texts. About 30 texts were sent over the length of the school year and advised parents about upcoming tests, for example, and suggested concrete actions such as asking their child regarding specific topics. The parents expressed they felt the amount of texts they received was appropriate. Kraft and Rogers (2015) found that a one-line message (communicated via text, email, or phone call per the parent's request) decreased the summer school drop-out rate of the high school students by 41%. The students whose parents received the communication, however, felt their students' performance was lower than the control group's grades despite the opposite being true.

Bates (2014), on the other hand, looked at online blogging as a tool to encourage writing by her students and involve student families. Digital portfolios can help involve parents because they can be shared easily, frequently, and in a timely manner. The connection parents could maintain with their child's progress was not limited to parent–teacher conferences and was more constant. Parents reported feeling an increased connection with the school and their child's education. Furthermore, according to Bates (2014), the ability of parents to modify and add to the digital portfolios not only made the portfolio more accurate but was another layer to encourage parent involvement. There were drawbacks, especially in terms of equal access, if parents did not have electronic devices.

Yet another researcher, del Valle (2011) examined the experiences of parents and teachers with an online portal for grades. The parents communicated with the teachers of their children using a web-based portal. According to del Valle, the teachers felt that it was time consuming to keep the children's grades up-to-date on the portal. Insufficient training with the

program was also an issue that led to the increased time completing grade input for teachers. Much of the communication with the teachers was about grades.

After comparing a number of apps and their features, the Bloomz app was selected to be used for this current study. One reason Bloomz was selected is that it has a fairly intuitive interface that could ease the learning curve for both parents and teachers. Furthermore, the Bloomz app uses a Facebook-like forum with which many parents and teachers would already be familiar. Connections between parents and teachers can be made in various ways through the app. Teachers can post calendars, supply lists, and documents, and can message parents privately or within a group context. The app also allows for behavioral updates, as well as volunteer sign-ups. Parents and teachers can communicate through Bloomz asynchronously or synchronously, which may facilitate communication.

Parent–Teacher Communication Styles and Culture

Epstein (2001) noted that communication between parents and school personnel at the secondary level is too frequently limited to situations when children are in trouble. Epstein (2007) stated that school personnel must be in charge of creating programs to connect with families for the benefit of the students. The transition time between middle school and high school is an especially important time for parents and schools to communicate (Bouffard & Stephen, 2007). Children's educations are affected by their families and their schools. Regardless of culture or SES, families want to be a part of the education of their children (Bouffard & Stephen, 2007). Most families want information regarding how to best help their middle and high school students. Schools can help provide academic information parents need to help their children succeed academically (Bouffard & Stephen, 2007). Schools need to create and put into practice plans incorporating the main forms of parent involvement (Epstein, 2007).

Buhl and Hilkenmeier (2017) posited that it is common knowledge that parent–teacher communication is disliked by both parents and teachers. They suggested it would be helpful if teachers understood parent perspectives and knew the expectations parents have for teachers. They further suggested that skills related specifically to parent–teacher conversations should be included in preteaching and continuing education for teachers. The goals of parent–teacher conversations are to ultimately support student success, build relationships between parents and teachers, and increase parent connection with school. Competent teachers are not afraid to communicate with parents. Parent–teacher relationships are extremely important for students' educational achievement (H. Miller, Robinson, Valentine, & Fish, 2016). Latino parents, especially when they are new to U.S. culture, and teachers have a perception disconnect. The Latino parents and children are less likely to communicate with teachers, which the teachers may perceive as acceptance or approval. This lack of communication also may contribute to the Latino families not benefiting from having a relationship with the teacher, as well as creating the possibility that the Latino children and families may not receive extra needed support if there are problems (H. Miller, et al., 2016).

H. Miller, Robinson, Valentine, and Fish (2016) found however that this relationship can be improved through active, purposeful interventions. The Families and Schools Together (FAST) program was successful in improving the perception Spanish-speaking Latinos have of teachers but did not resolve the problem of perception disconnect completely. FAST has been successfully used nationwide to help develop relationships between school families and staff. This after-school, eight-week program was designed to strengthen family bonds as well and build community.

Palts and Harro-Loit (2015) described the different communication styles of parents with an activity–passivity scale. They found that parents' communication styles tended toward one

end of the spectrum or the other, with most being either highly passive or highly active. Palts and Harro-Loit described active parent communicators as those who always want to know what's going on at school, want an active part in decision-making, and want to be a part of dialogue and events at school. The active parents were further described as being those who are involved educational partners with the teacher versus the passive parents who had a more hands-off approach and felt like the educating of their children is the teacher's responsibility.

The parents who were more passive were either passive–negative or passive–positive, according to Palt and Harro-Loit (2015). The passive–positive parents only communicated with teachers when something was wrong or when their child was ill. If these parents did not receive communication from their child's teacher, they saw it as a good sign that their child was behaving appropriately and things were going fine with their child's education, although they were unaware of what exactly was happening at school. Some parents in this category felt that their child should be responsible for his or her own education, which was an additional factor in their lack of communication with their child's teacher. Parents in this group went so far as to say that the high amount of teacher communication kept them from their real responsibility of teaching and maintaining a safe classroom (preventing bullying). The passive–negative parents usually had past negative experiences communicating with teachers and did not want to communicate with teachers at all. They also did not feel a partnership with teachers but rather saw them as authoritarian figures. They expected that communication from their child's teachers would be negative (Palts & Harro-Loit, 2015).

The active parents were also separated into active–negative and active–positive (Palts & Harro-Loit, 2015). The active–negative parents were the most difficult for teachers to communicate with. These parents had many concerns about their children and needed frequent support from the teacher. The active–positive parents communicated frequently with the teacher,

using many different modes of communication, and the topics of conversation were more varied

than the passive–positive (which were mostly limited to the health or the grades of the children).

These parents were more interested in the overall development of their child, versus only grades,

and spent time conversing with the teachers regarding the tests given students (Palts & Harro-

Loit, 2015).

The parent participants in the study of Palts and Harro-Loit (2015) attributed their ability

(or inability) to communicate with the teachers to the school's culture of communication. Many

parents in the study expressed they matched their communication style to the teacher's. Palts and

Harro-Loit (2015) indicated that the school communication culture was developed both by

parents and teachers who took steps to actively communicate. According to their study, school

staff can help parents with low communication literacy skills develop their ability to

communicate in order to better support their child.

Conclusion

Parent involvement in their children's education has varied historically. Those with lower

SES are much less likely to be involved than those of higher SES, although most parents express

similar desires to be involved regardless of SES (Altschul, 2012; Finigan-Carr et al., 2015; Renth

et al., 2015; Schafft, 2005; Yoder & Lopez, 2013). School personnel in rural Idaho struggle to

provide the same quality of education as urban areas. There are numerous ways that parents are

involved in their children's education despite the many barriers that can inhibit their

involvement. Electronic modes of communication between parents and teachers are some of the

newest forms of parent involvement. Parent–teacher communication has been shown to be an

effective way to help students achieve more academically and increase collaboration between

parents and teachers (S. Miller et al., 2016; Sheldon et al., 2010).

In the next chapter, the methodology selections and design choices will be discussed. The instruments used, the population sampled, and the setting will be shared, as well as the role of the researcher and the limitations of the study.

Chapter III

Design and Methodology

Introduction

Children's academic success has been positively correlated with parent involvement (Crowe, 2013; Henderson & Mapp, 2002). Parents' involvement, however, in their children's education is particularly difficult for low-SES families (Altschul, 2012; Renth et al., 2015; Schafft, 2005; Yoder & Lopez, 2013). Nevertheless, most parents, regardless of their SES, desire for their children to receive an education and recognize they have a role in the education of their children (Bennett-Conroy, 2012; DePlanty et al., 2007; Poza et al., 2014; Schafft, 2005).

One way parents can be involved is through parent–teacher communication (Bennett-Conroy, 2012). Although a correlation between student academic achievement and different forms of parent involvement has been demonstrated many times, very little if any research has been performed that has established a connection between parent involvement through the classroom communication app Bloomz, parent involvement rates, and student achievement (Froiland & Davison, 2014; Lam & Ducreux, 2013; McNeal, 2015; Sheldon et al., 2010). In broader terms, findings from studies have been inconsistent in demonstrating a connection between parent involvement and student academic achievement (Hill & Tyson 2009; Kim & Fong, 2014; McNeal, 2012; Okilwa, 2016; Robinson & Harris, 2014).

There has been some debate regarding the negative correlation found between parent involvement and student academic achievement. In the late 1980s, the reactive hypothesis was developed to explain why some researchers found negative correlations between parent involvement and student achievement (McNeal, 2012). That is, some research has indicated that increased parent involvement is correlated with decreased student achievement. The premise to the reactive hypothesis was that parents with children with decreased student achievement react

with increased involvement. McNeal (2012) examined the reactive hypothesis, however, and found that the data did not indicate a positive relationship between increased parent involvement and their children's poor academic achievement as reported. McNeal (2012) found the opposite—the data demonstrated decreased parent involvement is positively associated with decreased student achievement.

More research is necessary to understand connections between the use of the classroom management app Bloomz, the participation of the parents, and the effect both may have on student achievement within the rural, low-SES, middle school context. The purpose of this study was to add to the body of knowledge about parent–teacher communication as a form of parents' involvement in their children's education through the Bloomz classroom communication app.

Chapter 3 includes details outlining the research process. Beginning with details about the research design, each aspect of the actual research will be discussed. The chapter will be completed with the role of the researcher, the limitations of the study, and a section regarding the protection of human rights.

This study will be guided by four questions.

Research Questions

1. Does the use of the classroom communication app Bloomz by parents and teachers have a positive impact on the academic performance of lower SES, rural, middle school students?

2. Was the Bloomz app easy, effective, and sufficient as a mode of communication from the parents' and teachers' perspectives?

3. Does the use of the classroom communication app Bloomz increase parent–teacher communication as compared with traditional email, face-to-face, or telephone contacts?

4. What, if anything, deterred parents or teachers from communicating?

Research Design

In order to effectively answer the research questions, a mixed-method approach was chosen. Both qualitative and quantitative methods were incorporated into a mixed-method design, thus a discussion of the benefits of both designs is appropriate in order to understand the design choice.

Qualitative research is helpful when researchers are deeply exploring and describing the complexities of humanity and trends in human behavior (Creswell, 2016; Hoy & Adams, 2016; Marshall & Rossman, 2016; Rich & Ginsburg, 1999). It is a particularly appropriate choice when examining the results of putting processes into place (Patton, 2014). Qualitative research designs can be effectively used when the object of the research is to explore increasing the quality of something. That is, qualitative research is for when the human perspective is essential—it can explain human interactions, unique viewpoints, and people's feelings (Creswell, 2016; Patton, 2014).

A quantitative design, on the other hand, is appropriate for research involving detailed, specific information that can be gained through statistical analysis (Creswell, 2016). Quantitative research is well adapted to examining concrete information (Rich & Ginsburg, 1999). Hoy and Adams (2016) indicated that quantitative design uses measurement of empirical observations that can be represented with numbers and used in systematic and controlled experiments.

An explanatory sequential, mixed-method research approach was chosen for this study in order to answer the research questions fully and deeply. In an explanatory sequential model of mixed-method research, one method comes after the other (sequential) and is used to understand it (explanatory; Creswell, 2016). In this study, the quantitative research will be followed with the

qualitative research, and both are equally important. The qualitative research will help explain the quantitative results.

According to Creswell (2016) and Rich and Ginsburg (1999), qualitative and quantitative research can enhance the research of each other. Creswell (2016), in fact, indicated that in a mixed-method approach, the strengths of one can make up for the limitations of the other and vice versa. Maxwell (2013), Rich and Ginsburg (1999), and Hoy and Adams (2016) described this phenomenon of the approaches' complementary nature, suggesting that different aspects of the research subject can be described and understood better with a mixed-method research design. Not only can it facilitate deeper understanding because the data gathered are multidimensional and better reflect the intricacies of humankind, when using a mixed-method approach the quantitative outcomes can be explained and better understood through the qualitative results (Creswell, 2016; Greene, 2007).

Creswell (2016) also suggested that a benefit of using a mixed-methods design is that it can help reduce bias through triangulation checks that are intrinsic with the use of multiple methods. Rich and Ginsburg (1999) further suggested that the triangulation in mixed-method research can be used to verify results. As Greene (2007) noted, the use of mixed methods can facilitate different ways of knowing and understanding that enhance understanding overall.

Within the mixed-method design, the applied behavioral analysis, or single-subject research, quasi-experimental design was chosen. In this design, an individual's or group's performance is compared without a treatment to its performance under a treatment or intervention (Creswell, 2016). In this current study, the treatment or intervention was the incorporation of the Bloomz classroom communication app as the mode of communication between parents and teachers during Q2. Q1 was the control when the traditional methods of communication were used. In this study, the mixed method was particularly useful in

illuminating the differing perspectives of what happened with the Bloomz app. The quantitative

data gathered revealed if the student grades were affected and if the frequency of parent–teacher

communication was affected. Campbell and Stanley (1963) described a similar experimental

design, the Time-Series Experiment. They stated that this type of design is especially appropriate

in situations where extensive records are kept naturally.

There are two parts to this study. During the first phase, Q1, parent–teacher

communication was completed through traditional methods. During the second phase, Q2, the

classroom communication app Bloomz was introduced as a parent–teacher communication tool.

The middle school students' quarter grades and the frequency of parent–teacher communication

were quantifiable dependent variables that were examined for causality. The independent

variable was the use of the classroom communication app Bloomz by the teachers and the

parents. In order to understand the relationship between communication via the classroom

communication app Bloomz and academic achievement of students, it was necessary to examine

how the variables interacted with each other (Shumow, 2014). The qualitative interview part of

the study helped to determine the parents' and teachers' perceptions of the effectiveness of the

classroom communication app. Okilwa (2016) indicated follow-up of this nature would benefit

the depth and richness of research.

One drawback to using the applied behavior analysis quasi-experimental design is the

tendency of researchers to hyper focus on statistically significant results versus insignificant

results (White & Sabarwal, 2014). All results from this current study were represented, which

avoided this issue. Shumow (2014), in his analysis of the book about parent involvement, *The*

Broken Compass: Parental Involvement with Children's Education, by Robinson and Harris

(2014), stated that the data they collected did not capture the complex nature of the topic of study

because the choices on their survey were limited to a 2-point response scale. In order to increase

the quality and depth of the data collected, a semistructured, open-ended interview was used to better allow parents and teachers to fully express their feelings and experiences. Another possible drawback to this design is that some unknown variable introduced concurrently with the treatment (in this study, the use of the Bloomz app) is the actual cause of any change (Campbell & Stanley, 1963).

Semistructured, open-ended interviews based on the quantitative data initially gathered allowed for deeper understanding of issues connected with the use of the app. Maxwell (2013) indicated that the researchers' reason for how the interview is structured is more important than if the interview is structured and to what degree. Choosing a semistructured approach facilitated the analysis of data gathered in the interview by virtue of similar topics covered during the interview, while allowing some flexibility to pursue additional ideas as warranted by the comments of the interviewees. The nonquantifiable data helped extend understanding of the quantifiable data, facilitating a more complete understanding of parent involvement in the form of parent–teacher communication by rural, low-SES parents of middle school students and how parental involvement affected the students' academic performance.

Participants

Parents of 73 students (seventh and eighth grades; age range: 12–14 years old) attending two different rural Idaho schools identified as predominately populated by students from low-SES families as determined by the school qualifying for school-wide Title I. Of the children, in both schools, gender ratios were nearly 50/50. Based on the ethnicity of the children, the ethnicity of the parents would be approximately 77% Hispanic and 23% White at Willow Middle School and about 20% Hispanic and 80% White at Maple Middle School. The teachers maintained traditional forms of communication with those parents who were unable or unwilling to participate during Q2. Eleven of the 73 student participants' parents or guardians, or about

15%, participated in the focus group. Of the focus group participants, 10 were female (seven Caucasian non-Hispanic and three Hispanic) and one was male (one Caucasian non-Hispanic).

Participants of this study were selected based on their children's attendance at the two schools selected because of the overall schools' free-and-reduced lunch participation. Schools selected were those that met the qualifications of a school-wide Title I program, which meant that 40% or more of their students qualified for free-and-reduced lunch (Ybarra, 2017). Of the students at Maple Middle and High School, 67% of their students received free-and-reduced lunch, and 98% of the Willow Middle and High School students received free lunches (GreatSchools.org, 2019).

As noted in Table 4, the two schools differed in their performance on the ISAT as well. It can also be noted that the data in Table 4 reveal the proportion of ethnic groups and what percentage of the seventh and eighth graders at each school met grade-level expectations on the ISAT for English language arts and math. In general, a higher percentage of students at Maple Middle School met grade-level expectations on both of the ISAT exams than at Willow Middle School. Willow Middle School had a much higher proportion of children who received free-and-reduced lunch than at Maple Middle School (see Table 4).

Table 4

Maple Middle School and Willow Middle School Student Demographics and ISAT Results

Demographic	Maple Middle School	Willow Middle School
Students enrolled	402*	199*
Gender	51% male/49% female	52% male/48% female
Main ethnic groups	20% Hispanic/80% White	77% Hispanic/22% White
From low-income families	47% of student population	98% of student population
Received free-and-reduced lunch	46%	94%**
Met grade-level expectations *2017–2018 Math ISAT*	Grade 7: 33.8% Grade 8: 25.4% Low income***: 13.6%	Grade 7: 11.1% Grade 8: < 18% Low income***: < 10%
2017–2018 ELA ISAT	Grade 7: 54.4% Grade 8: 38.1% Low income***: 38.6%	Grade 7: 15.6% Grade 8: 22.9% Low income***: < 21%

Note. *Combined middle school/high school enrollment. **The most recent data for percentage of students receiving free-and-reduced lunch at Willow Middle School were for the 2015–2016 school year. ***Percentage of seventh- or eighth-grade students from low-income families that met grade-level expectations (also included in the Grade 7 and Grade 8 percentages). Adapted from GreatSchools.org, 2019, retrieved from https://www.greatschools.org; ISDE, 2018b; *Children Receiving Free or Reduced Price Lunch by School District in Idaho*, by Kids Count Data Center, 2018, retrieved from https://datacenter.kidscount.org/.

The demographics for Willow Middle School and Maple Middle School were combined with their high schools' demographics because of the schools' small sizes. Maple Middle School had nearly the opposite White-to-Hispanic student ratio than Willow Middle School, with Willow's population being roughly three-fourth Hispanic and Maple's population slightly over three-fourth White (see Table 4). Table 4 also indicates that the male–female ratios at both schools were nearly 50/50 and were opposites as well. The student population at Maple Middle/High School was 402 with a teacher–student ratio of 17:1. At Willow Middle/High

School, the student population was much smaller at 199 students and the teacher–student ratio was similar at 19:1. At Maple Middle/High School, 84% of the teachers had three or more years of experience, but only 70% of the teachers at Willow Middle/High School had three or more years of teaching experience.

Parents were invited by the principals to participate in the focus groups at the end of the study. Each was offered a Redbox gift certificate in appreciation for their time after the focus group. Five teachers participated in the study, three females and two males; all taught either English classes or math classes along with other classes, but only data from English and math classes were collected. The teachers ranged in age from mid-30s to mid-50s. All the teachers were White. At both Maple Middle School and Willow Middle School, one of the teachers was familiar with Bloomz and had used it before. The teachers who participated were each given a $25 gift card.

Setting

Two predominantly low-SES, public middle schools in two rural Idaho towns were the settings for this study. The two schools chosen were classified as rural by Rural School Districts—Rural Public Charter Schools (2009) and given the pseudonyms of Willow Middle/High School and Maple Middle/High School.

The wages in rural areas are significantly less than those in urban areas, but usually the cost of living is also lower (Salant & Porter, 2005; USDA Economic Research Service, 2016). Populations in rural Idaho have been decreasing annually, while urban populations have been increasing dramatically (Barnhill, 2013; Dearien & Salant, 2015; Salant & Porter, 2005). Rural Idaho populations have a higher population of individuals 65-plus years old and a higher percentage of Hispanics (Salant & Porter, 2005).

Dearien et al. (2009) reported that students in rural areas typically performed as well on tests such as the ISAT and the National Assessment on Educational Progress as their urban counterparts despite the districts being funded at lower levels. The ISDE (2017) reported that rural students were achieving lower scores on their ISATs than urban students by an average of 7.5 percentage points. Students in rural areas are less likely than those in urban areas to graduate as well. Rural districts in Idaho have decreasing student populations, and with lower property values and population levels, most rural schools in Idaho have struggled with funding.

The following two paragraphs include data for the cities of Willow and Maple (pseudonyms) more specifically. These data for the cities provide a setting for the schools. The population at the schools came from the city as well as the surrounding areas, so these were not exact figures for the populations of the students and their families. At Willow Middle School, 67% of the students attending the school lived within the city limits (Principal of Willow Middle School, personal communication, March 14, 2019). The Maple Middle School drew 15% of its student population from within Maple's city limits (Principal of Maple Middle School, personal communication, March 14, 2019). Demographics for the district as a whole were not available because the county in which the schools resided were served by multiple school districts.

In 2014, the city of Willow had a population of about 1,600 (City-data.com, 2019). Willow had a Hispanic population of 76% and a White population of 23% and was nearly perfectly split between male (49.6%) and female (50.4%; City-data.com, 2019). The median household income in 2016 was $37,152, but a majority of the household incomes were in the $20,000–$25,000 bracket with some higher and lower household incomes. For the Willow population 25 years and older, 55.1% had a high school diploma or higher, 4.7% had a bachelor's degree or higher, and 2.3% had a graduate or professional degree. Over 25% of the population reported being born outside the United States in Latin America. In 2015 the

unemployment rate in Willow was 4.5% as compared with the Idaho unemployment rate of 3.7%. The poverty rate for Willow in 2016 was 33%, quite a bit higher than the Idaho average rate of 19%.

In 2014, the city of Maple had a population of 529 (City-data.com, 2019). The Hispanic population in Maple was 24.6% and the White population was 73.1%, and the population was also nearly perfectly split between male (49.6%) and female (50.4%). The median household income in 2016 was $43,864. For the Maple population 25 years and older, 91% had a high school diploma or higher, 17.5% had a bachelor's degree or higher, and 4.3% had a graduate degree. In 2015 the unemployment rate in Maple was 4.2% as compared with the Idaho unemployment rate of 3.7%. The poverty rate for the city of Maple in 2016 was 17.8%, less than the Idaho average rate of 19%.

Data Collection

Maxwell (2013) indicated that for qualitative research, purposeful sampling is the best choice. With purposeful sampling, participants are chosen because they can provide answers to the questions of the researcher. In quantitative studies, the two most common forms of sampling are convenience sampling and probability sampling (Maxwell, 2013).

In this current study, the researcher chose to use purposeful sampling because a very specific group of participants were necessary to answer the research questions. The participants in this study were parents of students who attended two rural, low-SES middle schools in Idaho. The low-SES status of both schools was determined by their meeting the qualifications for a school-wide Title I program.

The principals from the rural schools, Maple Middle School and Willow Middle School, were contacted via email and telephone to obtain approval for their schools to participate in the study (see Appendix A). Once approval was secured, potential teachers were contacted via email

and were followed up with phone calls. Teachers and administrators received $25 gift cards for their participation in this study. Teacher information packets, parent information packets, parent information guides, communication measurement records, and student grade records (see Appendix B–G) were delivered to the schools once teachers were selected.

At the beginning of the school year, the researcher provided flyers for the open houses of both schools, as well as for parent–teacher conferences, and met with the teachers and principals multiple times in order to assist them with the setup of their Bloomz accounts and to build relationships, an important part of qualitative research (Maxwell, 2013). In further hopes of garnering support from as many participants as possible, students were given information packets (see Appendix C) to take home. The parent information packet contained an invitation to participate, an overview of information regarding the research study, parent consent forms, and researcher contact information for further questions (see Appendix C). A parent information guide with information on how to set up Bloomz was also given to parents (see Appendix D). SES was determined based on the student's attendance at a school that met the qualifications for a school-wide Title I program.

For the first half of the semester, parents and teachers communicated in traditional ways: phone calls, emails, paper notes, face to face, and texts (if teachers shared their personal phone number). During Q1, data were collected by teachers regarding communication initiator, method, message subject, and frequency of parent–teacher communication on a communication measurement record sheet (see Appendix E). The second half of the semester, data were also collected by teachers regarding initiator, method, message subject, and frequency of parent–teacher communication. Students' overall percentage grades were noted at the end of Q1 and the end of Q2.

The first half of the semester was used to share information regarding the Bloomz app and how it would be incorporated into the classroom for the second half of the semester. Parents were given instructional sheets (see Appendix D) on how to set up Bloomz, as well as signature sheets allowing the teacher to contact them via Bloomz. In essence, parents and teachers would download the app on their phone. The Facebook-like forum allowed for different connections to be made between parents and teachers. Teachers could post calendars, supply lists, and documents, and could message parents privately or within a group context. The app also allowed for behavioral updates, as well as volunteer sign-ups.

During the second half of the semester, or Q2, in addition to traditional methods of communication, parents and teachers could initiate individual communication as desired through the Bloomz app. Teachers could also initiate whole-class communication. Teachers used nearly the same form as used during Q1 for recording the communications, except there was also a spot to record communication through Bloomz (see Appendix F). Frequency, initiator, method (phone call, email, text, paper note, Bloomz), and subject of message (attendance, grades, assignments, etc.) were recorded. If parents were unable or unwilling to communicate via Bloomz, traditional methods of communication were still available for them to communicate with their child's teacher.

Teachers assigned each student a number that corresponded to a number for their parents. For example, a student might be 21 and their parent would be P21. Overall percentage grades were recorded for each student by their assigned student number on the student grade record form (see Appendix G).

Qualitative data were gathered following Q2 to augment the quantitative data collected. Parents were contacted for participation in follow-up focus groups (see Appendix H). A consent form was signed at the beginning of the discussion group (see Appendix I). The focus group

questions (see Appendix J) were designed to draw out more detailed explanations from the parents of the middle school children regarding their involvement via the Bloomz app. The focus group questions used during the focus group discussions were related to ease of use of the Bloomz app versus traditional communication methods, if ease of use or lack thereof affected communication, and how the parents and teachers felt about the differences between traditional communication methods as compared with Bloomz. The focus groups were facilitated by the researcher on school grounds and were audio recorded.

Focus group participation was opened to all parents who were involved in the study. Parents were invited to attend the focus groups, and meeting times were arranged for each school to accommodate as many parents as possible. Of the approximately 60 parent participants, 11 participated in the focus groups. Three focus groups met: one at Willow Middle School and two at Maple Middle School. Each focus group lasted about 20 minutes and covered about five questions. In the Maple school district, eight parents participated in the focus group, and from Willow Middle School, three parents participated.

Follow-up interviews (see Appendix K) were conducted with teachers to examine their experience with the process of communicating with the Bloomz app. Interviews with teachers also lasted about 20 minutes and covered about five questions.

Instruments

The instruments involved in this study were a focus group question outline for the parent focus groups and a teacher interview question outline for use with the teachers. The semi-structured, open-ended questions based on the quantitative data facilitated a deeper understanding of issues connected with involvement. The Parental Academic Support Scale developed by Thompson and Mazer (2012) was the basis for the interviews. The questions on the

focus group instrument and the teacher instrument were very similar because many of the same issues pertained to both parents and teachers regarding their experiences with Bloomz.

Maxwell (2013) described the difference between research questions and interview questions. Research questions address the main concept the researcher is seeking to understand, and the interview questions revolve around seeking that understanding (Maxwell, 2013). The intent of the focus groups and interviews was to increase understanding regarding the parents' and teachers' perspectives about the Bloomz app's ease of use, effectiveness, and sufficiency as a communication tool. The questions further sought to illuminate possible reasons why parents and teachers do or do not communicate. The questions were developed to help the researcher understand the experience the teachers and parents had with their use of the app and communicating with each other in general.

When considering validity of qualitative research from a wider perspective, the main two concerns are the bias of the researcher when interpreting results and reactivity of the subjects to the researcher (Maxwell, 2013). For a qualitative study, the best way to handle researcher bias and research subject reactivity to the researcher is to account for possibilities and how they may affect the understanding the researcher infers from the data (Maxwell, 2013). For validity of the instrument, the content validity of the instruments was measured and verified through a two-step procedure. Validation of instruments through a two-step procedure is a critical step in the verification and measurement of content validity (Lynn, 1986).

To quantify validity of instruments, the most common method used is the Content Validity Index (CVI; Rodrigues, Adachi, Beattie, & MacDermid, 2017). CVI was determined for both individual items on the instruments identified as Item-CVI (I-CVI), as well as the two instruments as wholes, Scale-CVI (S-CVI; Rodrigues et al., 2017). The instruments were developed for this current study, and panels of six experts rated each item for relevancy and

clarity. The experts were selected to include individuals representing the population of the focus group as well as professional experts of the content (Zamanzadeh et al., 2015). With six or more experts, it was possible for one expert to disagree and the I-CVI to still be higher than the recommended .79 (Lynn, 1986; Zamanzadeh et al., 2015). Some have argued that if the average approach is used, then .90 should be used as the delineation line for S-CVI appropriateness (Polit & Beck, 2006). Polit and Beck (2006) indicated that .90 should be easily met with revision and reevaluation of the items with I-CVIs lower than .90. Zamanzadeh et al. (2015) stated that in order for new items and instruments such as these to be considered valid, the I-CVIs must be higher than .79. There are some limitations to using this method of validation. As with any instrument that seeks human input, the responses are subjective and the responses may have been affected by any bias held by the experts (Zamanzadeh et al., 2015).

A 4-point rating scale was used for the experts' responses regarding the relevancy and understandability of the questions, and possible responses were "not at all," "no," "yes," and "absolutely." Responses were grouped into either relevant or not relevant or clear or not clear, and the scores were averaged for each item to find the I-CVI. For the S-CVI, a proportion of relevancy was used for calculation, that is, the proportion of relevant items in relation to the total number of items was calculated.

Distinct yet connected, both the I-CVI and the S-CVI required verification (Polit & Beck, 2006). The S-CVIs of both instruments were 1.0. There were two questions on each instrument that received scores of .67 and required revision for clarity. After the revised items were resubmitted to the experts, the I-CVIs were all 1.0 as well. The S-CVI was calculated for both the focus group instrument and the teacher interview instrument. The focus group instrument and the teacher interview instrument both had an S-CVI of 1.0, which met the .90 suggested standard for the S-CVI for a new instrument.

The instruments were also assessed for comprehensiveness by the panel of experts. The experts were requested to evaluate the items on the instrument on whether the items comprehensively covered the content area of the research questions or if the instruments required additions to comprehensively cover the content area or needed other revisions or deletions (Lynn, 1986). The comprehensiveness of the instruments was calculated as a proportion of agreement amongst panel experts (Zamanzadeh et al., 2015). The teacher interview instrument had a comprehensiveness score of 1.0 and the focus group instrument had a comprehensiveness score of .80.

Reliability is a critical verification of the consistency of the results of the instruments (Heale & Twycross, 2019; Leung, 2015; Scholtes, Poolman, & Terwee, 2010). For qualitative instruments, such as the ones in this study, reliability is more difficult to measure. Qualitative research is based on human experiences and emotions, which has generated a great deal of discussion on how to verify reliability and validity of qualitative instruments and research (Dixon-Woods, Shaw, Agarwal, & Smith, 2004; Leung, 2015). The wide variety of study designs within qualitative research has rendered generalizations regarding quality control methods difficult (Dixon-Woods et al., 2004). Some focus on the importance of ensuring the quality of the research method used and others on the importance of quality interpretation of data (Leung, 2015). For qualitative studies, instead of reliability, credibility of data may be considered. Credibility of data may be increased by triangulation, peer debriefing, and member checks (Creswell, 2016; DeVault, 2018). These three methods were utilized in this study to increase reliability and credibility.

Analytical Methods

Quality control checks were performed on the communication record sheets to verify for completeness. Focus groups were utilized as a method to member check quantitative data and

increase validity, as well as increase richness of information (Maxwell, 2013). For applied

behavior analysis, the analysis is directed toward examining behaviors to see if they changed

before the treatment, and after the treatment to see if the intervention made a difference great

enough to conclude there was a connection (Campbell & Stanley, 1963; Creswell, 2016). In this

study, the analysis was focused on determining if the behavior of students and parents changed

during phase 2 when the Bloomz app was incorporated as compared with phase 1.

According to Hill and Tyson (2009), there is not a standard measure for parent

involvement, but frequency counts for mode, type of message, and initiator of communication

were collected in this study, and relationships between variables were analyzed with cross-

tabulation tables and statistical procedures.

Creswell (2016) suggested two different manners of analyzing results: (1) visually

inspecting line graphs and (2) statistical calculations. Creswell (2016) indicated the existence of

some debate over which method is better for analyzing the data. In order to provide the clearest

most accurate picture of the results, both were incorporated into the analysis process. Qualitative

data from the focus groups and interviews were categorized, coded, and organized into tables to

help determine trends and patterns (Maxwell, 2013; Rich & Ginsburg, 1999).

The p value is a measure of dependability of results, or in other words, how probable any

difference between the values being compared was due to chance. If the p value is equal to or

below a specific level, usually $p \leq .05$, then the results are considered statistically significant,

meaning the likeliness of the results being due to chance is 5% or less. If the p value is above the

same level, then the results are not considered statistically significant, usually $p > 0.05$ (Parab &

Bhalerao, 2010). For this study, p values of $p \leq .05$ were decided to be considered statistically

significant. Because the sample was greater than 50 individuals, one could assume that the

distribution was normal and use a parametric test such as the paired-sample t test (Field, 2013).

A two-tailed paired-sample *t* test was used to analyze the students' overall percentage grades from the two different quarters. The test was chosen before beginning the study to ensure the results were not a factor in the choice of the test (Parab & Bhalerao, 2010). Two-tailed versus one-tailed was selected because the direction of the results was not known, and it was possible the opportunity to use Bloomz could either increase, decrease, or have no effect on the amount of communication between parents and teachers (du Prel, Hommel, Röhrig, & Blettner, 2009). The null hypotheses (H_0) was that there would be no difference between the grade means during Q1 and Q2. The alternative hypothesis (H_1) was that there would be a statistical difference between the grade means of the two quarters.

The students' grades were used as the dependent variable and the implementation of Bloomz as the independent variable. The paired-sample *t* test was performed using IBM SPSS Statistical Software Version 25 to check for a statistically significant difference in grades between Q1 and Q2. Analyses were calculated as two-tailed probabilities with significance at $p \leq .05$. Additionally, communication counts were compared for Q1 and Q2. The information was graphed and compared visually.

Roles of the Researcher

As a superintendent of a local, urban charter school, the researcher was qualified to conduct this research. Extensive experience with interviewing and survey creation using open-ended questions assisted with the study. The researcher was highly familiar with educational topics in general and was biased toward parent involvement benefiting students yet understood the importance of accurately interpreting and reporting data. Researchers must be careful to listen respectfully to what the participants have to say and not for results the researcher himself would like to see (Goodyear, Jewiss, Usinger, & Barela, 2014).

Limitations

      One limitation of this study was the limited number of participants. The number of schools participating could be increased if desired. Another limitation was that the low-SES families in rural Idaho may not have had ready access to smartphones, despite statistics indicating this was not an issue, and may have chosen not to participate once it took more than one step. Instruction sheets were offered to facilitate participation.

      Another limitation was that the school district may have been reluctant to allow participation of its teachers and the students' parents may not have wished to share the grades of their children. Incentives were offered to participants as well as administrators to help encourage participation. Teachers and administrators were offered $25 gift cards, and parents were offered a free RedBox rental for their participation in the focus groups. Incentives could possibly have affected results. Every parent who attended the focus group received an incentive. Finally, the focus groups may not have accurately represented all the experiences of the parents of the class using Bloomz.

      Another limitation of the study was that the use of Bloomz varied significantly between teachers. One way to help reduce this limitation on the study was to replicate the study in more than one classroom at more than one school. Another limitation was that the SES level of participants was not determined on an individual basis due to the selection of the school being based on its overall low-SES rating and the researcher was not allowed to know the SES of individual participants. Another possible limitation was the length of time involved in the study. Campbell and Stanley (1963) suggested, however, that in research designs such as this a shorter time period of experimentation is better because there is less chance that something outside the experimental design could affect the results—that is to say another unknown variable introduced concurrently with the treatment (in this study the use of the Bloomz app) was the actual cause of

any change. There may have been some inherent difference between the amount of contact between teachers and parents during Q1 and Q2, for example, due to certain types of information shared only at the start of the school year. Finally, there may also have been other factors that impacted students' grades during the two quarters other than the communication between parents and teachers, for example, health issues of students or teachers, less difficult subject matters, or increased study time.

Protection of Human Rights and Approval

Treating participants ethically needs to be a primary concern of researchers (Creswell, 2016). Researchers are required by federal law to guarantee certain rights and obtain permission from participants before their involvement in a study (Creswell, 2016; Marshall & Rossman, 2016). The Family Educational Rights and Privacy Act (FERPA; 20 U.S.C. § 1232g; 34 CFR Part 99) regulates the appropriate use of student information. Participants and gatekeepers need to understand the purpose of the study, their role in the study, and how the study could possibly bring them harm. Further, participants need to be informed if any of their information would be shared. Educational facilities, such as the Willow Middle School and Maple Middle School, must require the researcher to keep the student data safe and destroy or return any and all records when the study has been completed or after three years (Privacy Technical Assistance Center, 2014).

In this study, parent, teacher, and principal permissions were secured before the study began. Principals were contacted first for permission. Teacher permission was secured next, and then permission from the parents involved in the study last.

The participant data from this study were kept confidential by coding data on a master list containing student grades and data collected by the teachers. The parents or guardians involved in the focus group names were coded with numbers coordinating with their child's number. The

names of the students, parents, and guardians were not used in the study. For example, a child may have been given the number 23 and his or her parent would have been coded P23. The master list was kept separate on a different computer with a separate password and was not shared with the researcher. The audio recordings did not include names of the parents or guardians. The teachers' names also were kept confidential and not used in the study.

Teachers collected information that included the communication initiator, quantity type, topic, and mode data gathered throughout the term. These data were coded with numbers coordinated by the teacher to student names. Only the teacher had access to students and their related data.

In order to become an ethical researcher, the researcher completed the appropriate training and was awarded a Certificate for Human Research through the National Institute of Health (see Appendix L). Permission from the administrators at the rural school districts was obtained, as well of that of the teachers and parents in order to use the students' overall percentage grades and details regarding parent–teacher communication during the first semester. Consent was also sought and obtained from the Institutional Review Board Committee at Northwest Nazarene University before commencing this study (see Appendix L).

Chapter IV

Results

Introduction

Despite sustained efforts, during the last 25 years, the difference in academic

achievement levels between children from families living in poverty and families not living in

poverty has continued to increase (Porter, 2015; Reardon, 2011; Renth et al., 2015; Tienken &

Zhao, 2013). This is a high-stakes issue because the academic achievement and mental capacity

of students are increasingly connected with earning higher wages as an adult (Reardon, 2011). If

wages are decreased as an adult, it is likely the cycle will continue with another generation of

children being raised in poverty. Some children from low-income families can, however, break

free from the cycle and succeed academically (OECD, 2011).

Parent involvement is one action that can help children succeed academically and for

some possibly break out of the cycle of poverty (Engle & Black, 2008; Froiland & Davison,

2014; Lam & Ducreux, 2013; McNeal, 2015; Sheldon et al., 2010). One way that parents can be

involved is through communicating with their children's teachers. Texting as a form of parent–

teacher communication is just beginning to be explored, and electronic forms of communication

are becoming more prominent (Thompson, 2008). This study hopes to shed light on the use of

Bloomz as a way to facilitate communication between parents and teachers. The guiding

questions of this study were the following:

1. Does the use of the classroom communication app Bloomz by parents and teachers

   have a positive impact on the academic performance of lower SES, rural, middle

   school students?

2. Was the Bloomz app easy, effective, and sufficient as a mode of communication from

   the parents' and teachers' perspectives?

3. Does the use of the classroom communication app Bloomz increase parent–teacher communication as compared with traditional email, face-to-face, or telephone contacts?

4. What, if anything, deterred parents or teachers from communicating?

Chapter 4 contains the quantitative and qualitative data from quarter one when Bloomz was not used to communicate and quarter two when Bloomz was made available as a communication method. Both quantitative data collected during the research, such as student grades and communication counts, as well as qualitative data from the parent focus groups and teacher interviews as related to each of the research questions are also within Chapter 4.

Results

Research question 1. The impetus behind this study was the potential for academic gains for children from low-income families. Some research has shown student academic growth from texting between parents and teachers (S. Miller et al., 2016). For example, in one study, the children with parents who received texts were absent less often and were more advanced academically in math. In another study, a short one-line message was communicated through text, email, or phone call, and the drop-out rate at the high school decreased by 41% (Kraft & Rogers, 2015). The hope for this study was that the use of Bloomz might also be connected with student academic success.

Academic success can be multifaceted and involve more than grades, including attributes such as preparedness for class, attendance, organization, homework completion, and lack of discipline issues. For the purposes of this study, in order to broaden the scope of what defines academic success, both qualitative and quantitative research methods were selected as the best way to examine the first research question of this study:

Does the use of the classroom communication app Bloomz by parents and teachers have a positive impact on the academic performance of lower SES, rural, middle school students?

The seventh and eighth-grade math and English grades from Maple Middle School (pseudonym) and Willow Middle School (pseudonym) were collected for Q1 and Q2 by the students' teachers. At Maple Middle School, the grades were in the form of a percentage grade, such as 97%. Willow Middle School recorded grades on a 4-point scale, however. Student grades were shared with the researcher by the teachers with students identified for the researcher only by number so as to maintain student anonymity. At Maple Middle School, there were 24 math students, 41 students in the ELA(A) class, and 15 in the ELA(B) class whose parents participated and whose grades were shared; at Willow Middle School there were 11 student participants (one left midsemester, so $n = 10$ for both math and English classes at Willow Middle School).

When two variables are tested from the same sample, such as the before and after results when a treatment or intervention is given to a group, a paired-sample t test is an appropriate statistical procedure (Döring, 2018; Field, 2013; Imam, Usman, & Chiawa, 2014). A two-tailed analysis can help when the direction of the results (positive or negative) is not known (du Prel et al., 2009). The null hypothesis (H_0) for research question 1 was that there would be no difference between the grades during Q1 and Q2. The alternative hypothesis (H_1) was that there would be a statistical difference between the grades of the two quarters. The data for each school and class were kept separate because of their unique grading styles and differing communication counts.

The grades were analyzed with IBM SPSS Statistics 25.0. The paired-sample t test, chosen as the most appropriate test for comparing two dependent sets of quantitative data, requires a normal distribution of the data (Döring, 2018; Field, 2013; Imam et al., 2014). When the data were checked for a normal distribution with the Shapiro-Wilk test, however, the three

sets of data from Willow Middle School were nonnormal (see Appendix M; Das & Imon; 2016; Field, 2013). The data for the English (A) at Maple Middle School were also nonnormal, but because $n > 30$, the paired-sample t test could still be utilized to analyze the data (Döring, 2018; Field, 2013). The data distributions from the English(B) and math classes from Maple Middle School were both normal despite n<30 so the paired-sample t-test was the better choice for data analysis for those two teachers' classes as well. For the data from Willow Middle School—related samples with nonnormal distributions—the preferred test was the nonparametric Wilcoxon signed rank test (Döring, 2018; Field, 2013; Imam et al., 2014). The analyses were calculated as two-tailed probabilities with significance at $p < .05$. The paired-sample t test has more statistical strength than the Wilcoxon signed rank test, so it was the best test to analyze the data when the sample size was greater than 30, which allowed for the analysis of the nonnormal data with a parametric test because of the central limit theorem, or when the data distribution was normal when the sample size was less than 30 (Döring, 2018; Field, 2013; Imam et al., 2014).

As noted earlier, the grades from the two schools were analyzed separately because of their different grading scales and communication counts. Additionally, in order to preserve and analyze any differences in grade means as possibly affected by the different amounts of communication via Bloomz, the decision was made to analyze the data for both of the English teachers' classes separately instead of combining the students' grades. The classes were labelled English(A) and English(B) and were taught by two different teachers. The teacher of the English(A) classes had 41 students who were a part of the study, and the teacher of the English(B) classes had 15 study participants in the class.

The communication counts for Bloomz use were twice as high for the English(B) class as compared with the English(A) class. There were eight counts of communication via Bloomz during Q2 in the English(B) class. The teacher communicated with the class three times, and

parents communicated with the teacher five times. In the Maple Middle School English(A) class, the teacher did not communicate with the class at all via Bloomz, although four communications were received by parents by that method.

At Maple Middle School, the paired-sample t test was used to compare the English(A) Q1 grade mean with the Q2 grade mean because the larger sample size allowed for the parametric test despite a nonnormal distribution of data (see Appendix M). As noted in Table 5, the paired-sample t test indicated there was a significant difference in the grade mean for the Maple Middle School English(A) group Q1 grade mean ($M; M = 84.1$, $SD = 11.169$) and the English(A) group's Q2 grade mean ($M = 80.6$, $SD = 9.298$), $t(40) = 3.481$, $p = .001$ (see Appendix N).

The English(B) group had a sample size of 15 and the math group had a sample size of 24 so the data were checked for normality with the Shapiro-Wilk test because the sample size was less than 30 (see Appendix M). The analysis of the data with the Shapiro-Wilk indicated that the data for the English(B) and the math classes were normally distributed, so a paired-sample t test was also utilized to test for significant differences in grade means for these classes as well.

As noted in Table 5, the analysis of the Maple Middle School Q1 English(B) indicated an insignificant positive increase in the Q1 grade mean ($M = 80.0$, $SD = 13.071$) and the English(B) group's Q2 grade mean ($M = 83.3$, $SD = 9.932$), $t(14) = -1.369$, $p = .192$. Full test results for the paired-sample t test can be found in Appendix N. The analysis performed with the paired-sample t test on the grade means of the math class indicated there was an insignificant positive difference between the grade mean for Q1 ($M = 75.8$, $SD = 13.316$) and the math group's Q2 grade mean ($M = 77.1$, $SD = 12.612$), $t(23) = -.876$, $p = .390$. In summary, as illustrated in Figure 2, the math and English(B) grade means increased insignificantly and the English(A) grade mean decreased significantly.

Table 5

Statistics for Seventh- and Eighth-Grade Math and English Grades: Q1 and Q2

Variable	Range	Mean	Standard Deviation	*p* value
*Maple Middle School**				
English(A) Q1	46	84.1	11.169	
English(A) Q2	42	80.6	9.298	*p* = .001
English(B) Q1	42	80.0	13.071	
English(B) Q2	30	83.3	9.932	*p* = .192
Math Q1	53	75.8	13.316	
Math Q2	44	77.1	12.612	*p* = .390
*Willow Middle School***				
Reading Q1	1.0	3.75	.4249	
Reading Q2	1.0	3.65	.4116	*p* = .577
Writing Q1	1.0	3.30	.4216	
Writing Q2	1.0	3.55	.4972	*p* = .238
Math Q1	1.0	3.70	.4830	
Math Q2	1.0	3.10	.3162	*p* = .014

Note. *Maple Middle School: English(A) *n* = 41; English (B) *n* = 15; Math *n* = 24. **Willow Middle School: *n* = 10.

Figure 2

Maple Middle School Grade Means by Subject: Q1 and Q2 and Bloomz Communication Counts
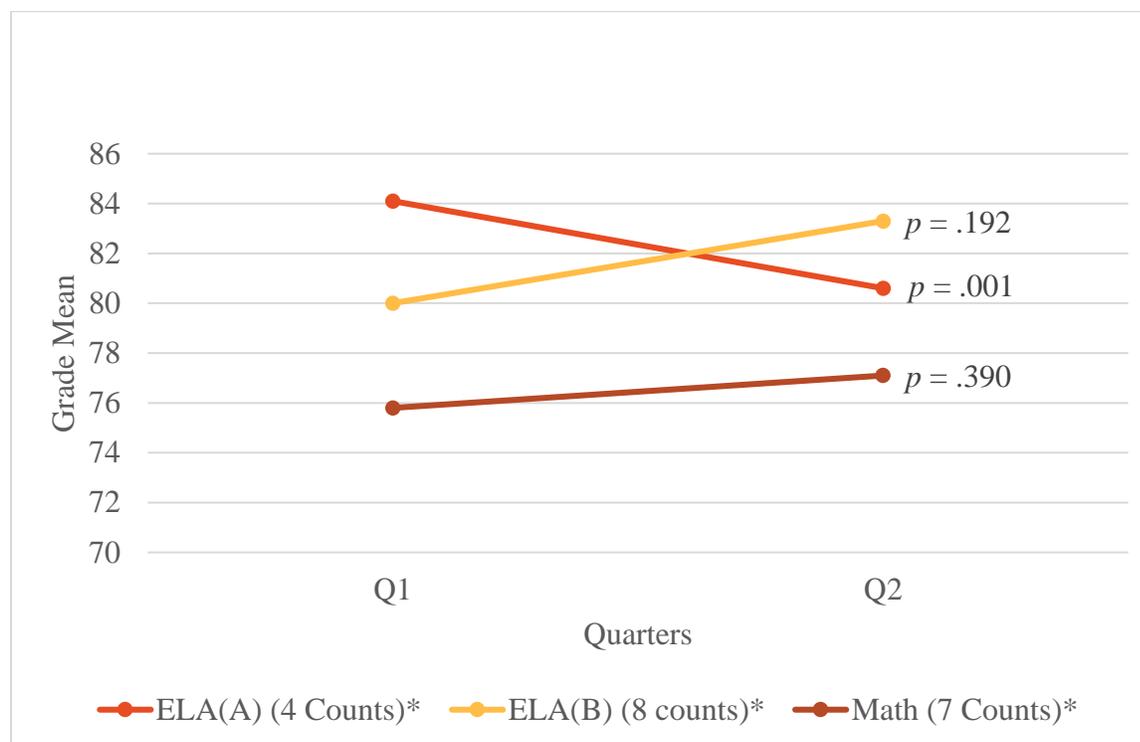
Note. *Number of Bloomz messages during Q2

At Willow Middle School, the English grade was separated into a writing and a reading grade. As noted in Table 5, the students' Q1 reading grade mean was 3.75 with a SD of .4249, and the Q2 reading grade mean decreased to 3.65 with a SD of .4116. Also at Willow Middle School, the Q1 writing grade mean was 3.30 with a SD of .4216 and the Q2 writing grade mean increased to 3.55 with a SD of .4972(see Table 5). The math grade mean of the Willow Middle School students at the end of Q1 was 3.70 with a SD of .4830, and the math grade mean at the end of Q2 was 3.10 with a standard deviation of .3162 (see Table 5). These numbers are visually represented in Figure 3 and listed in Table 5.

Figure 3

Willow Middle School Grade Means by Subject: Q1 and Q2 and Bloomz Communication Counts
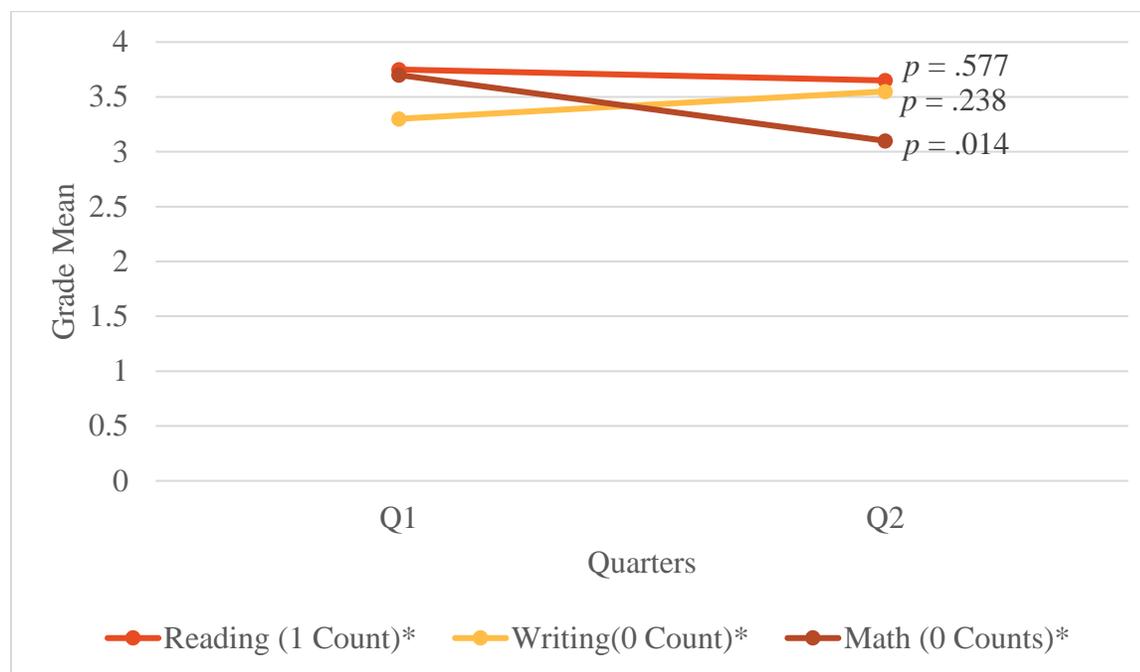
Note. *Number of Bloomz messages during Q2

The Wilcoxon signed rank test indicated that only the change in the math grade mean at Willow Middle School was statistically significant. As noted in Table 5, the results from the analysis of the Willow Middle School Q1 and Q2 reading grades indicated an insignificant difference, $z = -.557$, $p = .577$. Full results for the Wilcoxon signed rank tests performed are found in Appendix O. The mean of the ranks that increased was 3.50, while the mean of the ranks that decreased was 2.17. The Willow Middle School Q2 writing grades were not statistically significantly higher than the Q1 writing grades, $z = -1.179$, $p = .238$ (see Table 5). The mean of the ranks that increased was 3.20, while the mean of the ranks that decreased was 5.00. Finally, the same test was used to analyze the Willow Middle School math data and indicated that the Q2 math grades were significantly lower than the Q1 math grades, $z = -2.449$, $p = .014$. The mean of the ranks that increased was 0.00, while the mean of the ranks that

decreased was 3.50 (see Appendix O). In summary, the Willow Middle School reading and writing grade means did not change significantly between Q1 and Q2, but the math grade mean did change significantly for the worse.

Analysis of qualitative data is distinct from the analysis process for quantitative data. After the reliability and validity of the two instruments were established, the instruments were used to gather data during three focus groups and four teacher interviews. Parents were invited by the principals of the schools to participate in the focus groups. Of those invited, three parents or guardians (all female and Hispanic) attended from Willow Middle School and eight parents/guardians came from Maple Middle School (7 female and 1 male, all White). All parents who participated in the study and attended the focus group were given a free Redbox rental. All five of the teachers were interviewed. Informal member-checking occurred within the focus group and teacher interviews as the researcher sought clarification and understanding of participants' comments.

The audio recording of the focus groups and interviews were then transcribed. Although coding is the most commonly purported method of qualitative data analysis, memos and connecting approaches are also useful strategies (Maxwell, 2013). For this study, coding and memos were utilized. Memos, indispensable for their usefulness in recording ideas and theme connections during axial coding, were added as the transcriptions were compiled and coded (Groenewald, 2008). Multiple readings and continued review of data created deeper understanding and helped with the organization of the data into patterns and themes (Creswell, 2016). Hand analysis of the data was selected because data were not so extensive as to preclude hand analysis, and more importantly, the researcher wanted to develop a personal feel for and understanding of the data.

As the data were analyzed, there were broad categories shaped by the questions themselves, as well as in vivo codes or clusters that manifested organically as the data were coded (Maxwell, 2013). During the literature review, the researcher was made aware of connections between themes that might be found within the qualitative data, which assisted with the coding process (Marshall & Rossman, 2016).

After the transcription of the audio files, the data were then marked with 10 interconnected colored codes: challenges, comfort level of parents, multiple communication methods/designated use of Bloomz, reasons for communication, amount of communication, sufficiency of communication tools, academic connections with communication tools, relationships between teachers and parents, communication deterrents, and recommendations. These codes were grouped and used to explore the overarching themes and ideas within the data in relation to the research questions (see Figure 4; Creswell, 2016). Finally, axial coding was used to explore connections between the various themes (Marshall & Rossman, 2016).

Figure 4

Coding for Qualitative Results
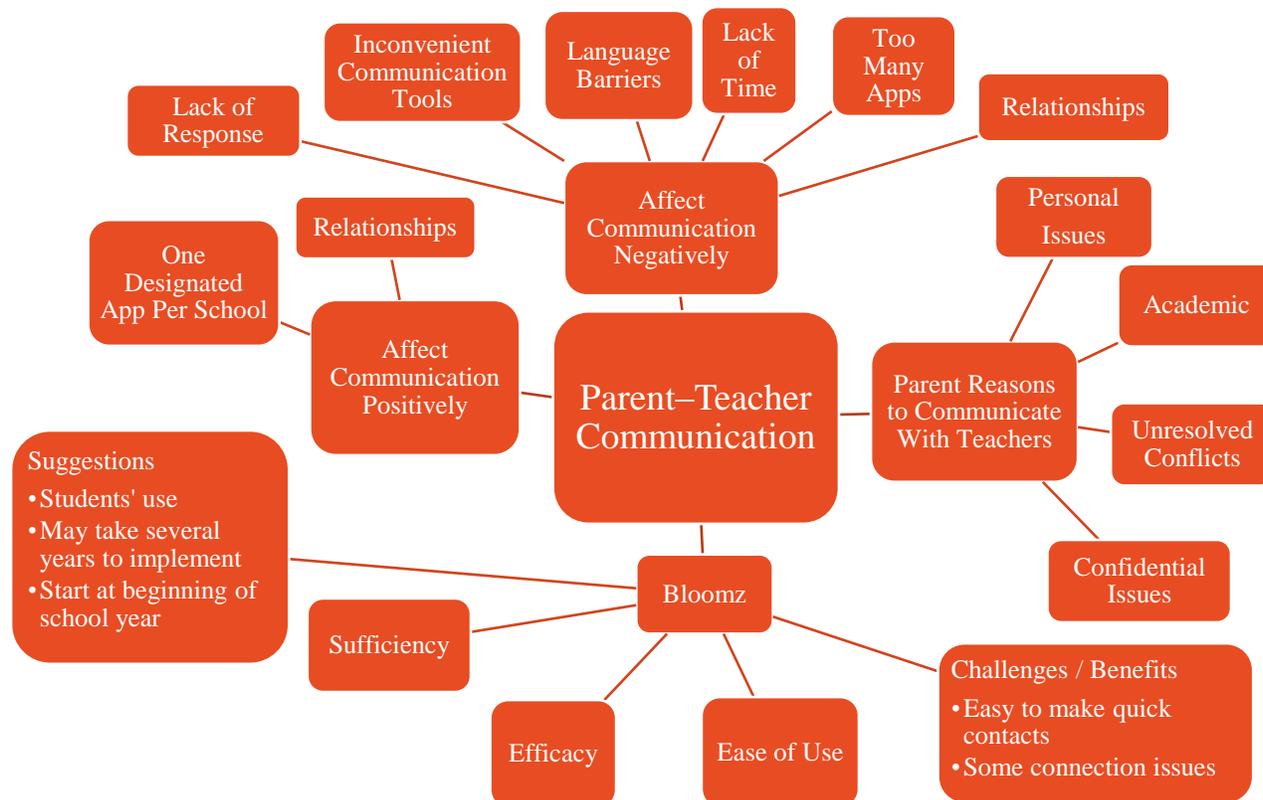
The focus groups and teacher interviews were invaluable to help interpret, understand, and draw implications from the quantitative research. Again, the first research question asked if the use of the classroom communication app by parents and teachers would impact the academic performance of lower SES, rural, middle school students. According to the teachers, student academic performance was not affected by the use of the Bloomz classroom communication app. One teacher said,

> No, I don't really see a change. I mean, the only thing with the students' academic performance would be like letting the kid know that we have contact with their parent, but we've had that ability to contact them multiple other ways in the past, so there's not really a big change there.

The other four teachers also indicated they had not noticed any differences in academic performances of the students. One teacher stated that Bloomz had not hurt the academic performances, but it did not affect it positively either.

The parent focus groups told a slightly different story when one considers communication apps in general and not just Bloomz specifically. Most of the parents felt that apps were very beneficial in terms of their children's academic performances. The two apps the parents indicated were helpful were Edmodo and PowerSchool.

Several of the parents stated that their children frequently checked for missing assignments and their grades on the PowerSchool app. One parent stated,

> My experience would be through PowerSchool. My middle school son, he does look at it all the time, and in fact he has some Bs on his PowerSchool and he's totally like, "Ahh!" over that….Because of that app he is like, when I dropped him off for school today, he's, like, "OK, I'm going to talk to this teacher and this teacher and this teacher," because he knows..."I need to go communicate to find out what am I doing wrong and study how I can improve my grades."

This was expressed by another parent as well. She said about her child, "It's 24/7, every day she looks at what's rolling in, what she needs to do to better it." These parents felt the ready accessibility to grades and assignments through the PowerSchool app was very helpful to enable students to improve their academic performance.

Several other parents indicated they also liked PowerSchool because it allowed *them* to check their children's grades. One said, "PowerSchool is really my go-to to monitor how they're doing academically." For these parents, the opportunity to keep tabs on their children's grades was invaluable, especially when the parents had children who needed more support academically, for whom they kept closer tabs on their grades.

Edmodo, used by the English teacher at Maple Middle School, was also liked by some of the parents because it allowed them to check in on their children's assignments and grades. One parent's experience was appreciation for the frequent notifications about due dates of assignments through Edmodo. If she did not receive the notification that the assignment was turned in, then she would check in with her child about what was happening. This parent saw the usefulness at being able to keep track of assignments that were not turned in, so she could make sure her child completed them.

Two parents did, however, feel that Bloomz was helpful academically at least at the elementary school level because the teachers (of their elementary students) had their students post pictures of their spelling papers or other papers so parents were made aware of student work. One parent said,

> So they'll share [through the app], "I got a 100 on my spelling." Good, because we've been working on it for a whole week, and sometimes we don't communicate very well at home when we're busy, so I don't know how it goes, but they're able to send me those pictures.

One parent said that if Bloomz would work at the middle school level, it would be very convenient because she could quickly verify with teachers if her middle schooler's assignments had been completed.

Research question 2. The next research question centered on the Bloomz app's ease of use, effectiveness, and sufficiency for communication. These three characteristics were considered separately and will be discussed individually as well. A qualitative research method was chosen as the most appropriate method in order to determine the answer to research question 2:

Was the Bloomz app easy, effective, and sufficient as a mode of communication from the parents' and teachers' perspectives?

As far as ease of use, the parents and teachers had varied experiences. The group of Willow Middle School parents had been successfully using Bloomz with younger siblings, but they had issues connecting with their middle schoolers' teachers via Bloomz because of technical problems they were not able to overcome. This group never did successfully use Bloomz to communicate with their children's teachers. Another set of parents had no issues at all with logging in. In the last group of parents, two of the parents remembered logging in and receiving a couple of messages from the teacher and the third did not ever log in at all.

The majority of the teachers found that Bloomz was easy to use as far as apps go. One challenge they experienced with Bloomz was that they did not receive any or hardly any responses from parents. Two of the teachers had very few parents sign up to use Bloomz in the first place, so they felt their attention and efforts were divided. When all of the students' parents' or guardians' contact information was entered in, three found sending out messages was easy. One teacher never used the app because she felt that the parents of her students never responded, so she never learned how to use it herself.

When the effectiveness of Bloomz is considered, it must be considered from two vantages: first, within the context of this study, if Bloomz is effective as a communication tool, as a method to increase student academic success, and as a tool that may be utilized to increase parent–teacher communications; second, broadening the context, if Bloomz is effective as a communication tool in general. This is an important distinction because the Bloomz app was not utilized within the classrooms to its fullest extent.

Within the different classes, there was only limited use of Bloomz. Several teachers indicated either they did not have parents sign up, or if they did sign up, the parents did not

respond through Bloomz. One teacher's comment was, "I never had any parents message me on Bloomz, so if it was the parents initiating a conversation, it was always through email." Another said, "A lot of the parents never did respond." A similar message was shared by yet another teacher who said,

> I would post things on there [Bloomz] like reminders to parents. "Hey, you need to bring [a] permission slip to watch the movie after we finish the book," or "Your student needs to bring a poster board to class." Then all the kids would come to school and say, "Hey, my mom reminded me to do this, but they would never actually, like, respond to me on Bloomz.

The last teacher said,

> A fair amount of parents signed up for it [Bloomz], and then I didn't get a lot of responses. Partially from me not posting a bunch of things on there and partially they just emailed me instead like they always had done. I think old habits die hard.

According to all the teachers, the parents with limited contact through Bloomz from the teachers continued to communicate with them mostly through emails.

The teacher who said, "old habits die hard," expressed the consensus of the teachers for why they thought the parents did not use Bloomz. They thought the parents were too confused by a new process and they were too busy to take the time to learn something new. One teacher's comment was, "It was hard for them to try to figure out how to sign up." Another teacher's comment was their community was about 10 years behind technology-wise. Yet another thought the parents looked at it more as a source of information versus a two-way communication tool.

The teachers' conjectures regarding the parents' lack of use of Bloomz were not reflected in the parents' responses for the most part. Three main themes emerged from the focus group data regarding why the parents did not communicate through the app: lack of communication

through Bloomz from the teachers, especially communication that required a response; connection issues; and app fatigue.

Ironically, the main reason the parents expressed repeatedly for not using Bloomz to communicate was that the teachers did not use Bloomz, so they did not bother with using it either. "I logged on just fine. The teacher just never ever posted anything, so it never benefitted me," was how one parent put it. Furthermore, the parents felt that the few posts they received were general welcomes or announcements that did not invite a response. One parent, for example, said,

> I got two different ones. The message that was sent wasn't like an urgency for me to respond. It wasn't even inviting me to respond. So that's why I really didn't even delve into it, because it wasn't like, "Hey, I need to talk to you about your students. Your son's grade or behavior or whatever." So, I was like that was nice. I don't know what this means, but I'll sort it out later and then I forgot.

The parents did not feel any impetus to change their communication method. If the teacher was not using Bloomz to communicate, then they would continue communicating through email or face-to-face.

Connected with the lack of communication from the teachers was a feeling of "app fatigue." When parents with multiple children each had teachers choosing different apps to communicate with parents, it created problems. The parents expressed that if Bloomz was the one main app used by everyone within the school or school district, then they would use it too. As one parent aptly put it,

> Every teacher seems to want to use their own application. I have two of the teachers that want to communicate solely through that app, so I have to have that app on my phone, which negates me from having other things that I need on my phone. Then you throw in

PowerSchool and that's a big chunk...and I have nothing left on my phone. It would be nice if everyone could consolidate into one app so that you could sign on to the app for the different kids.

There were too many apps being used by different teachers, so if a teacher did not communicate through the app, then the parents would not keep the app.

Although they did not have technical issues with the Bloomz app itself, one group did have issues with Bloomz not connecting right when there were multiple sibling accounts. Their problem, perhaps, was not one with Bloomz per se because the parents were successfully using Bloomz with their younger children. None of the parents within the focus groups had issues with not being able to figure out how to use the app as the teachers had suggested.

At Willow Middle School, Bloomz could not be considered effective or ineffective for communicating, increasing academic success, or increasing parent–teacher communication during this study because it was only used once by one parent. Neither teacher used Bloomz to communicate with the parents of their students. At Maple Middle School, the communication between parents and teachers via Bloomz was bilateral—more originating from the parents than from the teachers. This said, most parent communication with teachers was by email. One of the Maple Middle School teachers did not communicate at all via Bloomz despite parents reaching out to communicate through Bloomz.

Although Bloomz was not demonstrated to be an effective communication tool for all teachers and parents during this study, most of the parents and teachers recognized its potential for effectiveness as a communication method. Teachers and parents alike felt that Bloomz was easy to use, and if it were the main, designated form of communication, they thought it would be effective. They projected that if Bloomz was implemented at the beginning of the year, within several years it could become the familiar, commonly used method of communication between

parents and teachers. Another suggestion from the parents and teachers was that Bloomz might be more effective if it were used directly between the students and the teachers or between the students, teachers, and parents. Lastly, the recommendation was made by the parents that the best communication app for a school to use would combine an easy way to communicate with a way to check student grades.

The final part of the second question was regarding sufficiency. Was the Bloomz app sufficient as a mode of communication from the parents' and teachers' perspectives? The short answer is no. There were some situations where parents preferred a phone call or a face-to-face meeting as the method of communication (see Table 6). For example, for several of the parents, a conflict or situation between their child and the child's teacher that the child was not able to resolve by himself or herself was an occasion that would warrant a face-to-face meeting. Poor grades, behavioral problems, significant number of missing assignments, and personal issues would also be times when parents would want a face-to-face contact with the teacher versus a message through an app. One parent related her personal experience:

> There's one teacher in particular who only uses the app. Papers come home occasionally, but, yes, everything is through the app. She [the teacher] happens to have an autistic guy [in her class] and an app isn't just what I need all the time [as his parent]. I really would like her phone number. She doesn't give that out, so I'm stuck with an app; she doesn't face time real well.

The parents shared a definite sense of some topics being more appropriate to communicate with a face-to-face conversation or a phone call. Other topics, such a quick grade or assignment checks or whole-class announcements or reminders, the parents preferred communication via an app.

Table 6

Comparison of Parents' Preferred Communication Method by Topic

Topic	Preferred Communication Method for Topic
Personal issues	
A child's counseling needs	Face-to-face
Severe situations	Face-to-face
Unique classroom occurrences	Face-to-face
Child with special needs	Phone call
Academics	
Very low grades	Face-to-face
Extensive missing assignments	Face-to-face
Grade checks	Communication app
Assignment checks	Communication app
Unresolved Conflicts	
Between their child and another student	Face-to-face
Between their child and the teacher	Face-to-face
Private	
	Face-to-face
Confidential issues	
Behavioral issues	Face-to-face
Whole-class announcements or reminders	Communication app

Timing was another facet of how parents chose a communication method. Some parents felt that if there was something that needed to be communicated to a teacher right away, they would prefer to communicate face-to-face instead of communicating through Bloomz or another communication app. One parent stated, "Communication obviously isn't all that effective, you know, if it's through a message if you're getting it like a couple days later. If it's something she needs to know right away, I'd rather speak with her face-to-face." On the other side, if parents wanted to not "bother" the teacher and if it was something "quick," then they preferred to text or use a communication app.

Unlike the parents, all the teachers except one shared the sentiment of apps being sufficient for all communication needs. The other teacher felt some particular situations would be better communicated with a face-to-face conversation or phone call, for example, student discipline or protracted assignment clarifications.

Research question 3. The next research question to consider through the lens of the parents' and teachers' experiences was,

Does the use of the classroom communication app Bloomz increase parent–teacher communication as compared with traditional email, face-to-face, or telephone contacts?

For this question, quantitative methods were chosen as the most effective method to determine if the number of parent–teacher communications increased during Q2 when Bloomz was used, as compared with Q1 when only traditional methods were utilized.

Communication counts were gathered by the teachers during both Q1 and Q2. As noted in Table 7, during Q1 at Maple Middle School, 33 conversations by any communication method (excluding Bloomz) were initiated by parents and 12 conversations were initiated by teachers, including messages that were whole-group messages and those that were with individual parents. During Q2 the teachers recorded 58 conversations initiated by parents, 24 initiated by teachers, and one initiated by a student. The most common method of communication was email during both quarters at Maple Middle School, with 73% of communication occurring via that method during Q1 (33 email conversations; see Table 7). During Q2, the total number of email communications rose to 42 but the number of communications via the other forms of communications increased to such a high degree that the percentage of communication by email decreased to 52%. During Q2 there were 19 communications at Maple Middle School via Bloomz. Total number of communications increased 80% from Q1 to Q2 (36 more communications during Q2).

Table 7

Communications at Middle Schools: Q1 and Q2

Variable	Bloomz	Phone Call	Text	Paper Note	Email	Face-to-Face	Total	Percentage of Change
Maple Q1	n/a	1	3	3	33	5	45	
Maple Q2	19	1	3	0	42	16	81	+80%
Willow Q1	n/a	4	6	0	15	29	54	
Willow Q2	1	3	1	2	3	2	12	-78%

As noted in Table 7, at Willow Middle School during Q1, there were a total of 54 communications with 12 initiated by parents and 43 initiated by the teacher. Communications decreased sharply during Q2 with a total of 12 communications: four initiated by parents and eight initiated by teachers (one of which was via Bloomz). The greatest number of communications at Willow Middle School during Q1 were face-to-face conversations (29 communications, or 54%) followed by 15 email conversations (28% of total conversations during Q1; see Table 7). During Q2, communication methods were evenly spread with one to three communications per method for a total of 12. The number of total communications decreased by 78% from 54 to 12 at Willow Middle School.

Because the use of Bloomz varied between the subjects and schools (teachers communicated zero to three times via Bloomz), a comparison between subjects and schools is included to help provide a greater understanding (see Figure 5). Figure 5 illustrates the number of communications via Bloomz for each group. Overall, the parents communicated much more than the teachers did via Bloomz. Four communications were initiated by parents in each of the

Maple Middle School math and English(A) classes, and five communications via Bloomz were initiated by parents in the Maple English(B) class. Most of the parent-initiated communication was regarding class needs or assignments (see Figure 5). Between the schools, Maple Middle School parents and teachers communicated much more via Bloomz than Willow Middle School teachers or parents. This may be related to the smaller number of participants. The total number of students with participating parents was 62 at Maple and 11 at Willow.

Figure 5

Bloomz Communication Counts by Middle School Teacher and Initiator

	Willow Reading	Willow Writing	Willow Math	Maple English(A)	Maple English(B)	Maple Math
■ Teacher to Class*	0	0	0	0	3	2
■ Teacher to Parent**	1	0	0	0	0	1
■ Parent to Teacher	0	0	0	4	5	4
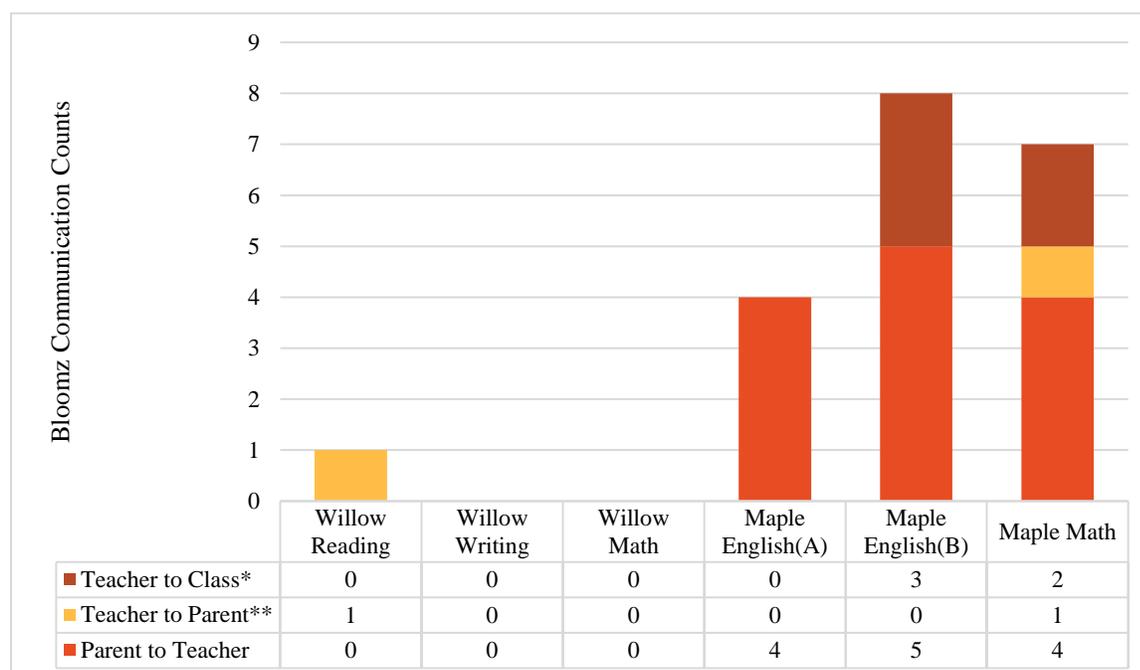
Note. *Bloomz messages sent from the teacher to all of the students' parents using Bloomz in the class. **Bloomz messages sent from the teacher to an individual parent.

Research question 4. The last research question was aimed at exploring communication deterrents. Communication deterrents do not necessarily stop communication from occurring— rather they make communication more difficult or less likely to happen. In Table 8 the deterrents are listed as discussed within the focus groups and interviews. The table is split into four columns because both parents and teachers described deterrents for themselves and for the other

party. The most frequent deterrent described by parents was their inconvenient access to a communication tool. According to one parent, "It's hard. To communicate I have to go on through my laptop." Other parents had interpersonal relationship issues that made communication more difficult. For example, "I feel a little reprimanded, you know, and so...I communicate with her very little." It was also difficult for parents to communicate with teachers when they did not feel they were being heard, when they did not receive a response, or the response was delayed. Parents also did not communicate if they did not have something they needed to communicate. Unless there was an issue, some parents did not communicate with the teachers.

Table 8

Communication Deterrents as Described by Parents and Teachers

Themes from Focus Groups and Teacher Interviews	Parents Regarding What Deters Parents*	Parents Regarding What Deters Teachers*	Teachers Regarding What Deters Parents*	Teachers Regarding What Deters Teachers*
Inconvenient access to communication tool	XXXX			X
Interpersonal relationship issues between parents and teachers	XXX	X	X	X
Lack of response	XXXX			XX (on Bloomz)
Lack of availability/time		XX	XXX	XXX
Lack of privacy	X			
Fear of retribution	X			
Lack of need (If all is going well, then no need to communicate.)	XX			
Language barrier			XXX	XXXX
Lack of one common communication app	X	X		
Inaccurate or missing phone numbers/emails	X			XX
Negative conversation topics regarding their child			X	
Lack of communication technology (or technology issues)	X		X	

Note. *The number of Xs correlates with the number of comments.

Lack of time was another deterrent to communication brought out by both teachers and parents. Teachers felt that sometimes when parents were available to communicate, they were not available and vice versa. "A large majority of parents work during the times I would be available to speak to them," said one teacher. On the other hand, parents only commented that lack of time made it hard for teachers to respond and did not comment on their lack of time.

Language was another barrier to communication that made communication difficult, according to the teachers. One teacher said,

> The language barrier, you know, is huge. I had a couple students that were doing super good and so I wanted their parents to know, but I had to get a hold of [a translator] and she had to, you know, call home and tell mom and dad,...so that's very challenging.

For this teacher, it was problematic as well because she would have liked to have personally had that conversation with the parents, and the translator might not have known the answers to questions the parents might have had. A different teacher described the language barrier being "as scary for them as it is for us."

Another issue the language barrier created was the possibility of not reaching parents with communication. Two teachers described different situations involving someone other than a school-employed translator. In one case the teacher said that she sometimes depended on students to translate for her but felt the translation may not have been reliable. In the other case, the teacher described a situation when the communication was in written form, another family member translated the message for the parents and dismissed the message as unimportant without informing the parents of the contents.

Along with the barriers or deterrents to communication behaviors, parents also discussed items that encouraged their communication with teachers. When they had a good relationship with teachers, they were more apt to communicate. Several parents described situations where

they preferred to communicate with one person more than another because of the relationship they had with that person. Of that, one parent said,

> I have one teacher that we communicate really, really well with, but we have similar personalities. The other teacher is much more strict than me, so I kind of try to back off there and just let her do her job.

When the teachers reached out to welcome parents, it made one parent feel like the teacher was more approachable, and she would feel more comfortable talking with him if there ever was a problem. Timely responses also encouraged parents to communicate with teachers. Parents appreciated it when they could easily and quickly communicate with their children's teachers.

Conclusion

Chapter 4 shared results from the quantitative and qualitative research that was performed. Descriptive statistics, Shapiro-Wilk test, Wilcoxon signed rank test, and the paired-sample *t* tests were performed to analyze the quantitative data to determine if there was a positive or negative relationship between the student grades and the use of Bloomz. A significant difference (in a negative direction) was found between the Maple Middle School English(B) Q1 and Q2 grades. There were no other significant differences either positive or negative within the grade means.

Qualitative methods were used to add depth and richness to the quantitative data. Themes from focus groups and teacher interviews illustrated that parents and teachers share some of the same thoughts regarding the Bloomz app's ease of use, effectiveness, and sufficiency. The parents and teachers saw potential for efficacy in Bloomz but hadn't felt it was utilized sufficiently to definitively decide upon its effectiveness. While four out of five teachers indicated that Bloomz was sufficient, the parents indicated that using an app was not sufficient for all communication topics. Those who used the app agreed it was simple to use. Communication

counts indicated that for one school communication increased almost two-fold from Q1 (before Bloomz was introduced) to Q2 (after the app was implemented). For the other school, Willow Middle School, communication by all means decreased by more than half.

Qualitative data were gathered to identify communication challenges independent of the use of Bloomz. Parent focus groups and teacher interviews identified barriers to communication that were common to both parties: lack of time on the part of the teacher, relationship issues, lack of response, and language barriers. Some communication barriers were unique to parents or teachers, such as how parents noted that inconvenient access to communication tools was something that kept them from communicating with teachers. The data presented here will be further discussed in the following chapter.

Chapter V

Discussion

Introduction

The purpose of this study was to examine the use of the classroom communication app Bloomz by rural, low-SES, middle school parents and middle school teachers as a tool to increase student achievement and assist low-SES parents to become more involved. A more in-depth understanding of the relationships between parent involvement through communications via Bloomz was achieved through a combination of quantitative and qualitative research approaches. Qualitative data were gathered through parent focus groups and teacher interviews to add depth and allow for better understanding of the quantitative data in the form of students' quarter grades and communication counts. A combination of the two research methods facilitated a more complex and layered understanding of parent involvement through the smartphone app Bloomz by rural, low-SES, middle school parents (Rich & Ginsburg, 1999).

Parents' involvement in their children's education in general has increased in the last 50 years, but so has the gap in achievement between children from high-SES families and children from low-SES families (CER, 2017). For low-SES families, being involved in their children's education is especially difficult for parents (Altschul, 2012; Renth et al., 2015; Schafft, 2005; Yoder & Lopez, 2013). Regardless of their SES, most parents recognize they have a role in their children's education and desire for their children to succeed (Bennett-Conroy, 2012; DePlanty et al., 2007; Poza et al., 2014; Schafft, 2005).

Student academic achievement has been correlated with many different forms of parent involvement in a great deal of research (Froiland & Davison, 2014; Lam & Ducreux, 2013; McNeal, 2015; Sheldon et al., 2010). There are many ways that parents involve themselves in

their children's education. Parent–teacher communication, for example, is one way that parents can support their children's education (Bennett-Conroy, 2012).

Communication with teachers has changed in tandem with technology changes, and teachers and parents now communicate through communication apps, such as Bloomz, as well as via the more traditional emails, texts, phone calls, paper notes, and face-to-face conversations. Very little if any research has considered a connection between parent involvement via a communication app, student achievement, and parent–teacher communication rates. To this intent, the questions examined in this study were the following:

1. Does the use of the classroom communication app Bloomz by parents and teachers have an impact on the academic performance of lower SES, rural, middle school students?

2. Was the Bloomz app easy, effective, and sufficient as a mode of communication from the parents' and teachers' perspectives?

3. Does the use of the classroom communication app Bloomz increase parent–teacher communication as compared with traditional email, face-to-face, or telephone contacts?

4. What, if anything, deterred parents or teachers from communicating?

In this chapter, the results of the research will be interpreted and discussed. Implications for future research and implications for professional practice will also be considered.

Summary of the Results

In answer to the first research question, this study found no significant difference in the grades of the middle school students between the end of Q1 and the end of Q2 when the Bloomz app was used, except for in the Maple Middle School English(A) group and the Willow Middle School Math group, which both had significantly lower grades in Q2. The other two Maple Middle School teachers' classes and the Writing classes at Willow Middle School showed numerical, though not significant, increases in grades after the implementation of Bloomz. The

last Willow Middle School class (Reading) experienced negative, though also not significant, changes in grades after Bloomz was a communication method option. One teacher said that using Bloomz did not hurt or help the students' grades, which was supported by the quantitative data in that neither of the teachers of the two classes that had a significant decrease in grades used Bloomz to communicate. Broadly speaking, two of the three teachers' classes at Maple Middle School had mean grades that demonstrated positive changes and one that demonstrated a significant negative change. At Willow Middle School the opposite trend was noted: 2 of the 3 teachers had class groups that demonstrated negative changes (one of which was significant) and one of the class groups had an insignificant positive change in the student grade mean.

One of the Maple Middle School teachers did not communicate with the parents of students via Bloomz, although four parents communicated with that teacher. The other two Maple Middle School teachers communicated with the whole class by Bloomz two and three times respectively during Q2, and one of those teachers also communicated with an individual parent via Bloomz once. The Willow Middle School teachers communicated zero or one time during the whole quarter, one of whom did not implement the program. There was one comment by a teacher about students being more prepared for class, but neither the parents nor the teachers felt that Bloomz had an academic impact on the students' academic success.

For the second question of the study, there were mixed results regarding Bloomz's ease of use, efficacy, and sufficiency. The teachers and the parents who had used the app indicated it was very easy to use. None of the parents or teachers had issues with the use of the app itself. There were some connection issues or glitches when a few parents tried to add additional students to a sibling's account.

Regarding the sufficiency of the Bloomz app, according to the parents, the Bloomz app or any app was insufficient as a method of communication. There remained some topics that

necessitated a face-to-face conversation or a phone call. Teachers, except for one, however, felt that any topic could be covered via the app.

Although the app was not effective at increasing student academic grades, it may have been connected with an increase in parent–teacher communication. During Q2 at Maple Middle School, parent–teacher communication increased by 80%. This was over 50% due to an addition of Bloomz communications and partly due as well to an increase in emails sent. At Willow Middle School, where teachers did not send more than one message on Bloomz, communication decreased by 78% and was nearly nonexistent during Q2. While Bloomz seems to have the potential to increase parent–teacher communication, it does not have that impact if teachers stop communicating with parents entirely. This said, the Willow Middle School teachers drastically decreasing communication of all types during Q2 may not have had anything to do with the Bloomz app.

The final research question explored what barriers keep or inhibit parents and teachers from communicating. During the interviews and focus groups, the parents and teachers shared many of the same barriers to parent–teacher communication. Some of the main themes that emerged are a lack of time, a lack of response, and language barriers.

Both teachers and parents felt that using technology to communicate was very important. This finding supports the findings of the research by Olmstead (2013). Both parents and teachers suggested that the other would benefit from training on how to use the app. This is similar to Bennett-Conroy's (2012) study, which suggested that parents and school personnel would likely mutually benefit from training on effective parent–teacher communication roles. Buhl and Hilkenmeier (2017) posited that skills related specifically to parent–teacher conversations should be included in preteaching and continuing education for teachers. According to the study by Palts

and Harro-Loit (2015), school staff can help parents with low communication literacy skills develop their ability to communicate in order to better support their child.

Parent involvement at school worked best when teachers and parents communicated about the child's needs and worked together to meet them. Tang and Davis-Kean (2015) suggested that parent–teacher communication could help students by keeping parents up-to-date regarding if their child might need more academic support at home. This was one of the most mentioned uses of an app, according to the parents in the focus groups of this study. Parents suggested that the best app would combine a method to communicate (which Bloomz has) with an access to grades (which it does not).

Bennett-Conroy's (2012) research suggested that most parents are interested in being involved, and schools can increase that involvement by initiating and encouraging bidirectional communication with parents (Mitchell et al., 2009). The previous statement seems consistent with the findings of this study. At Maple Middle School, the teachers, to some extent, were initiating and encouraging bidirectional communication and during Q2 experienced a dramatic increase in parent communication from Q1. At Willow Middle School, the teachers did not initiate communication with the parents at all during Q2 (except for one teacher one time with one parent). A lack of communication at Willow Middle School from the teachers may have led to a lack of communication from the parents.

Similar to Mitchell et al.'s (2009) study, this current study likewise found that many of the teachers and parents felt the other party should be the one to initiate communication. In their study, Mitchell et al. found that when school personnel made an effort to communicate with parents, many of the barriers to parent involvement were resolved. In this study, when the teachers and the parents from Maple Middle School and Willow Middle School did not receive communications from the other via Bloomz, they did not continue to reach out and try to

communicate via Bloomz. If one or the other of the groups had persisted, perhaps they would have overcome this obstacle to communication through the app. Communication did occur through other methods (more so at Maple than at Willow), but not through Bloomz. Flowers (2015) suggested that parents do not communicate through emails or texts because the teachers are not initiating the email or text conversations. Palts and Harro-Loit's (2015) study supported this suggestion. In their study, many of the parents indicated they matched their communication style with the teacher's style. It is difficult to say if this idea of the parents matching or reciprocating communication style with the teachers was borne out in relation to Bloomz in this study. First of all, the teachers initiated very little Bloomz communications. Second, the communications that were sent did not encourage bidirectional communication. The parents who received the Bloomz communications did not feel like a response was expected and thus did not respond. The parent participants in the study of Palts and Harro-Loit (2015) attributed their ability (or inability) to communicate with the teachers to the schools' culture of communication. Perhaps if the teachers had continued to communicate through Bloomz or had used messages that encouraged more bidirectional communication, the school communication cultures at Maple Middle School and Willow Middle School would have been affected positively in terms of an increase in parent–teacher communication.

In the study by Thompson et al. (2015), as in this study, many parents preferred email as a communication method when the topic was objective. The media richness theory was supported by the data from this study. According to the media richness theory, communicators choose methods appropriate for the depth of information they need to convey. For example, Palts and Harro-Loit (2015) indicated that in their study, the parent and teacher participants mentioned they preferred texts or emails when the topic was quick and objective. For more sensitive or involved conversations, parents and teachers indicated a preference for face-to-face

conversations or telephone calls (Palts & Harro-Loit, 2015). The parents at Maple Middle School and Willow Middle School indicated this same preference, but only one of the five teachers felt that different situations required different communication methods.

Although Thompson et al. (2015) suggested that more parents would text if it were more readily available, this was not the finding of this study. Even though Bloomz made texting readily available, the parents still preferred emails to all other forms of communication. Parents and teachers both felt that Bloomz could be effective and had features they liked. They suggested that if Bloomz were implemented at the beginning of a year, within several school years it could become a familiar, commonly used method of communication between parents and teachers. They suggested that having the students communicate directly with the teachers through the app might also be an effective use of Bloomz.

The focus groups and teacher interviews brought rich, deep data. The teachers expressed that Bloomz specifically did not affect the students' academic grades. Through the focus group, a fuller picture was developed as the parents described how communication apps in general were being used to help parents and students check grades and assignments. The parents and teachers, except for one, felt like Bloomz was easy and potentially effective, though insufficient to be the sole method of communication. There were some topics parents felt were best handled face-to-face. The opportunity to use Bloomz may have contributed to a dramatic increase in parent–teacher communication at one school, but its lack of use at the other school precluded any conclusive findings. Those things that were barriers to communication were lack of time, language, and personal relationship issues.

Conclusion

For these two rural Idaho communities, implementing the communication app Bloomz was difficult. Both parents and teachers at both schools expressed a willingness to use Bloomz,

but when it came down to actually using the app, for some of the teachers and parents, it was not as convenient as methods they were more familiar with. Some studies have indicated significant increases in students' academic performances when communication apps were used consistently (Kraft & Rogers, 2015; S. Miller et al., 2016). If results from this study can be extrapolated for other rural areas, any changes like a communication app would take considerable effort and time for it to be effective.

An idea to make app use easier as reported by the teachers and focus groups was to introduce anything new like an app at the beginning of the year. Also, teachers need to be consistent regardless of the response they receive from the parents. Furthermore, school personnel should be aware that the implementation of an app would most likely take more than a year for the app to become familiar and the go-to method for communication. Additionally, it is important for schools to limit app use within the schools by teachers to one or two apps at the most to prevent app fatigue by parents. Learning to use multiple apps and having each app take up space on their phone make communication with teachers more difficult. Finally, as suggested by Beecher and Buzhardt (2016) and supported by data from this study, the ideal app would include both a way to check student progress and a way to communicate with the teacher.

This study was limited somewhat by the low degree of utilization of Bloomz to communicate by some of the parents and teachers. Although low participation made it difficult to answer definitively if Bloomz was effective, in the broad picture, regardless of functionality or lack of functionality, Bloomz was not effective for two-way communication at this time in the rural Idaho setting within the short implementation time frame of one quarter.

Another limitation to this study may have been a lack of parents in the focus groups who spoke only Spanish. This study did not indicate that language was a barrier from the parents' perspectives, but this is more likely a result due to the fact that the parents who were a part of the

focus group all spoke English fluently and language was not a barrier to communication for them. The teachers definitely felt that language was a barrier.

Another limitation to this study was the duration. If the study had continued for several years and parents and teachers would have had the time to become familiar with and utilize Bloomz more fully, it is possible there would have been a different outcome in terms of the effectiveness of Bloomz and its impact on academic performance.

Recommendations for Further Research

Existing research has documented parent–teacher communication can positively impact student performance. Additional research needs to be conducted to investigate whether communication apps can contribute positively to this communication.

Furthermore, future research would be beneficial to examine the use of Bloomz within an urban community. Perhaps parents and teachers within this context would be more interested in communicating through an app if they were not from rural communities. Another interesting consideration is whether texting will become a more prominent form of communication between parents and teachers as young adults, who currently text more than other age groups, age and have school-aged children. A study of how much time and what kind of training is necessary to successfully implement an app or software program into the parent–teacher communication culture would be beneficial in order to help schools implement new communication methods.

Implications for Professional Practice

One suggestion for future consideration came from an interesting suggestion from both teachers and parents that perhaps the students should be the ones to use the Bloomz app. Parents and teachers both felt that using technology was what youth of today are comfortable with. Both groups also felt the students would appreciate having a direct and easy connection with the teachers.

Based on the results from this study, Bloomz may help increase parent–teacher communication. Even with tentative implementation by teachers, parent–teacher communication increased dramatically, possibly because of Bloomz implementation. Successful implementation would be most likely when there is one designated app that all teachers within a district use to communicate. Too many apps and ways of communicating were too hard for both parents and teachers. Second, any new communication tools should be put into place at the beginning of the year, and both teachers and parents need to be educated thoroughly on how to use them. Last, it would take time for any program to take hold and become the communication method of choice.

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Appendix A

Letter to Principal

March 26, 2017
Mr. X
Principal of School
Address

RE: Permission to Conduct Research Study

Dear Mr. X:

I am writing to request permission to conduct a research study at your school. I am currently enrolled in the Doctor of Education program at Northwest Nazarene University in Nampa, ID, and am in the process of conducting research for my doctoral dissertation. The study is entitled "The Impact of Bloomz App on Parent Teacher Interaction in Middle Schools Serving Low Socioeconomic, Rural Communities." As a school administrator myself, I value parent involvement in school and my hope for the study is to help identify the usefulness of classroom communication app Bloomz to increase parent involvement in terms of parent-teacher communication.

I hope that the school administration will allow me to recruit about 30 individuals—parents or guardians with children in grades 7-8 at your school—to participate in the research I am conducting. Participation would involve the parents or guardians completing a permission slip allowing access to their child's quarter 1 & 2 Math or English Language Arts grades, using the Bloomz app to communicate with their child's teacher during quarter 2, and if they are willing participate in a group discussion after semester one.

Possible negative impact on parents/guardians, students, and teachers is minimal. It is possible that questions in the discussion group might make the parents feel uncomfortable or upset, but they are made aware that they are free to decline to answer any question they do not wish to answer or to stop participation at any time. Participation in this study could possibly involve a loss of privacy; however, all records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes or audio recordings will be kept in a password protected computer or electronic device. In compliance with the Federal-wide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117). Furthermore, only the primary researcher and the research supervisor will be privy to data from this study. As researchers, both parties are bound to keep data as secure and confidential as possible.

If approval is granted, parents/guardians and teachers would use the Bloomz app to communicate during the second quarter of the semester (supplemented with traditional communication methods as needed). The data will be pooled for the dissertation project and individual results of this study will remain confidential. No costs will be incurred by either your school or the individual participants. Parents who participate will be given a Redbox Movie gift certificate for

one free rental; teachers and administrators will receive a $25 gift card as a thank you for the time involved in the research process.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call next week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my email address: fcastaneda@nnu.edu.

If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope. Alternatively, submit a signed letter of permission on your institution's letterhead acknowledging your consent and permission for me to conduct this study at your institution.

Sincerely,

F. Javier Castaneda

Enclosures: Parent Packet, Teacher Packet

cc: Dr. Dennis D. Cartwright, Research Advisor, NNU

Approved by:

| Name and Title (Printed) | Signature | Date |

Appendix B

Teacher Information Packet

TEACHER INFORMED CONSENT FORM

A. PURPOSE AND BACKGROUND

F. Javier Castaneda, a doctoral student in the Department of Education at Northwest Nazarene University, is conducting a research study related to the classroom communication app Bloomz and its impact on low socioeconomic status (SES) middle school parent involvement in rural Idaho.

You are being asked to participate in this study because you are a Math or English Language Arts teacher at a rural public middle school in Idaho.

B. PROCEDURES

If you agree to be in the study, the following will occur:

1. You will be asked to sign an Informed Consent Form, agreeing to participate in the study.

2. You will continue to communicate with your students in traditional ways (phone, email, paper notes, texts (through your personal cell number if you normally share this)) the first quarter of school as desired. The second quarter you will be asked to download the free app Bloomz to communicate with your students' parents/guardians through the app Bloomz. If parents are unwilling or unable to communicate via the Bloomz app, traditional modes of communication may be used instead.

3. You will be asked to track the date, the parent, the initiator (either you or the parent/guardian), the mode and the subject of communications sent and received by you during both quarters.

4. You will be invited to participate in a post-term interview where you will be asked questions and engage in a discussion regarding your experience with the use of Bloomz to communicate with your students' parents/guardians compared with traditional methods. This discussion will be audio taped and is expected to last approximately 60 minutes.

5. You will be asked to provide first and second quarter grades for students whose parents agree to participate in the study.

The closing interview will be completed at a location mutually decided upon by the you and the principal investigator and will take a total time of about 30 minutes.

C. RISKS/DISCOMFORTS

1. Some of the discussion questions may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to answer or to stop participation at any time.
2. Confidentiality: Participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes, audio tapes, and disks will be kept in a password protected computer or electronic device. In compliance with the Federal-wide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117).
3. Only the primary researcher and the research supervisor will be privy to data from this study. As researchers, both parties are bound to keep data as secure and confidential as possible.

D. BENEFITS

There will be no direct benefit to you from participating in this study. However, the information you provide may help educators to better understand the factors that enhance communication between teachers and parents/guardians.

E. REMUNERATION

As a thank you for your time and participation you will receive a gift certificate for $25.00.

F. QUESTIONS

If you have questions or concerns about participation in this study, you should first talk with the investigator. Javier Castaneda can be contacted via email at fcastaneda@nnu.edu or via telephone at 971-275-2259. If for some reason you do not wish to do this you may contact Dr. Heidi Curtis**,** Graduate Education Chair and Doctoral Programs in Ed Leadership Director at Northwest Nazarene University, via email at hlcurtis@nnu.edu, via telephone at 208-467-8250, or by writing 623 S. University Blvd, Nampa, Idaho 83686.

G. CONSENT

You will be given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You are free to decline to be in this study, or to withdraw from it at any point. Your decision as to whether or not to participate in this study will have no influence on your present or future status as a teacher.

I give my consent to participate in this study:

_____   _____

Signature of Study Participant   **Date**

I give my consent for the interview and discussion to be audio taped in this study:

_____   _____

Signature of Study Participant   **Date**

I give my consent for direct quotes to be used in this study:

_____   _____

Signature of Study Participant   **Date**

_____   _____

Signature of Person Obtaining Consent   **Date**

THE NORTHWEST NAZARENE UNIVERSITY INSTITUTIONAL REVIEW BOARD HAS REVIEWED THIS PROJECT FOR THE PROTECTION OF HUMAN PARTICIPANTS IN RESEARCH.

Appendix C

Parent Information Packet

Do you **WANT** to MAKE A DIFFERENCE and

possibly **CHANGE**

the **WORLD**?

This Semester you can be a part of a study to help see if the classroom communication app Bloomz can help you better communicate with your child's teacher and know what's going on at school! More communication usually helps kids do better at school so it's important to find ways to help make communication easier for you as the parent. It's completely confidential & participants receive a **FREE REDBOX**! Look for more info from your teacher today!

Hello Parents and Guardians,

Your participation in this study could really help change the world. Traditional methods of communication with teachers are sometimes not as convenient as newer methods. The goal of this study is to see if the smart phone app Bloomz can help parents and guardians and teachers communicate more effectively. As a parent myself, I know that parents are extremely busy! Your time as a parent or guardian is so valuable. The hope for this study is that the Bloomz app will make communication with your child's teacher easier & less time-consuming for you!

Bloomz is a classroom communication app. It is very similar to Facebook. Teachers can post videos and pictures, calendars, sign-up sheets, group messages and individual messages. You as the parent/guardian can respond to the messages as well as initiate your own messages to the teacher. We will have a Bloomz explanation meeting. There is a free app for both Android and iPhone platforms. Please download the app and enter our classroom code when prompted: _____.

All information gathered during the semester will be kept strictly confidential. There is some degree of risk that participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes and surveys will be kept in a locked file cabinet, password protected computer or in password protected files. In compliance with the Federal-wide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117). Participation is voluntary, and withdrawal is possible at any point in the survey. Only data from parents that use the smartphone app Bloomz to communicate with their teacher will be used for the purpose of this study. Your child's end of quarter grades will be accessed anonymously—only the teacher will see your child's name. At the end of the semester, as a thank you for your participation, a Redbox code will be given to you at the discussion group!

There are risks and benefits in everything we do. The risks to the participants include a possible loss of privacy. You may elect to not use the app Bloomz to communicate with your child's teacher or end your participation at any time. However, by participating in this survey, you will help to contribute to the body of educational research in the area of parent/guardian communication with teachers. Specifically, your information will contribute to research investigating if the app Bloomz will make it easier and faster to communicate. Upon completion of the term, as a thank you for your participation, a Redbox code will be given to participants after the focus group interview.

If you have any questions or concerns about the study, please contact the principal investigator, Javier Castaneda via email at fcastaneda@nnu.edu or the faculty advisor, Dr. Heidi Curtis at hlcurtis@nnu.edu. If you have any questions regarding your rights as a research subject, contact the NNU Human Research Review Committee at IRB@nnu.edu.

By signing below you are agreeing that you are 18 years old or older and that you agree to have your responses used anonymously to help further research about parent involvement and academic success. The protection of your child's privacy is very important. Your child's grades and name will never be shared and will only be used to look for connections between parent communication methods and academic success.

PARENT/GUARDIAN CONSENT

I, _____, am the parent or guardian of _____ and am giving the researcher permission to access and use my child's math/English grades and how I communicated with my child's teacher to help study the connection between parent/guardian-teacher communication methods and academic success and the effectiveness of Bloomz.

_____

Printed Name   Signature   Date

1. How old is your child? _____ What grade are they in?_____

2. Gender: Male / Female   Age: _____

Thank you for your time! In appreciation for your time I will be giving out codes for **free RedBox rentals** at the parent discussion group where we talk about your experience with the app after quarter two. Please fill out the attached consent form and return to your child's teacher. A copy will be provided for you if you desire. If you have any questions, please do not hesitate to contact me, Javier Castaneda at fcastaneda@nnu.edu or by phone 208-608-6335.

  Sincerely,

  F. Javier Castaneda

PARENT/GUARDIAN INFORMED CONSENT FORM

A. PURPOSE AND BACKGROUND

F. Javier Castaneda, a doctoral student in the Department of Education at Northwest Nazarene University, is conducting a research study related to the classroom communication app Bloomz and its impact on middle school parent involvement in rural Idaho.
You are being asked to participate in this study because you are a parent/guardian over the age of 18 of a middle school student.

B. PROCEDURES

If you agree to be in the study, the following will occur:

1. You will be asked to sign an Informed Consent Form, volunteering to participate in the study.

2. You will be asked to communicate with your child's teacher as needed.

3. You will be asked to download the free app Bloomz to your smart phone and use it to communicate with your child's teacher during the second quarter of the school year.

4. You will be invited to participate in a focus group interview where you will be asked questions and engage in a discussion on your experience with the use of Bloomz to communicate with your child's teacher compared with traditional methods. This discussion will be audio taped and is expected to last approximately 60 minutes.

The focus group will be completed at a location mutually decided upon by the participant and principal investigator and will take a total time of about 60 minutes.

C. CONSENT FOR MINOR TO PARTICIPATE

The researcher, Javier Castaneda, will not have access to your child's name and will not be able to connect the name to the child's grades.

Parent's/Guardian's name: _____

1. I authorize Javier Castaneda, Doctoral student at Northwest Nazarene University, Nampa, ID, to gather my child's quarter grade information from my child's Math or English teacher in the form of a student's overall percentage grade average. There will be no time involvement required of my child.

I understand that my participation is voluntary and that I may refuse to participate or discontinue participation at any time without penalty or loss of benefits to which my child may be otherwise entitled.

3. I understand that confidentiality of research results will be maintained by the researcher. No individual results or names will be released without my written consent as the parent or guardian of: _____.

(name of child)

_____   _____

Signature of Parent or Guardian   Date

D. RISKS/DISCOMFORTS

4. Some of the discussion questions for parent participants during the discussion group may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to answer or to stop participation at any time.

5. Confidentiality: Participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes, audio tapes, and disks will be kept in a password protected computer or electronic device. In compliance with the Federalwide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117).

6. Only the primary researcher and the research supervisor will be privy to data from this study. As researchers, both parties are bound to keep data as secure and confidential as possible.

E. BENEFITS

You will have the benefit of access to Bloomz app to communicate with your child's teacher. As well, the information you provide may help educators to better understand the factors that enhance communication between teachers and parents/guardians.

F. REMUNERATION

All participants that attend the focus group will receive a gift certificate for a free REDBOX movie.

G. QUESTIONS

If you have questions or concerns about participation in this study, you should first talk with the investigator. Javier Castaneda can be contacted via email at fcastaneda@nnu.edu, via telephone at 971-275-2259. If for some reason you do not wish to do this you may contact Dr. Heidi Curtis, Graduate Education Chair and Doctoral Programs in Ed Leadership Director at Northwest Nazarene University, via email at hlcurtis@nnu.edu, via telephone at 208-467-8250, or by writing 623 S. University Blvd, Nampa, Idaho 83686.

H. CONSENT
You will be given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You are free to decline to be in this study, or to withdraw from it at any point. Your decision as to whether or not to participate in this study will have no influence on your child's present or future status as a student. All communication will be shared with you through traditional means if you decline to use the Bloomz app.

I give my consent to participate in this study:

_____   _____
Signature of Study Participant   **Date**

I give my consent for the interview and discussion to be audio taped in this study:

_____   _____
Signature of Study Participant   **Date**

I give my consent for direct quotes to be used in this study:

_____   _____
Signature of Study Participant   **Date**

_____   _____
Signature of Person Obtaining Consent   **Date**

THE NORTHWEST NAZARENE UNIVERSITY INSTITUTIONAL REVIEW BOARD HAS REVIEWED THIS PROJECT FOR THE PROTECTION OF HUMAN PARTICIPANTS IN RESEARCH.

Appendix D

Parent Information Guide

HOW TO BLOOMZ

| **A PARENT GUIDE**

OBJECTIVE

Quick start to using bloomz

CAPABILITIES

Calendars
Supply lists/requests
Classroom events
Instant messaging
Photo/video sharing

ABOUT BLOOMZ ·

Bloomz is free for you and for your teacher. It's designed to be a safe secure environment for teachers and parents to share information about your child's class.

MORE INFORMATION ·

Go to https://www.bloomz.net/parents/ to watch a video on how bloomz works. Or check out their FAQ page at https://bloomz.desk.com/customer/portal/articles/1655635-teacher-faqs#main

HOW TO JOIN ·

Go to https://www.bloomz.net/parents/ and click on the pink "Join bloomz" button. When asked, choose the option that looks like this:

Join a class/group
(using an access code I received)

And enter the class code shared by your teacher on the information letter.

NEED MORE HELP?

Ask your teacher or contact Javier Castaneda, the researcher, for more help on downloading or using the app. Javier can be reached at fcastaneda@nnu.edu or 971-275-2259.

Appendix E

Communication Measurement Record Quarter 1

		Initiator	Communication Method				Communication Subject						
Date:	Student Number	P-Parent T-Teacher	Phone Call	Text	Paper Note	Email	Attendance	Grades	Behavior	Calendar	Class Needs	Assignments	Other

Appendix F

Communication Measurement Record Quarter 2

		Initiator	Communication Mode					Communication Subject						
Date:	Student Number	P-Parent T-Teacher	Phone Call	Text	Paper Note	Email	Bloomz	Attendance	Grades	Behavior	Calendar	Class Needs	Assignments	Other

Appendix G

Student Grade Record Quarters 1 and 2

Student Grades: Quarter 1

Class: _____ Date: _____

Student #	Parent #	Quarter 1 Overall % Grade

Student Grades: Quarter 2

Class: _____ Date: _____

Student #	Parent #	Quarter 2 Overall % Grade

Appendix H

Focus Group Invitation

It's **TIME** to **REFLECT**...did **things CHANGE?**

Thank you for being part of this study designed to see if the classroom communication app Bloomz can help you better communicate with your child's teacher and know what's going on at school! The study's goal is to help identify if a smartphone app like Bloomz can help parents and teachers communicate. Your child's class took part in this study & it's time to talk about how it went! What did you think? Please come tell me all about your experience...it's completely confidential & participants receive a **FREE REDBOX** code!

Discussion groups will last about 30 minutes. We'll be talking about your experience with the Bloomz app.   Questions? Call Javier at 208-608-6335 or email at fcastaneda@nnu.edu

Appendix I

Focus Group Consent

Thank you for your participation in this study. The purpose of the study is to look for connections between parent-teacher communication and increased math grades of their children. Parents are extremely busy, your time as a parent or guardian is valuable. The purpose for this study is to further research focused on helping parents and guardians use their time wisely to help their children succeed academically. The information gathered in the discussion group regarding your experience with the app will be kept strictly confidential. There is some degree of risk that participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. No individual identities will be used in any reports or publications that may result from this study. All data from notes and focus group transcripts will be kept in a locked file cabinet, password protected computer or in password protected files. In compliance with the Federal-wide Assurance Code, data from this study will be kept for three years, after which all data from the study will be destroyed (45 CFR 46.117). Participation is voluntary and withdrawal is possible at any point in the survey. Upon completion of the parent discussion group, as a thank you for your participation, a Redbox code will be emailed or mailed to you by USPS, whichever you prefer.

Please sign below to indicate you are agreeing that you are 18 years old or older and that you agree to have your responses used confidentially to help further research about parent involvement and academic success.

Printed Name: _____ Date: _____

Signature: _____

Appendix J

Focus Group Question Outline

1. How well did Bloomz work for your family as a way to communicate with your child's teacher? What was your experience with Bloomz like?

2. Did you experience any challenges when using Bloomz? How did that affect your experience with it?

3. Was using Bloomz sufficient for all of your communication with your students' parents or guardians? Were there topics that you thought were better addressed in other ways than with Bloomz?

4. In what ways did using Bloomz affect how often or how likely you were to communicate with the teacher and why? Did communication FROM the teacher change after Bloomz was put into place? In what ways and why do you think so?

5. Have any of you noticed any changes in your child's academic performance or your relationship with your child's teacher since you've been able to communicate through Bloomz? (If yes, then what changes and thoughts about why.)

6. What kinds of things, if any, make it hard for you to communicate with the teacher?

7. For what reasons would you either recommend or not recommend the continued use of Bloomz as a means of communication between teachers and parents?

Appendix K

Teacher Interview Outline

1. How well did Bloomz work for you as a way to communicate with your students' parents or guardians? What was your experience with Bloomz like?

2. Did you experience any challenges when using Bloomz? How did that affect your experience with it?

3. Was using Bloomz sufficient for all of your communication with your students' parents or guardians? Were there topics that you thought were better addressed in other ways than with Bloomz?

4. In what ways did using Bloomz affect how often or how likely you were to communicate with the teacher and why? Did communication FROM the parents or guardians change after Bloomz was put into place? In what ways and why do you think so?

5. Have you noticed any changes in your students' academic performance or your relationship with your students' parents or guardians since you've been able to communicate through Bloomz? (If yes, then ask what changes and thoughts about why.)

6. What kinds of things, if any, make it hard for you to communicate with the teacher?

7. For what reasons would you either recommend or not recommend the continued use of Bloomz as a means of communication between teachers and parents?

Appendix L

Certificate of Completion: PHRP

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Fransisco Castaneda** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 03/21/2016.

Certification Number: 2036555.

Appendix M

Shapiro Wilk Test of Normality Results

Maple Middle School English(A)

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ELA A Q1 Maple	.165	41	.007	.901	41	.002
ELA A Q2 Maple	.138	41	.048	.928	41	.013

a. Lilliefors Significance Correction

Maple Middle School English(B)

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ELA B Q1 Maple	.178	15	.200[*]	.934	15	.315
ELA B Q2 Maple	.115	15	.200[*]	.948	15	.492

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Maple Middle School Math

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MATH Q1 Maple	.119	24	.200[*]	.945	24	.214
MATH Q2 Maple	.096	24	.200[*]	.953	24	.318

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix N

Paired Sample t Test Results

Maple Middle School English(A)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	ELA A Q1 Maple - ELA A Q2 Maple	3.488	6.415	1.002	1.463	5.513	3.481	40	.001

Maple Middle School English(B)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	ELA B Q1 Maple - ELA B Q2 Maple	-3.267	9.239	2.385	-8.383	1.850	-1.369	14	.192

Maple Middle School Math

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	MATH Q1 Maple - MATH Q2 Maple	-1.375	7.689	1.569	-4.622	1.872	-.876	23	.390

Appendix O

Wilcoxon Signed Rank Test Results

Willow Middle School Writing, Reading, and Math

Ranks

		N	Mean Rank	Sum of Ranks
Q2 Writing Grade Point - Q1 Writing Grade Point	Negative Ranks	1[a]	5.00	5.00
	Positive Ranks	5[b]	3.20	16.00
	Ties	4[c]		
	Total	10		
Q2 Reading Grade Point - Q1 Reading Grade Point	Negative Ranks	3[d]	2.17	6.50
	Positive Ranks	1[e]	3.50	3.50
	Ties	6[f]		
	Total	10		
Q2 Math Grade Point - Q1 Math Grade Point	Negative Ranks	6[g]	3.50	21.00
	Positive Ranks	0[h]	.00	.00
	Ties	4[i]		
	Total	10		

a. Q2 Writing Grade Point < Q1 Writing Grade Point
b. Q2 Writing Grade Point > Q1 Writing Grade Point
c. Q2 Writing Grade Point = Q1 Writing Grade Point
d. Q2 Reading Grade Point < Q1 Reading Grade Point
e. Q2 Reading Grade Point > Q1 Reading Grade Point
f. Q2 Reading Grade Point = Q1 Reading Grade Point
g. Q2 Math Grade Point < Q1 Math Grade Point
h. Q2 Math Grade Point > Q1 Math Grade Point
i. Q2 Math Grade Point = Q1 Math Grade Point

	Q2 Writing Grade Point - Q1 Writing Grade Point	Q2 Reading Grade Point - Q1 Reading Grade Point	Q2 Math Grade Point - Q1 Math Grade Point
Z	-1.179[b]	-.557[c]	-2.449[c]
Asymp. Sig. (2-tailed)	.238	.577	.014

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.