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SUPPORTING A SCHOOL COMMUNITY IN TECHNOLOGY KNOWLEDGE AND USE TO BENEFIT STUDENT SUCCESS

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**SUSPPORTING A SCHOOL COMMUNITY IN TECHNOLOGY KNOWLEDGE
AND USE TO BENEFIT STUDENT SUCCESS**

by

Joseph D. Escobedo

Masters of Public Administration, University of New Mexico, 2010
Bachelor of Arts, University of New Mexico, 2002

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements of the Degree of

**Doctorate of Education
Educational Leadership**

University of New Mexico
Albuquerque, New Mexico

December, 2015

DEDICATION

To my Dad, Joseph Donald Escobedo, for always believing in me and pushing me to continue my education. You are not with me now but will always be in my heart. I thank you for the sacrifices you made to give me a better life and for the strong work ethic you taught me. You were gone too early but will forever be my hero!

To my Mom, Gloria Jean Escobedo (Gina), for always having faith in me and telling me that no one could ever take away my education. You have instilled in me a sense of passion for the work that matters including fighting for the voiceless and ensuring that I know that there is a reason for everything. Thank you for your guidance, love, and pushing me beyond my comfort level.

ACKNOWLEDGEMENTS

To my wife, Jamie Alison Escobedo, for your unwavering love, commitment and support. Thank you for your patience and endurance while I earned this degree. Your support in labeling, stamping, and sealing the questionnaires allowed me to get the surveys out on time. Thank you for all that you teach me on a daily basis. I appreciate and love you more than any words can express.

To my sons, Joseph Dominic Escobedo II (Joey) and Jaxon Hayes Escobedo, thank you for understanding what you will not be able to understand for years to come, that I took time away from you to make our lives better. Thank you for your love, compassion, and belief in me as your father. I learn from you every day. To my sisters, thank you for pushing me when I need pushing, checking my reality, and for always believing in the world of possibilities.

To the chair of my committee, Dr. Allison M. Borden, I will be forever grateful for your guidance, perseverance, patience, and support. I will remember our long talks about education, Latin America, leadership, and the countless other topics that helped me continue my journey to become a strong leader. You have helped me personally and professionally in ways for which I will be thankful for the rest of my life.

I wish to thank the other members of my committee. Dr. Arlie Woodrum, thank you for allowing me to just ramble into your office all through my classes, for pushing me to find the right focus for my study, and for understanding my urgency to complete my degree. To Dr. Marjori Krebs, my guide through one of the most difficult professional years of my life, thank you for your understanding, support, for pushing me and reminding me of the faith I needed to complete. I thank you for always being there

when I was pulled in so many directions. To Dr. Peter Winograd, from my days as a lobbyist in Santa Fe to the completion of my terminal degree, you have always treated me with respect and provided support, while pushing me to be a better thinker, writer, and person.

    To my colleagues and friends, from the time I began the doctoral program through the completion of my degree I have experienced tremendous loss, sadness, and failure, and through it all you supported me whether by reading a draft of a chapter, editing the entire document, just asking me where I was in the dissertation process or telling me it was time for a break from it all. I hope to continue to give back to you, our community, public education, and, most importantly, future students and leaders who will continue to make an impact on our nation.

Supporting a School Community in Technology Knowledge and Use to Benefit Student Success

by

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ABSTRACT

The use of technology is a growing part of the educational environment inside and outside of the classroom. In addition, all of the actors in a school community, families, teachers, and community members, play a role in the academic success of students. The convergence of the use of technology and the increased role of community in student success is important for educators and policymakers to understand. The deeper understanding of how all the actors in a school community can work together is nothing new, but it is how these actors participate and support technology initiatives through collective impact that makes this study unique.

Educators across the country have begun to focus their attention on the work of implementing one-to-one technology devices for each and every student. Such implementation has taken place on a small scale in some districts with just a few hundred students and was attempted in one of the largest school district in the nation, Los Angeles Unified School District but was quickly discontinued. In 2003, New Mexico was one of the first states to start such an initiative with the investment of $8 million, but found there needed to be more training and coordination between the state, district, and teachers.

This study answers three questions: Which technology devices and what kind of access do students from a large urban elementary school have? What are parents' perceptions and knowledge of the impact of technology access on student success? What supports does the school community need to contribute to technology knowledge and use at home to benefit student success? I found that there is a presence of devices in households and there was far more connectivity than I would have predicted based on national and local studies. The families in the Emerson community support the use of

technology inside the classroom but are split on their support of purchasing technology over textbooks. Finally, there is a strong request for classes and engagement of families, community members and teachers so that they, too, can know and understand the devices and software that are being used to support the educational environment of students.

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Introduction

The use of technology is a growing part of the educational environment inside and outside of the classroom, as is the need to ensure that all of the actors in a school community have a part in any initiative. The convergence of these two trends is important for educators and policymakers to understand. We must understand the necessary supports that go into these initiatives in a school community. I am interested in understanding the technology assets students have at home, the perceptions parents have of technology use and its impact on student success, and ultimately, the assessment of needs that supports the entire community to ensure that a technology initiative is implemented to support student success. This deeper understanding of how all the actors in a school community can work together is nothing new, but it is how these actors participate and support technology initiatives through collective impact that makes this study unique. Collective impact can be understood as, "the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem" (Kania & Kramer, 2011, p. 36). In this study I examined the social problem of the digital divide through an asset view rather than a deficit view (Becker, 2006; Cleary, Pierce, & Trauth, 2006). My goal for this study was to understand how to better support families, teachers, school leaders, and community members in acquiring technological knowledge and making the best use of technology at home to contribute to student success.

Educational Background

Sixty years ago, the United States Supreme Court attempted to tackle the issue of equal educational opportunities in *Brown v. Board of Education, Topeka* (Bell, 2004). It is important to understand its ruling that "separate is not equal" because, as a result of the ruling, for decades school districts have adopted specific educational programs in hopes of guaranteeing parity for all students regardless of their race, ethnicity, or national origin. Students, however, continue to be subjected to segregation or bias because of inferior academic environments that perpetuate the cycle of poverty in which many urban students reside. In addition, some students are subjected to deplorable and inhumane conditions in their learning environments where "many of the schools with the most devastating academic records are also physically offensive places" (Kozol, 1991, p. 151). Inequality goes beyond the physical deficits of the school buildings in which so many of our urban students reside. In fact, many of the students are not getting the same access to what other schools consider as basics, including computers, laptops, interactive whiteboards, and other technological devices that provide exposure to our technological economy (Kozol, 1991). The rapid emergence of technology in our schools brings us back to *Brown v. the Board of Education* and the importance of continuing to ensure that every student has equal educational opportunities. It is essential that every student "develop basic technology literacy skills to be afforded the opportunity to become a full participant in our society" (Morse, 2004, p. 267).

In study after study, huge inequity has been revealed in the access to and quality of educational technology for students depending on their race, socio-economic status and the school that they attend (Becker, 2006; HART Research Associates, 2012;

Jackson, von Eye, Biocca, Barbatsis, Zhao, & Fitzgerald, 2006; Morse, 2004). Multiple

studies have concluded, "there exist significant disparities in access to high-quality

technologies and serious inequities in how technology is distributed to and used for

different groups of students" (Becker, 2006, p. 5). However, the importance of

technology in education continues to be debated. One official from the Federal

Communication Commission said technology is like a Mercedes when all you need is a

Chevrolet in order to educate students; others call the inequitable access to education a

violation of civil rights (Becker, 2006). What is clear is that there is now a system of

technological "haves" and "have nots."

         As technology continues to become embedded in our educational environment,

we need to examine the access to technology and the internet connectivity that students

have in their homes. Beyond just access and connectivity is the need to understand how

school communities use technology to benefit student success. As more and more school

districts begin to implement one-to-one initiatives, they also must ensure these resources

are available for home use and that there is connectivity available. In addition to making

available the resources for home use to support student success, it is important for entire

school communities to support technology in an effective way. This is important because

many actors in a school community play a role in supporting individual students, so we

must ensure that the community members understand and implement the technology

resources for the benefit of the students.

         The use of and need for technology in the classroom have increased exponentially

over the past decade (Shelton, 2011). There are additional pressures on schools not only

to perform, but also to ensure that students are ready to compete in our economic

environment (Molnar, 2014). The promotion of technology in the classroom is coming

from multiple directions at the federal, state, and local levels. At the federal level, one of

the discussions is about encouraging teachers to embrace technology so that students will

not be bored in the classroom (Shelton, 2011). United States Department of Education

Deputy Secretary Jim Shelton said, "Students have been locked down by the concept of

seat time and locked out of the technological revolution that has transformed nearly every

sector of American society, except for education" (Shelton, 2011, para 1). With the

national attention paid to technology from agencies like the U.S. Department of

Education, Shelton believes it will make a difference in academic achievement, finding:

> To prepare today's students for tomorrow's jobs and rapidly changing society, we
>
> must build a high quality and highly effective education system that takes
>
> advantage of everything we know from the learning sciences and every learning
>
> tool and opportunity available. This is especially true given the 'New Normal' of
>
> needing to do more with less. (Shelton, 2011, para 2)

> More recently, President Barack Obama announced the nation's ConnectED

initiative with the focus on connecting more schools and students to high speed

broadband technology in the coming years (Molnar, 2014). Calling on the importance of

having high speed broadband for the success of all students, Congressmen Jared Polis and

Chris Gibson wrote that the hope for digital education offers personalized pacing and

coursework to challenge every student. They believe:

> If our children are going to compete in the 21st-century global workforce, we must
>
> educate them differently from the way we did in the 19th century. Instead of
>
> telling students to 'power off' when they enter the classroom, we should integrate

technology into lessons where it can be used effectively to engage and motivate

students. (Polis & Gibson, 2014, para 3)

President Obama and both congressmen supported the expansion of the E-rate

funding from the Federal Communications Commission (FCC). The E-rate program was

designed to provide all public and private schools and libraries access to affordable

telecommunications and advanced digital technologies (The Urban Institute, 2000).

School districts that wish to participate in the program must make an application based

upon the percentage of students eligible for participation in the National School Lunch

Program. The FCC has discussed focusing their efforts on ensuring that schools are

prepared for digital learning.

At the state level, New Mexico has put into place new graduation requirements,

beginning with the Class of 2013, that require students to take an Advanced Placement,

honors, dual credit or distance learning class (Albuquerque Public Schools, 2012; Lomax,

2008). All of these courses require some use of technology, and distance learning relies

solely on technology. These new graduation requirements were put into place by the

state of New Mexico to prepare students for tomorrow, echoing the push from the U.S.

Department of Education (Shelton, 2011).

In addition, the state of New Mexico adopted the Common Core State Standards

(CCSS), which were phased in over three years with full implementation in 2015. The

New Mexico Public Education Department described the CCSS as a "different approach

to learning, teaching and testing that engenders a deeper understanding of critical

concepts and the practical application of that knowledge" (New Mexico Public Education

Department, 2012, p. 1). With full implementation of the CCSS, students are now given

an assessment that has been developed and administered by the Partnership for

Assessment of Readiness for College and Careers (PARCC). The PARCC allows New

Mexico to compare proficiency levels with students in other states, although the exact

number is constantly evolving as political pressure mounts over the implementation of

the Common Core. In 2014, there were 15 states and the District of Columbia listed as

participants on the PARCC website, currently there are only 11 states that are

participating (New Mexico Public Education Department, 2012; Partnership for

Assessment of Readiness for College and Careers, 2014; Swedien, 2014).

These assessments are delivered online, which has raised many concerns over the

logistics of administering these exams due to a lack of computers, bandwidth, and overall

infrastructure at many schools in the state (Swedien, 2014). The New Mexico Public

Education Department indicated:

Districts received funds in the State Equalization Grant to pay for production

costs for tests and to report test results. It is anticipated that this funding will

continue. The cost of the PARCC assessment is now unknown and we will

reconsider funding needs as new information is made available. (New Mexico

Public Education Department, 2012, p. 1)

Beyond the logistical needs of the schools, the use of computers by students needs

to be taken into account. A recent pilot study suggested this might not be a problem as

"fourth graders are capable of using a computer to type, organize, and wrote well enough

to be assessed" (Heitin, 2014, p. 2). Findings from a study conducted by the National

Center for Education Statistics cautioned that the results of a computer-based test might

not offer a true measure of students' writing abilities. The small pilot study did not

compare how students performed on the computer-hosted test compared to hand-written tests taken in the past (Heitin, 2014).

At the local level, all of these issues are being played out in the classroom. Albuquerque Public Schools is ahead of the curve in some respects when it comes to technology infrastructure. However, as the APS administration pushes for technology in classrooms to help support academic achievement, equity across the district continues to remain a problem (Albuquerque Public Schools, 2014c). In addition to ensuring that the curriculum and professional development for teachers are available to enable teachers to use these digital tools, the district must also ensure that technology safety, security, and the infrastructure are maintained and up to date (Albuquerque Public Schools, 2014c).

Economic Background

Beyond the general educational impact technology has on students, there is a real need to focus on ensuring that students are technologically literate in the economic environment in which we live (Goldin & Katz, 2008). What we now must understand is that our global economy relies on technology:

> Information technology (IT) has wrought fundamental changes throughout
> society. IT has instrumented the shift from an industrial age to a network age.
> We now live in a society in which the production, acquisition, and flow of
> knowledge drive the economy and in which global information networks
> represent key infrastructure. (Servon, 2002, p. 1)

Since 1980, economic inequality has been exacerbated as the earnings of college graduates rose at a much faster rate than for those who only graduated from high school. During the same time, the income of top managers and professionals increased at a

greater rate than those of everyday workers (Goldin & Katz, 2008). For decades, many

researchers have searched for the reasons why economic inequality has become so

pervasive with "a key suspect [being] skilled-biased technological change, particularly

which involved the use of computers" (Goldin & Katz, 2008, p. 90). Technological skills

are important for all students because "those who fail to acquire such skills are seen to be

at risk, not merely of unemployment, but also of a kind of disenfranchisement, as they

will be unable to participate fully in the future 'information society'" (Buckingham,

2007, p. 16).

　　　　Our economy already heavily relies upon technology and students who will soon

be contributing to this economy need to be able to use the latest software and hardware.

Globally, access to the internet is relatively small in terms of numbers of users and those

who have access are at a different advantage. In 2002, for example, "only about 7

percent of people on the planet [were] connected to the internet, in contrast to an average

40 percent in the European Union, above 50 percent in North America, and above 60

percent in Scandinavia" (Servon, 2002, p. xvii). Today those numbers are improving,

about 39% of people in the world are connected to the internet, North America has 84.9%

of the population connected compared to Europe, which now has 68.6% of their

population connected (Miniwatts Marketing Group, 2014, p. 1).

　　　　Unfortunately, there is a growing digital divide in the United States that, as with

most social issues, is based on socio-economic factors such as income, ethnicity, and

education (Cleary et al., 2006). In 2010, The United States Department of Commerce

reported that households with lower incomes and less education, as well as Blacks,

Hispanics, people with disabilities, and rural residents, were less likely to have internet

service at home. In addition, 81% of Asian households and 72% of White households had

broadband at home, compared to 57% of Hispanic households and 55% of Black

households (Bureau of the Census for the U.S. Department of Commerce, National

Telecommunications and Information Administration, 2012). It is essential to keep these

statistics in mind as school-related technology decisions are being made not only at the

federal and state levels but more importantly at the local level.

What we do know from the economic research that examines inequalities and

technology skills is that "technological changes are not, in themselves, responsible for the

increase in inequality in the recent period, just as they are not responsible for the decrease

in inequality during the earlier part of the twentieth century" (Goldin & Katz, 2008, p.

125). In recent years, the focus in academics has been on math and reading because of

standardized testing that assesses those subjects (Goldin & Katz, 2008). The skills that

students will need and the information they must possess when leaving school go well

beyond these two subjects (Shelton, 2011). As we move forward with educational

technology initiatives we must respect the need for technology literacy while maintaining

strong instruction in literacy and mathematics to ensure we have a workforce that can

support our economy (Fullan, 2013; Fullan & Langworthy, 2013).

Education and Economic Background

The true impact of technology on education continues to be debated (Fullan,

2013; Jackson et al., 2006). Technology in the home is a strong predictor of academic

success in the following ways: it can enhance student achievement on standardized tests;

exposure to technology at early ages is a predictor of college success; students exposed to

technology demonstrate higher-order thinking and problem solving skills; it is essential to

support making students eligible for future employment; and those who are in the workforce and are able to use a computer at work stand to earn 15% more income than a person lacking technology skills (Wilhelm, Carmen, & Reynolds, 2002, p. 3). This points to the educational and economic benefits of having technology in our current educational environment. At the same time, we must understand that everyone's level of comfort and experience with technology is truly individual:

> Popular technology assumes that all people have a rich array of experiences with technology, shaped by their social location, and that these experiences provide a valuable resource for thinking collectively and critically about the relationship among technology, politics, citizenship, and social justice. Popular technology entails shifting from vocational approaches that teach technological skill to popular education approaches that focus on nurturing critical technological citizenship. (Eubanks, 2012, p. xx)

Without a focus on how technology can and should be used to support student achievement now and in the future in our educational institutions these initiatives and investments will be for naught. This will exacerbate the problem because "massive investment in science and technology without simultaneous investment in a more just society is an investment in increasing political and economic inequality" (Eubanks, 2012, p. xvi). We need to focus on supporting improvement of educational practice by all actors in a school community given that "the only way to change educational practices is to change the beliefs and values of teachers, administrators, parents and other educational stakeholders – and that's a cultural issue, not a technological one...It's about processes and people rather than bits and bytes" (Tahnk, 2014, para. 5).

These investments cannot just be for future generations but need to be discussed with those who are currently in the job market and need to scale up their knowledge to be able to compete in this economy (Goldin & Katz, 2008). It is important to examine how individuals use the internet to support their professional development given that:

Education and family income levels also reveal disparities in Internet use for job training or courses. Only 9 percent of Internet users without high school diplomas participated in online job training or courses, compared with 12 percent of high school graduates, 23 percent of those with some college credit, and 32 percent of college graduates (see Figure 4). Similarly, 15 percent of online Americans with annual family incomes below $25,000 used the Internet for job training, compared with 31 percent of those with family incomes of $100,000 or more. (U.S. Department of Commerce, 2013, p. 7)

In my opinion, it is clear that Americans are using the internet more frequently to help them find jobs and for job training, skills students will need to fully be able to use as they complete their K-12 education. It is no longer just a benefit to be able to conduct research and to be able to write a paper for class. It is important to understand how to use the internet as one of the required skills to be able to better one's future in this economy through training and job searching. There is and will continue to be a demand for IT jobs that have:

A unique opportunity for moving disadvantaged people into good jobs. IT jobs tend to be good jobs. Many require less than two years of training and, as the economy continues to shift in ways that require more IT skills from workers, these opportunities will continue to be available. (Servon, 2002, p. 141)

It is important for children to see their parents and other adults interact with technology. The importance of having students understand and connect with their familial surroundings is the basis for what is called funds of knowledge. The basis of this concept is that this gives students an avenue to grow their own interests while having respect for their current situation including their families, community and culture (Hedges, Cullen, & Jordan, 2011). This has been tested and, "the major findings were that children's interests and inquiries were stimulated by their funds of knowledge constructed during participation in everyday life experiences" (Hedges, Cullen, & Jordan, 2011, p. 197).

In conclusion, it is important to understand technology investments and initiatives through an educational and economic lens. In doing so, we must invest, research, analyze and support students while recognizing that:

> Focusing on youth requires patience, because it will take years to realize the payoff. Obtaining a significant public sector commitment to such a strategy may be difficult, given that it requires policy makers to think and act beyond the timeframe of election cycles. (Servon, 2002, p. 225)

This is important for us to remember when analyzing the findings from this study and making policy recommendations.

Access and Equity as a Legal Imperative

The importance of public education in our society is at the forefront of every election and appears during every election cycle (Iyengar & Simon, 2000). The arguments mostly range from discussing adequate funding or cutting the waste in education to discussions about major reform efforts that candidates want to implement

(Iyengar & Simon, 2000). However, most do not discuss the legal imperative of what current law states should be guaranteed for public school students. We have come to understand that "equal" is not necessarily equitable. In New Mexico, nearly all state-level school operational funds are distributed through the Public School Fund. More than 90% of school districts' operational revenues come from the State Equalization Guarantee Distribution (SEG). The SEG became law in 1974 under the Public School Finance Act to guarantee each student in New Mexico equal access to programs and services appropriate for his or her educational needs regardless of geographic location or local economic conditions (Burrell, 2009). Districts receive other operations funds outside of the SEG for transportation and instructional materials.

In addition to operational money, schools receive funding for Capital Outlay, which pays for bricks and mortar construction and technology. Also, districts can pay for technology using the Public School Capital Improvements Act. This act, which is commonly referred to as SB-9 or the "two mill levy," allows districts to ask local voters to approve a property levy of up to two mills for a maximum of six years (Burrell, 2009). "Purchasing computer software and hardware for student use in public school classrooms," is an acceptable use of the SB-9 funds (Burrell, 2009, p. 12). School districts may also use funds from the Public School Buildings Act, referred to as HB33. This allows for expenditures to be made for technology to equip a school building (Burrell, 2009).

School districts may request direct legislative appropriations for capital outlay projects, which allows individual legislators to sponsor specific projects for their districts. These funds come from the general fund or from the proceeds of the sale of severance tax

bonds. In recent years, it has become increasingly common to see direct legislative appropriations to schools and districts for the purchase of technology. Districts also have the ability to issue general obligation bonds not only for the building or renovation of existing buildings but also to purchase computer equipment and software for student use in classrooms (Ritzhaupt, Hohlfeld, Barron, & Kemker, 2008).

In 1994, recognizing the growing need for additional technology equipment in the state, the New Mexico Legislature passed the Technology for Education Act. The legislation mandates that the state Public Education Department develop a statewide plan for the integration of education technology, approve district technology plans, and make distributions from the educational technology fund with oversight and guidance from the Council on Technology in Education. This was revolutionary and even received national attention in 2001 in *Education Week.* The attempt to support equitable technology resources went beyond just hardware: "The state is giving low income and low-performing schools the highest priority for teacher training in an attempt to address the digital divide. Such training, given to teachers with an average of seven years on the job, is reviving teachers who have begun to feel burned out" (Gewertz, 2001, p. 94).

Figure 1 shows an analysis of funding from the Educational Technology Fund, which was created as part of the act in 1994. Funding since 2003 has varied widely for school districts, with the largest school districts receiving the largest amounts of funds to support technology. In the past three fiscal years, there has been no funding for the New Mexico Educational Technology Fund, including the 2015 fiscal year. However, in 2014, the Legislature passed and the governor signed into law a bill that allows for the statewide Public School Capital Outlay Council (PSCOC) to award up to $10 million

annually to school districts to correct technology infrastructure deficiencies (Legislative

Education Study Committee, 2014). This funding does not distribute the funds through

the Educational Technology Fund but allows the quasi-legislative committee, PSCOC, to

distribute the funds based on needs. This ignores the requirements of having a

technology plan and ensuring that the funds are used to create technology equities.
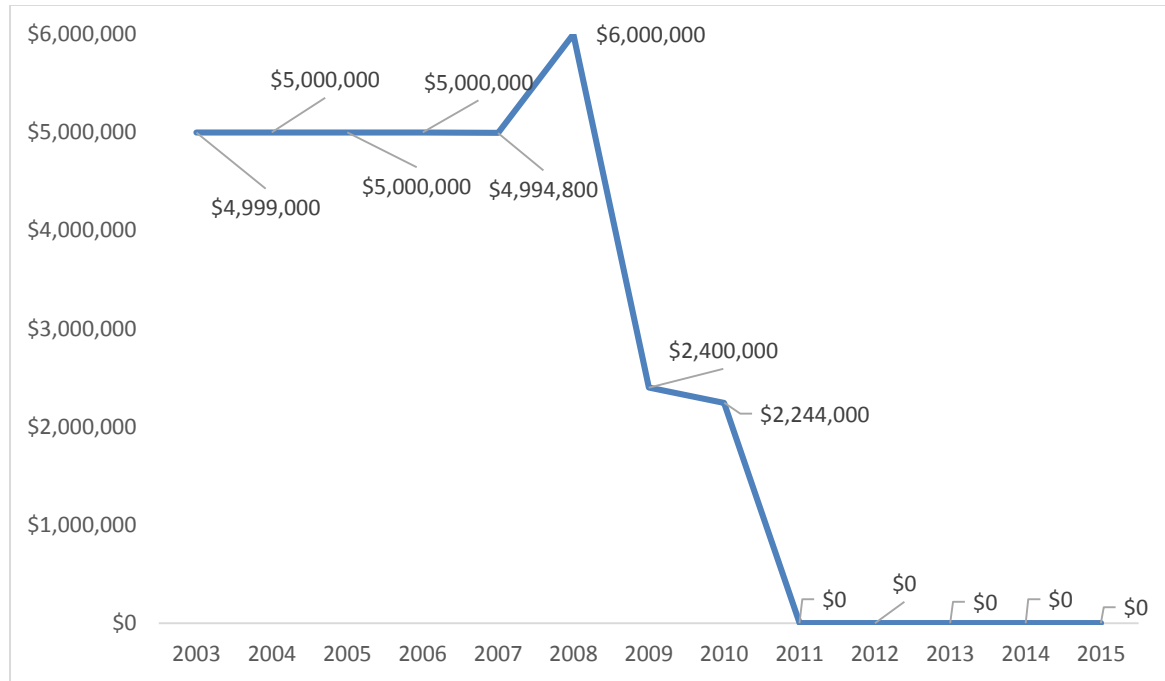
Figure 1. New Mexico Educational Technology Fund 2003-2015 (Legislative Education

Study Committee, 2014)**.**

Ultimately,

The intent of the 1974 Public School Finance Act [22-8-17 through 25 NMSA

1978] is to equalize financial opportunity at the highest possible revenue level and

to guarantee each New Mexico public school student equal access to programs

and services appropriate to his or her educational needs regardless of geographic

location or local economic conditions. (Burrell, 2009, p. 5)

The access to programs and services has been determined to be a mixture of educational programs that we see in the 89 school districts in New Mexico with little consistency. The programs and services range from the core instructional programs of English, math, and science to fine arts and athletic education (Burrell, 2009). It can be argued that technology is a program and service to which students should be given equitable access. Nationally, it is estimated that it would cost $15 billion to supply all the technology that schools need, and that can be estimated to be in the tens, if not hundreds, of millions of dollars in New Mexico (Tahnk, 2014). It is incumbent upon state policy makers to realize this for the future success of each and every student in the state.

Albuquerque Public Schools

Ensuring that more than 90,000 students and 11,500 employees in the Albuquerque Public Schools have the technology they need to do their jobs is no easy task (Albuquerque Public Schools, 2014a). The Technology Department at APS is responsible for ensuring the infrastructure behind the technology is up and running; that proper security is in place; all telecommunications functions are in working order; that there are personnel to respond by phone and in person for technology needs in the classroom and at any of the district's 148 sites (Albuquerque Public Schools, 2014c). Albuquerque Public Schools has put into place a five-year Technology Master Plan that outlines a long-term vision of supporting technology in the classroom, not only for students but teachers and other professionals in the district as well. In addition, it aligned the technology needs and technology supports with the district's goals of improving academic achievement (Albuquerque Public Schools, 2014c).

The curriculum, instruction, and technology departments in the state's largest school district have laid out a plan for implementing one-to-one computers in the district. The plan focused on supporting students who are in the millennial generation and have grown up with technology around them (Green & Jacobson, 2014). The district focused its plan on creating equitable opportunities to acquire 21st century skills where "technology is leveling the playing field, giving students and teachers who are challenged by their circumstances access to the education they need to succeed in the 21st century" (Green & Jacobson, 2014, p. 4). The plan states that this initiative will help improve academic achievement and ultimately close the achievement gap. The goals also include a focus on engaging learning more effectively, adding innovation to the classroom, more online and blended learning, and giving students the option for anytime and anywhere learning (Green & Jacobson, 2014). In addition the plan is touted as creating personalized learning and is meant to "honor every student's unique talents, support their learning modalities, reinforce learning styles and allow them to have a stronger voice in their own learning" (Green & Jacobson, 2014, p. 6).

Statement of the Problem

As we focus on the possible impact of technology on the educational environment, educators have to remember the need to develop technology literacy for students. Educators across the country have begun to focus their attention on the work of implementing one-to-one technology devices for each and every student. It has been implemented on a small scale in some districts with just a few hundred students and it was attempted in one of the largest school districts in the nation, Los Angeles Unified School District but was stopped shortly after the initial implementation (Herold, 2014).

The talk of one-to-one initiatives in New Mexico is not new. In fact, the state was at the

ground level of the initiatives when former Governor Bill Richardson proposed the idea

in 2003. The work on this initiative moved forward quickly and with support throughout

the state based on the belief that this would be a game-changer in education. Between

2004 and 2007 the state of New Mexico invested more than $8 million in this initiative

(Rutledge, Duran, & Carroll-Miranda, 2007). The Santa Fe Public School District is

moving forward with a plan to have all 14,000 students possess a computer or tablet

within the next five years. The total cost of the plan will be between $50 and $55 million

(Nott, 2014).

At this stage of implementation of one-to-one laptop initiatives in several states,

the biggest impact on students occurs through daily practice on using the technology that

will benefit them long into their careers (Penuel, 2006). Literacy skills have improved

along with writing skills, because of the use of the technology for collaborative practices

(Penuel, 2006). What still is not clear is how or if one-to-one initiatives will have a clear

impact on academic achievement for students in core subjects such as reading, math,

science and social studies (Penuel, 2006). Beyond that, there is professional development

support needed for teachers, principals, school leaders, community members, and, most

importantly, parents (Eubanks, 2012; Gonzalez, Moll, & Amanti, 2005). This is most

important for parents because of the theoretical work that has been explored through

funds of knowledge, the impact that is made on students when they can emulate what

their parents do and know, which in this case is the use of technology (Gonzalez et al.,

2005).

It is not clear how families, teachers, school leaders, and community members should be provided with technology knowledge and opportunities to use technology in their efforts to support student success. I believe this must be approached using a collective impact lens in order to understand that all the actors in the school community play a critical role in supporting students (Kania & Kramer, 2011). Collective impact makes everyone equal players in the complex work of addressing social issues like education and it allows for,

> The heightened vigilance that comes from multiple organizations looking for resources and innovations through the same lens, the rapid learning that comes from continuous feedback loops, and the immediacy of action that comes from a unified and simultaneous response among all participants. (Kania & Kramer, 2013, p. 2)

These three important parts of collective impact show why it is important to understand the supports that are needed so that they can be put into place before major technology initiatives like one-to-one devices are implemented.

Purpose of the Study

The purpose of this study was to identify and describe the support systems needed by a school community when planning and implementing student technology initiatives intended to increase student academic success.

Research Questions

1. Which technology devices and what kind of access do students from a large urban elementary school have?

2. What are parents' perceptions and knowledge of the impact of technology access on student success?

3. What supports does the school community need to contribute to technology

   knowledge and use at home to benefit student success?

Theoretical Framework

The theoretical framework for this study came from the work of Gonzales, Moll,

& Amanti (2005). The basic assumption is, "the more that participants can engage and

identify with the topic matter, the more interest and motivation they will have" (Gonzalez

et al., 2005, p. 9). This can be applied to the importance of principals, parents, teachers,

and community members engaging in the topic of technology to support student success.

If we "[capitalize] on household and other community resources, we can organize

classroom instruction that far exceeds the quality the role-like instruction these children

commonly encounter in schools" (Moll, Amanti, Neff, & Gonzalez, 1992, p. 132). In this

way, everyone has a role in helping improve student success and the funds of knowledge

framework (Gonzalez et al., 2005) can be expressly used as new initiatives such as

technology are introduced to the school culture where "all of the actors need to be able to

have "respectful talk between people who are mutually engaged in constructive

conversation" (Gonzalez et al., 2005, p. 8).

The conceptual framework I utilized for this study takes this idea and applies it to

how the actors must have two-way conversations to support initiatives in order for them

to be successful. What is key in this theoretical framework is that communication is

necessary and that all the actors have the same understanding, support, and clear focus on

the goals that should benefit not only the school but the students themselves. The

networks that are formed when a school community understands the funds of knowledge

that are important for student success because "these networks are flexible, adaptive, and

active," and might "involve multiple persons from outside the homes" (Moll et al., 1992, p. 133). Such networks are "'thick' and 'multi-stranded,' meaning that one may have multiple relationships with the same person or with various persons" (Moll et al., 1992, p. 133). Relationships develop around the whole child, not just academically but socially and emotionally, which include the history the student possesses (Moll et al., 1992). The second key part of the funds of knowledge exchange is that "reciprocal practices establish serious obligations based on the assumption of 'confianza' (mutual trust), which is reestablished or confirmed with each exchange, and leads to the development of long-term relationships" (Moll et al., 1992, p. 134). Both of these important aspects of funds of knowledge can be developed in the classroom, but all school actors play a role, from the staff member cleaning the cafeteria to the uncle who picks the child up from school. All of this work supports students and their families in developing and exchanging resources, including "knowledge, skills, and labor, that enhance the households' ability to survive or thrive" (Moll et al., 1992, p. 133).

Under the funds of knowledge theoretical framework for this study, it is important for all actors in a school environment to understand when a new initiative is being put into place. When the community is working together on the basis of funds of knowledge to support student achievement, they can support one another to ultimately support the student for success. It will be important to understand the supports that all of the actors in the school community need to support initiatives like technology implementation for all students. With this in mind, it is important to move on from our traditional thinking of technology "as a destiny, not a scene of struggle; a product not a site of possibility; a static, a historic thing not 'an ambivalent process of development suspended between

different possibilities'" (Eubanks, 2012, p. 21). We may move on to an understanding of

how technology can impact student success and how all the actors in a school community

play a role.

Personal Perspective on Theoretical Framework

I have had personal experience as a parent with the need to become involved in

technology enrichment for my child. Two years ago, my 9-year-old son entered the

second grade reading below grade level. During his first parent-teacher conference, his

teacher indicated that Joey would need to focus his academic efforts to improve his

reading skills in order to increase his proficiency and ultimately to be able to move on to

the third grade. We also discussed the need for extra support for Joey to become

proficient. Although I am a non-traditional educator and my wife is a math teacher, we

were at a loss as to how to help our child. Joey's teacher strongly encouraged him to use

technology to give him the extra support that he needed to improve his reading. The

teacher went beyond mentioning an application that we would need to download on the

family's three iPads. She sat with us, showed us how to download it, how to log on to the

program, how to use it, and ultimately how she would be able to track his progress.

Slowly but surely, with the combination of extra attention in class and the technological

support of the iPad at home, Joey was reading at grade level by the end of second grade.

What provided even more support is that to curb the summer loss in reading skills, his

teacher showed us how Joey could use the program to ensure he was at a reading level

when he began the third grade. This teacher made certain all the actors were involved to

support Joey's reading and provides a concrete example of why the funds of knowledge

conceptual framework is so important for this study.

Conceptual Framework

It is imperative as educational initiatives are put into place that all the actors in the school community have a clear understanding, buy-in, and support for these initiatives (Gonzalez et al., 2005). This is important because if we do not have all of the actors engaged in any major initiative, such as technology implementation, the ultimate goal goes unnoticed and unsupported. As technology continues to permeate the school walls, it also is important that the school community support these initiatives to be successful (Moll et al., 1992). As seen in Figure 2, the Conceptual Framework for this study focuses on the need for two-way communication among all the actors in the school community, including principals or school leaders, teachers and staff, parents, and the community at large. As shown in this Conceptual Framework, when the actors all have active buy in, and understand the opportunity for communication, they can support not only the school but more importantly, student success.
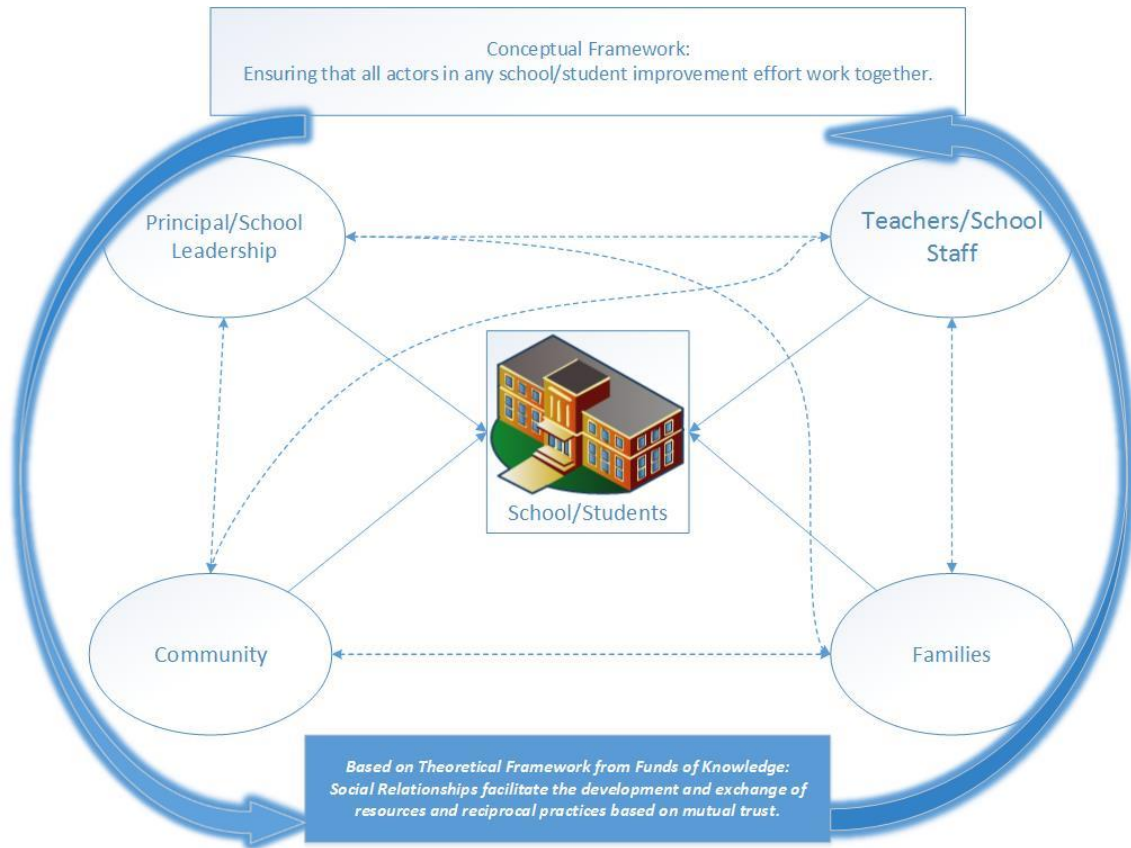
Figure 2. Conceptual framework for supporting a school community for technology knowledge and use to benefit student success.

Definition of Terms

Access. Having the ability to use digital devices that are connected to the internet, including the ability to have support by all members of the school community to effectively use them to support student success.

Connectivity. Having the ability to use a digital device to access the internet or to communicate with another computer.

Student Success. Students who are prepared with mathematics, literacy and technology skills to be able to be productive participants in the work force and economy.

Technology. Any electronic device that is available and used by students.

Community. Individuals who interact with Emerson Elementary School to support the school in a variety of ways including businesses and collaborative organizations in the school neighborhood that influenced the school or student success. In this study, community schools is referred to as an initiative, where the school community includes the actors who support the school through a wide variety of ways.

Digital Divide. "Inequalities in access to computers and the Internet between groups of people based on one or more dimensions of social or cultural identity" (Gorski, 2005, p. 3).

One-to-One Initiatives. The act of school districts issuing to enrolled students an electronic device, which may be a laptop, tablet or other digital device to access the internet and digital curriculum including electronic textbooks.

Delimitations

The study was conducted during the 2014-2015 school year and only included those participants who had a connection to Emerson Elementary School. The school, which is part of the Albuquerque Public Schools, is located in the southeast part of the city in an area known as the International District. The population included parents or guardians of 509 students at the school, where all students qualify for free-or reduced-priced meals, meaning they live near or below the poverty line; more than 80% are Hispanic and 45% are English Language Learners, meaning English is their second language (Genne & Brigman, 2014). The school has been historically low performing, has been plagued by myriad challenges for years, and has gained a reputation that mirrors the community it anchors. Researchers from the Albuquerque Public Schools (APS)

conducted qualitative interviews with staff members to get a description of the area in which the school is located and reported, "the children in this district have parents that die from gunshot wounds, they see drug deals, they walk over broken glass and dirty syringes to get to school" (Heath & Damle, 2012, p. 9). However, with a fresh vision, this dismal picture of Emerson is slowly changing from a site of despair to one of hope infused with new leadership and massive redesign effort (Heath & Damle, 2012).

This case study is bounded by four different groups of school actors, which include families, community members, teachers, and school leaders who make up the Emerson community. The school community members may be family members of students who attend the school but are specifically defined as individuals or groups who interact with the school on a continual basis through direct or indirect ways. These individuals are separate from teachers and school leaders because they are all are defined as not being paid by the school district for any support or services that are given. I selected this school for this study because I believe that conditions at Emerson mirror those found in many schools in our country that are set in large urban school districts. Emerson has had a history of challenges, including academic and social/emotional concerns that have been the targets of attempted improvement efforts for many years. This school, like many across the country, is under pressure from the federal, state, and local level to improve test scores while improving the community in which it resides. I used this one school as representative of other schools in the country in an effort to determine the kinds of the supports that principals, school leaders, teachers, parents and community members need when technology initiatives are put into place.

Significance

As more and more school districts across the country and the state of New Mexico embark on initiatives intended to put more technology devices in the hands of students, it is important to understand what assistance all school community actors need to ensure that the students have success. The principal and school leadership set the direction of the school and are instrumental in supporting instructional practices inside the school house door. Inside the classroom, teachers take over those instructional practices that they have learned from their pre-service education and professional development. They also are responsible for supporting the students beyond the classroom by helping them learn through educational activities outside the school day when parents, grandparents and other guardians play a crucial reinforcing role. It is important to understand this because of the positives and negatives of access (or the lack thereof) to technology. The biggest problem with technology, aside from "its dark side, including cyberbullying and inappropriate sexting" is that "it isn't present much. The digital life of students is largely outside schools, and it is a fairly undisciplined world, recalling worries of our distractor critics who see superficiality and long-term diminution of the brain as problems" (Fullan, 2013, p. 12). Beyond that, the school community as a whole plays a role in supporting education, whether it be by providing after-school programs, health and wellness services, or other community support outreach.

What we know about successful practices for school reform is that all the actors, the parents, principal or school leader, teachers, and community members must understand and support the initiative for it to be successful for students and the school (Gonzalez et al., 2005). We are still working on identifying supports that a school

community needs to ensure that technology knowledge and use at home are of the

greatest benefit for the students' success. Many times when districts and schools roll out

initiatives, there are top-down models that do not take into account the individual needs

and wants of the actors in the school community. Through this study, I examined the

supports that are needed when one-to-one initiatives are implemented.

I asked the actors from the school community about the assistance that they need

to support these major technology initiatives. The information that I gathered will

contribute to a deeper understanding of the need for professional development,

communication about the initiatives, and how to have all the actors understand the

importance of technology in student success.

Elementary schools in urban settings have become the center of the community

and need to have their doors open beyond the school day in both the morning and after

school hours. This helps to ensure that students have a safe place to go, that they get

proper nutrition, and that their mental and physical needs are taken care of so that they

can focus on their academics, which now must include technology literacy.

Conclusion

The importance of ensuring that all students have equitable opportunities is

paramount when discussing technology implementation in schools. What students should

know when leaving the confines of a schoolhouse is important to understand as well as

the economic impact of that knowledge. It is also important to look at the digital divide

in a larger context, to look at the role of parents and the community in student learning

and success, and how to bridge the digital gap to ensure the best opportunities and

advancement of each individual child. My goal for this research project was to

understand what all the actors in an individual school community need in order to support

student success, especially as this pertains to technology initiatives to provide increased

access to electronic devices for each and every child.

Chapter Two

Review of the Literature

Introduction

Technology is everywhere these days. We use it when we pay for our groceries and for our gasoline. We use computers in our workplaces. We even carry a mini-computer in our pocket if we have a smart phone. The educational impact of technology is ever-changing, inside and outside of the classroom. The bottom line with technology is that:

> Students use it to produce work; teachers use it as part of learning activity design, incorporating multiple digital resources and strategies from video lectures to social media to gaming to expert inquiry; new assessments use technology in a myriad ways; and schools and systems use it for collaboration, data sharing, learning analytics and stakeholder communication. (Fullan & Langworthy, 2013, p. 17)

While there remains a large digital divide along racial and socio-economic lines in this country, I approached this research from the point of view of understanding which technology devices and the type of access a school community has and how they can be used to support increased student success.

Beyond the digital divide it is important to look at connectivity rates across the country and more importantly in New Mexico where this study was situated. As teachers begin to use more and more technology in their classrooms as a way to increase interactivity with students, it is important for us to examine the professional development needs of teachers. Beyond that we must look at how teachers are implementing the

technology in their classrooms to try to increase the interactive nature of the

environments in which they are teaching.

Education policy makers need a greater understanding of how technology can be

implemented to support student success, and in particular, how parent and school

relationships work in such implementations. It is important to understand the dynamics of

parent and school relationships and the impact that could be made on individual student

success. This ties directly to the need for a complete understanding of collective impact

and the community schools movement that is being played out in schools across the state

and the country. It is the underlying support that all of these factors can have to affect

not only the school but the students themselves. All of this plays a part as districts across

New Mexico and the country begin to implement One-to-One initiatives. These

initiatives have been implemented with some major issues and the literature finds that not

all the results are positive (Chiong & Schuler, 2010; Cleary et al., 2006; Cooper & Bull,

1997; Herold, 2014; Jackson, et al., 2006; Mardis, 2011). Educational policy makers are

turning to technology initiatives as another step towards major educational reform. These

initiatives are being implemented across the country and their plans range from in-depth

to anemic including no professional development and little to no community

involvement.

This literature review does not take into account the history of technology in

education nor the cost. Although important, the history of technology is not critical to

understanding the context for this study because this study looks forward. Technology is

here and will continue to permeate and even break down school walls. In addition,

although funding continues to be a concern for school districts and schools themselves,

the literature review does not take into account the funding of technology because it was not part of this study.

The Digital Divide and Technology Skills for the 21st Century

The digital divide can be confusing and is often misinterpreted. It has "traditionally described inequalities in access to computers and the Internet between groups of people based on one or more dimensions of social or cultural identity" (Gorski, 2005, p. 3). However, the term was first used by two journalists at the *Los Angeles Times* "to describe the social division between those who were using technology and those who were not" (Servon, 2002, p. 24). It was also used in 1996 by Lloyd Morrisett, a founder of the Children's Television Workshop and Markle Foundation, "to describe the chasm that purportedly separates information technology (IT) haves from have-nots in U.S. society" (Eubanks, 2012, p. 35). Later the U.S. National Telecommunications and Information Administration (NTIA) released a report in which they defined the digital divide as, "The disparities in access to telephones, personal computers (PCs) and the internet across certain demographic groups" (National Telecommunications and Information Administration, 1999, para 1).

After the year 2000, the digital divide was seen as an informational divide in which individuals either knew or did not know not how to use and create items using technology. There was and continues to be a gap in how these individuals use social media through information and communication technologies (ICTs) (Moddares, 2011). The digital divide at that time was focused on "what information we access, who provides it, and whether we simply consume this information uncritically or take effort to add to it in a meaningful way" (Moddares, 2011, p. 5). What we know and must

understand is how to use the ever-changing devices in an effective way to positively

affect our lives, whether for student use, personal use or everyday business. These

devices also help to provide access to the internet even if someone does not have a

computer or tablet to connect to the internet. Beyond just the ability to connect to the

internet, smart phones allow the ability to participate in social networking and even

educational opportunities in the comfort of their own homes even if they have made the

decision to not purchase a land line (Moddares, 2011). The ability to connect to the

internet through smart phones can be seen when examining the type and quantity of cell

phones a family owns and how the internet is being used. All of this has resulted in a

more sophisticated look at the digital divide to consider digital inclusiveness:

> Now inclusion encompasses service provision, access to data, creating a presence
>
> on the Internet, and having an influence in shaping the future of ICTs.
>
> Community-based organizations and nonprofits must not only continue to think
>
> about how the Internet is accessed and used by their constituents; they also need
>
> to consider the effectiveness with which they are included in the ever-changing
>
> world of ICTs. We cannot always be playing a catchup game in terms of access
>
> to technologies that are outdated. In the evolving world of mobile computing and
>
> an uninterrupted 24/7 world of 4G connections, access to a desktop computer and
>
> DSL can be seen as a lighter shade of connectivity (as important as it might be to
>
> someone who would otherwise have no access). (Moddares, 2011, p. 5)

Digital inclusiveness and the digital divide are important to understand as

communities across the country are trying to give more and more of their community

members' access to the internet. However, cell phone-based internet access does have its

limitations even for tasks such as applying for jobs or doing complicated searches for information. In addition, connectivity speeds make using cell phone-based internet unreliable for users to be able to truly be able to depend on it (Stover, 2014).

An examination of the digital divide must take into account that it is not as simple as a lack of computers, nor does providing computers provide a ladder out of poverty. What is also important is the need for training or IT literacy, which is "the ability to use IT for a range of purposes, and the knowledge of how and why IT can be used as key resource (Servon, 2002, p. 7). Current policies on closing the digital divide have been focused on getting computers and internet into the schools. Beyond policies to close the divide by providing hardware and internet access, it is important for teachers to be properly "trained and supported to integrate technology into what they do" (Servon, 2002, p. 7).

It is essential to understand the complex problems of poverty and inequality when examining the digital divide and technology use to support student achievement. Technology can be a means to improve these societal challenges and can foster a positive atmosphere when using technology to support changing these complex, historic and deeply entrenched problems (Eubanks, 2012). We must remain cautious because "any effort to use IT as an intervention into these problems, however must derive from a deep understanding of the complex nature of US poverty and of the specific communities in which the intervention is being undertaken" (Servon, 2002, p. 21).

Our economy already heavily relies upon technology, and students need to be able to use the latest software and hardware (Goldin & Katz, 2008). According to the United States Department of Commerce, households with lower incomes and less education, as

well as African Americans, Hispanics, people with disabilities, and rural residents, are

less likely to have internet service at home. In addition, 81% of Asian households and

72% of Anglo households had broadband at home, compared to 57% of Hispanic

households and 55% of African Americans households (Vahey, 2011). What is clear is

that the current digital divide in the country is synonymous with racial, ethnic, class and

gender lines but extends to geographic and age divides as well (Moddares, 2011). It is

essential to keep these statistics in mind as technology decisions are being made not only

at the federal and state levels but more importantly at the local level. As parents seek and

receive more education, their socio-economic status improves and so does their ability to

use technology. In cases where parents have been given professional development

opportunities with technology, they can see the value and need for not only the

technology devices, but also for connectivity (Eubanks, 2012). This has the potential to

significantly impact the technology gap described by the United States Department of

Commerce (U.S. Department of Commerce, 2013).

> However, the digital divide can also be a term that is misrepresentative:
>
> The assumption that poor and working-class people lack access to technology,
>
> broadly generalized has led to policy and community organizing approaches that
>
> are practically misguided. In solely redistributive schemes, marginalized
>
> communities – and the people who live in them – are seen only as products of
>
> lack and destitution, not as vast reservoirs of assets, resources, networks,
>
> expertise, strength, hope, passion, and innovation. The assumption of community
>
> deficit blinds many policymakers and community organizers to the real world of

IT, to the true relationship between technology and poverty, and to the hope for

high-tech equity. (Eubanks, 2012, p. 8)

In a study of the digital divide, Eubanks (2012) found that low-wage workers had

many different and individual experiences with technology, ranging from working with

computers to do data entry work, having to apply for social services using a computer

system, and being constantly referred to information that was provided online whether it

be for the children's school or for future employment opportunities. This shows that the

various actors in a school community can support collectively initiatives such as

providing technology support in individual areas of expertise. It may be that one member

of the community is an expert at data entry and keyboarding and may be able to support

the school by teaching a keyboarding class. It should be understood that to have true

collective impact we must allow the various actors in the community to provide their

knowledge and support in their individual way so that initiatives like technology can truly

impact student success.

It is important to understand the digital divide when looking at the educational

achievements of students, especially in a large urban school district. What we do know is

that access to technology has a huge impact on the future of students for three reasons:

"(1), the effects on the education of children in the information society; (2), the ability to

secure future careers in the information economy; and (3), the central role in helping the

information society remain economically competitive" (Cleary et al., 2006, pp. 354-355).

Education is important for students to be able to master the technological skills that they

need to navigate the complex world not only of their school, but in the society in which

they live. It is especially important for students to acquire skills in using technological

devices earlier rather than later so that they can use the devices to reinforce the educational lessons they are being taught (Cleary et al., 2006).

Technology can support students at home by providing access to information about the subjects they are studying, and creating opportunities to reinforce the learning of basic, new, and higher-order cognitive skills (Eamon, 2004). The state of Maine embarked on a major initiative to provide all seventh and eighth grade students and their teachers with laptop computers in a program called the Maine Learning Technology Initiative (MLTI). In examining the impact of the MLTI on student achievement, teachers reported the greatest gains among certain students: "For instance, for at-risk students, teachers report their attendance and behavior has improved, along with their motivation, engagement, and class participation, all attributes known to be pre-conditions of learning. Also, important is the fact that over 70% of the teachers report that the levels of interaction between at-risk students and other students has improved" (Silvernail & Lane, 2004, p. 22). The same impact was seen in students with disabilities. These students saw an increase in motivation, productivity and overall engagement of the students when using the technology devices in the classrooms. Overall, the teachers reported that all students' behaviors, attendance, and motivation increased as a result of the MLTI. It is important to note that reports by teachers were not collected through empirical approaches (Silvernail & Lane, 2004).

A look at 140 students from low-income and minority families concluded that having access to technology and the internet showed positive impacts on their academic performance as measured by grade-point average and standardized tests scores (Jackson, et al., 2006). Yet the results of the examination of the connection to internet use at home

and math and reading scores on standardized tests showed there was no significant relationship. This single longitudinal study did point out that standardized tests may not capture the skills students acquired while using a technology device at home that is connected to the internet (Jackson, et al., 2006).

What is at play is the importance of looking beyond the term "digital divide" to the curricular, pedagogical, evaluation, and assessment inequalities (and others) that have plagued the educational environment for years (Gorski, 2005). This is an essential part of development for students because we must take into account that how "the Internet's interactive nature creates the conditions necessary 'for learning, confidence-building, and self-empowerment.' In short, the Internet provides the capacity for anyone to find his/her own destination in the net, and if not found, to create and post his/her own information" (Servon, 2002, p. 3). It is important to value the need to assess access beyond the connectivity and usage rates and examine the support and encouragement of students to pursue technologically demanding career paths (Gorski, 2005). Many times individuals who do not have access to equitable resources also do not have access to the same opportunities to understand the economic environment that they are in and possible career paths. To truly close the digital divide we must move past the need to provide more computers, devices and connectivity to a holistic approach that sees all actors in the educational system as equals and support the needs of the individual students (Gorski, 2005). Simply gaining access ignores many other social factors of which we must be aware, including "cultural recognition, institutional discrimination, health and safety issues, environmental injustice, non-participatory or ambiguous decision-making structures, and rights to privacy and technological due process" (Eubanks, 2012, p. 26).

Poverty and Education

Beyond the digital divide it is important to understand what societal impact technology initiatives may have on our communities. The picture has continually been painted of the public school dropout who is characterized as living in a deteriorated neighborhood, a member of an ethnic group, and ultimately who is raised by parents who do not have the means to give him school supplies much less technology access (Kvaraceus, Gibson, & Curtin, 1964). The bottom line is "that students who are Black, Hispanic, or Native American – or who come from homes that are impoverished or are not fluent in English – have a much harder time in American schools than students who do not possess these disadvantages" (Biddle, 2001, p. 2). This is the characterization we must keep in mind when analyzing the policy decisions that are at play as any one-to-one initiative is implemented. One prime example is the rate of dropouts among children from low-income families is estimated to be more than twice that of those living in non-low income families (Biddle, 2001). We must also understand the common goals of education in the efforts to impact poverty by creating learning experiences in children, "to achieve specified behavioral goals related to bettering human relations in the world of work, study, and play. This is a difficult, complex task" (Kvaraceus et al., 1964, p. 9). This means being conscious of the impact of poverty on the education of students, something that remains difficult as race, ethnicity and immigration status become part of the social psyche (Biddle, 2001).

What has remained for decades is the measure of poverty, the line that people cross to be able to take care of themselves and their families without government assistance (Ribich, 1968). The simple definition of the term poverty has been the

"amount of money needed to sustain a minimum diet," (Kvaraceus et al., 1964, p. 27) but

it can also be defined as the inability to function in society, which is often attributed to

the lack of education (Berg, 2008). Some argue that it is not just the poverty line that

should be studied or the number of individuals who are unemployed but a true measure of

the economy should be the focus on the number of people trying to improve themselves

by getting more education (Ribich, 1968). No matter what the definition, the bottom line

is that poverty is the uneven distribution of resources in our economy, independent of

who is the cause or the benefactor (Connell, 1994). However, we must take into account

that at least one-fifth of all children who go to school in the United States are likely to be

experiencing problems associated with poverty including inadequate diet, lack of health

insurance, chronic dental and health problems, deprivation and violence in their

communities, and little or no funds for school supplies. In addition, the American rate of

childhood poverty is at least one and one half times greater than that for any of the other

advanced, industrial democratic countries (Biddle, 2001).

Although there is a common belief in our society that education leads to the

alleviation of poverty, it must still be examined to see what the ultimate benefits of

education are on individuals and on our society as a whole (Ribich, 1968). A historical

view of the support of education and its impact on poverty points to the economist's view

that it not only benefits society in general but also specific individuals. What remains not

understood is, the "reasons why individuals undertake less educational investment in

themselves than is warranted by the personal rate of payoff to education" (Ribich, 1968,

p. 3). For years scholars have been discussing the importance of including all of the

school actors in supporting student achievement. The engagement of "parents from

disadvantaged socioeconomic strata need to be reassured over and over again as to what is possible, and their children need to be told explicitly how to go about staying in school and getting into college" (Ribich, 1968, p. 17). What has been demonstrated through various research projects is that teachers must not only become familiar with the child themselves but the familial background from which they come (Ng & Rury, 2006). This is why it is important to look at how all school actors participate in a student's academic growth.

However, it should be acknowledged that the institutions themselves discriminate against children of poverty by tracking them into special programs because of the perceptions of the lack of aspirations and true grit to overcome whatever is going on in their lives (Biddle, 2001). In addition, this discrimination is exacerbated by "other types of problems [that] are created because those schools may employ out-of-date curricula, adopt rigid and ineffective procedures, and fail to hire specialized personnel or provide programs that are targeted for atypical students" (Biddle, 2001, p. 18). The response to these issues should be applauded but it has not proven to make any drastic differences in the educational outcomes of students. For example, the Federal Title I program provides billions of dollars in resources to school districts and individual schools that have large populations of children in poverty. After decades of this program, the U.S. Department of Education cannot provide conclusive data on the effectiveness of its program (Biddle, 2001). These recent approaches of supporting poor children in their education are not really new; efforts to help poor children date back to the charity schools of the eighteenth century (Connell, 1994).

In order to effect real change, it is important to truly understand the issues that poor children face when entering and going through school. As with most educational reform efforts, the policy makers do not include those who are most impacted by the decisions, including the parents and students who are living and poverty and the teachers who interact with them every day (Connell, 1994). What has occurred is policy implementation that, "has been an oscillation among strategies of intervention that are mostly technocratic, all narrowly focused, all within a context of massive underfunding, and none making a great difference to the situation" (Connell, 1994, p. 133). This can be seen in teacher placement, especially when examining those who are new to the profession. The majority of freshman educators are put in schools with the highest levels of poverty and with little or no training on how to deal with the complexities of the students, families and community at large (Burnett, Lampert, Patton, & Comber, 2014; Ng & Rury, 2006).

Researchers have examined the individual factors that lead to positive outcomes in school for youth and those include having a strong positive self-concept or sense of self-efficacy, personal values and aspirations, and overall having high self-esteem (Biddle, 2001). These individual factors can be impacted in a large way by the parents of the students because they may have low expectations of their students or may have had negative experiences with education and will pass those on to their children (Biddle, 2001). We must learn to use the assets that each family brings to support the child no matter their past or present experiences (Moll et al., 1992). In order to be able to overcome these deficiencies in a school community, it is incumbent upon the educators, school leaders, school districts, and even state public education agencies to support the

student through "resources, structure curriculum and learning opportunities, and guide

learners toward mastery of the material, whatever the abilities and characteristics students

bring to their school experience" (Biddle, 2001, p. 181). This can be done through a

collective impact approach to engage families in the school's work by allowing them

access to professional development and other engaging opportunities so that the assets of

each family are used to support and improve the academic progress of each and every

student. By doing so, we can embrace the social and cultural capital that each student

brings to the school house door (Eubanks, 2012; Moll et al., 1992). In addition,

technology can lead to increased student interest and motivation, parent-school

communication and also impact parental involvement in its many shapes and sizes

(Eamon, 2004).

The digital divide must be examined through an economic lens to understand the

impact on those who do not have access to technology, training, and connectivity. These

individuals are constantly battling the economic effects of the lack of opportunities

because of their financial situation (Himma & Bottis, 2013).   Often, it is viewed that

technology will be the solution to education and societal problems, almost like a pot of

gold at the end of a rainbow, but the digital divide is complex and efforts to close the

technology gaps have been anemic (Stover, 2014). The efforts have ranged from states,

cities, and communities mobilizing around combating the digital divide through

investments in school-based computers and connectivity, designing and implementing

computer training programs and putting in place hardware that is accessible by the

community in different locations (Stover, 2014). One promising initiative is the creation

of Community Technology Centers, which provide computer access and training to

disadvantaged members of the community who would not have access otherwise (Servon & Nelson, 2001). Beyond the interventions that are available, it is true social and economic changes that must be made to change the chronic poverty issues in many of our communities (Berg, 2008).

Technology Impact on Citizenship and Society

The impact that education has on the future of the economy is important but the impact on society may be even more important especially when dealing with technology. According to Thomas Jefferson, the author of the Declaration of Independence and the third president of the United States**, t**he idea of having an educated society is an important part of having a strong democratic government, (Milson, Bohan, Glanzer, & Null, 2010)**.** He even wrote about what he thought should be included in a public education system:

> At every of these schools shall be taught reading, writing, and common
> arithmetic, and the books shall be used there in for instructing the children to read
> shall be such as will at the same time make them acquainted with Graecian,
> Roman, English, and American History (Milson et al., 2010, p. 43).

Jefferson went on to describe in great detail how the schools shall be operated, built, financed and even how teachers should be paid. The idea of a free and appropriate public education system was important to Jefferson who saw the benefits of many families sending their students to Europe to be educated and hoping that they would come back to the United States and impact the society here (Milson et al., 2010). Jefferson felt that providing a strong education would lead more individuals towards a civil service path: "The student would graduate to civil servant, applying the broad information, theories,

and principles gathered in his liberal education to practical affairs as he became a lawyer, legislator, business leader, scientist, or engineer" (Speck & Hoppe, 2004, p. 4).

As the importance of an education has grown in our society over the past century, over the past decade the impact of technology on our society has grown. President Roosevelt communicated to all Americans through radio and then the first televised election came in the 1960's (Crowe, 2006). As these technology innovations come of age they have and will continue to have an impact on our democracy. This is important to consider when understanding how technology will be used inside the classroom. There are three major ways that technology impacts democracy: "access to information; access to the political process; and, access to the topics or issues that are debated, discussed, and legislated" (Crowe, 2006, p. 111). Having an informed group of citizens is important to democratic practices and to ensuring that the government operates effectively and efficiently. When the United States was first created there was no possible way that somebody in a state far removed from the capital could have a voice in how the government operated or what legislation was being discussed. Now there are multiple venues for individuals to be engaged as much or as little as they want in the democratic process (Crowe, 2006).

With all the information that is available, it is important for citizens to be taught and shown how to process that information. It is incumbent on our public schools that we show students how to filter information, how to analyze data, and how to appropriately use that data to engage in democratic practices (Crowe, 2006). Students must also be given tools to dig deeper into their analysis of ideas and issues, "not only do they need to know how to understand the multiple perspectives that they encounter, they

need to feel an obligation to explore multiple perspectives to fully understand the society

they live in and make informed decisions" (Crowe, 2006, p. 114). As there is an

increasing amount of access to information, it becomes critical to ensure that there is

equitable access to the information so that all can participate in democracy and other

issues arise like the impact on freedom of speech (Crowe, 2006).

Yet it is important to understand while technology is important and can help so

many, it is not a panacea. This is especially important to note when using technology as

part of the education reform movement:

If a private company is failing to make a profit, no one expects that state-of-the-

art data centers, better productivity software, and new laptops for all of the

employees will turn things around. Yet, that is exactly the logic of so many

attempts to fix education with technology. (Toyama, 2015, p. 17)

However, others feel that the technology should be labeled as being part of the

"Jefferson Syndrome," which includes the idea that it will bring about revolutionizing

benefits to society by empowering individuals (Bar, Richards, & Sandvig, 2000). Critics

argue that the hope for the impact of technology on our society is purely just hope but

one that gains lots of traction because of the hope for the fostering of diversity and equity

in our communities (Bar et al., 2000). Indeed, it is acknowledged that technology and the

internet specifically will impact our society because whole system changes need to occur,

such as the dismantling of the current education system. The concern is that expanding

the use of technology will only exacerbate the equity issues in our communities:

"Technologies that facilitate information exchange will not diminish the incentives of

those in control of the system at hand (be it a seller, political party, or community) to

shape and channel our habits and behavior" (Bar et al., 2000, p. 5).

Connectivity

Advocates have long asserted there is a need for a proper structure for

connectivity if the digital divide is to be tackled (Bureau of Business and Economic

Research, 2013; Eubanks, 2012; Gorski, 2005; Himma & Bottis, 2013). Putting it in

simpler terms, it was first important to ensure that households had the opportunity to have

telephone lines before worrying about becoming connected to the internet (Moddares,

2011). It is important to understand the need for connectivity before beginning to discuss

the information and communication technologies that affect personal lives. It is essential

to examine connectivity in order to ensure that one-to-one initiatives are implemented

while keeping in mind students who may not have access to the internet in their home.

The thought of giving computers and access is empowering for most learners. It also

helps move toward digital-equity where "everyone [has] the ability to use up-to-date

learning resources that before were available only to those who lived close to a library or

benefited from school budgets that allowed for regular purchases of new textbooks"

(Penuel, 2006, p. 332). Beyond that, home internet access supports students' motivation

for continued engagement in their studies, allowing for greater personalized learning, and

improves parental involvement in a student's coursework (Jewitt, 2011).

From 2008 to 2011, the government of the United Kingdom launched a pilot

program to provide a computer and one year of internet connectivity to low-income

households with children from ages 5 to 19. The program was launched as a pilot in two

counties. The findings showed that being provided a computer and internet connectivity

helped close the digital divide and supported families at getting connected two and a half

years earlier than they would have without a government intervention (Jewitt, 2011).

There were also benefits to the entire family by having a computer in the home. Parents

were more likely to try to learn technology literacy skills and to support their children in

learning on and using the computer. Teachers reported that learning increased and that

the students were "increasingly inquisitive and [engaged] in independent learning, and

several teachers associated this with a more creative, exploratory and proactive approach

to homework" (Jewitt, 2011, p. 309). The students themselves enjoyed the opportunity

for learning at a personalized pace. Providing internet access had an overall positive

impact on families not only in academics for the students but for a more social and aware

populous (Jewitt, 2011).

When examining the importance of home connectivity for students, it is important

to discuss the relationship between home and school technology and broadband access in

rural environments. Isolated communities have been severely hurt by economic

challenges, including eroding agricultural and manufacturing sectors, which have resulted

in population declines and a pressure on services for federal, state and local government

officials (Mardis, 2011). The cost of being connected to the internet at home is a concern

for many families who are on fixed incomes. Parents, including those in rural

communities, want clear information about the impact of internet connectivity on their

families and their students (Mardis, 2011). What also has been shown is that families

that chose not to get internet broadband because it was too expensive are predominantly

minorities, which is noteworthy when examining the achievement gap of students in this

country. In addition, the likelihood of families having internet in rural and urban settings

has a cultural tie, especially in some homes. Parents in Hispanic households "that traditionally prized time spent working over personal discovery on the Internet" seemed to "lack understanding of the internet's educational advantages" (Mardis, 2011, p. 11). As policymakers discuss the importance of internet connectivity, there should be more research and communication with parents, especially minority parents, about the possible educational advantages of internet connectivity. Kent School District in Kent, Washington is combating this by creating huge kiosks in three community centers and six of the schools that provide Wi-Fi. This is a huge bridge between connectivity during the school day and the lack of internet access they cope with at home, at a cost to the district of only $6,500 per unit. The kiosk works by emitting "free Wi-Fi in a 75 foot radius and features a 42-inch LED screen up top to display the latest district news" (Davis, 2015, p. s4). Although the radius of the Wi-Fi is minimal, the signal never stops so students can use it at night, weekends, and even during the summer.

To deal with the internet connection issue when launching one-to-one initiatives, some school districts have begun piloting the loaning of mobile hotspots to students so that they can connect at home. The hotspot is a prepaid wireless service that has been specifically designed for students. The device is a portable, palm-sized Wi-Fi transmitter that connects to 3G and 4G networks using a wireless service. The cost for these devices vary but are typically around $140 each and then the average data plan ranges from $15 to $20 a month per device (Wilson, 2014). The hotspots even come with their own padded carrying case and if they are lost they can be tracked by GPS and disabled. Schools can also control students' access to websites and set limits on bandwidth usage (Wilson, 2014). To get even more creative, Coachella Valley Unified District in southern

California has mounted Wi-Fi routers in its school buses. The buses are then parked

strategically around the district to provide instant connection to the internet to thousands

of students' right in or near their homes (Dobo, 2014). Other districts around the country

are creating "Free Wi-Fi Zones."   These are business locations where students can go to

connect to the internet at no cost, and more importantly, feel safe while they do their

school work (Cavanagh, 2015).

Connectivity in New Mexico

New Mexico is dead last in the country when it comes to internet connectivity, a

problem so profound the Federal Communications Commission's Chairman Tom

Wheeler recently spent a day in Albuquerque attempting to highlight the need for internet

connectivity and working with social activists in the city's downtown neighborhood

(Mayfield, 2014). This comes on the heels of a report by the University of New

Mexico's Bureau of Business and Economic Research on *Broadband Subscription and*

Internet Use in New Mexico (Bureau of Business and Economic Research, 2013). The

research was requested by the New Mexico Department of Information Technology's

(DoIT) to analyze patterns and barriers to broadband adoption in the state. The

researchers conducted a survey of 1,000 households across New Mexico focusing on

home internet access and internet technologies, barriers to home access, patterns of

internet use inside and outside the home, and digital literacy (Bureau of Business and

Economic Research, 2013). Just more than half (54.9 percent) of New Mexico residents

have access to the internet in their homes (Bureau of Business and Economic Research,

2013). The state lags significantly behind the rest of the country; in 2010 the U.S.

Census Bureau found that Utah had the highest number of households with access to the

internet with 83%, neighboring states Arizona and Colorado had 75% (Economics and Statistics Administration and National Telecommunications and Information Administration in the U.S. Department of Commerce, 2011). The barriers to home internet access are aligned to affordability and, as seen in other studies, are linked to the perception that the internet is of little personal use (Bureau of Business and Economic Research, 2013).

The focus on New Mexico is important as we look at the digital divide. The national issues around access to the internet are reflected in our state, including "concern for affordability and the perception that the internet is of limited value" (Bureau of Business and Economic Research, 2013, p. 7). It seems that "one is either engaged in the digital world or one is not, and there is little evidence that those who are not engaged are more concerned to overcome the divide" (Bureau of Business and Economic Research, 2013, p. 7). The findings of the report also point to a lack of technology literacy in the state where non-subscribers say they either have no computer in the home or do not know how to use technology. Non-subscribers to home broadband do very little to substitute other means of access to "offset the absence of access at home" (Bureau of Business and Economic Research, 2013, p. 7). It is important to see that those who are not subscribers to internet access are, obviously, less likely to know how to use the internet. What is surprising is that those who are without home internet reported they are unwilling to pay even $5 per month for broadband service at home (Bureau of Business and Economic Research, 2013). Because of cost, African American and Hispanic populations may be using mobile devices as a substitute for fixed broadband. Researchers found that this was not the case, "in New Mexico, if you have a smart phone you are more likely to have a

fixed broadband as well but are unlikely to use a smartphone as a substitute for fixed broadband" (Bureau of Business and Economic Research, 2013, p. 30).

> Much work is needed in New Mexico to increase access to home internet: Internet advocates should continue to press for better internet infrastructure in underserved areas, especially New Mexico's tribal areas. The results of this research as well indicate that equal attention must be given to initiatives to increase the demand for high-speed internet access. This should begin with public awareness programs directed toward identifiable populations that make clear the importance of internet access for social and economic welfare. Policies to promote demand should also include more aggressive digital literacy programs, again targeted at populations that too often feel excluded from the digital world. Finally, policies should recognize that a significant barrier to access, and in some cases a large part of the broader concern for affordability, is the up-front costs of a device to access the internet at home. (Bureau of Business and Economic Research, 2013, p. 8)

Getting individuals connected is just part of the issue. It is also important to examine how individuals are using the internet at home. In New Mexico (Bureau of Business and Economic Research, 2013), the dominant use of the internet is for entertainment and social networking. Survey respondents said that only 3% of their total internet use is to support a child's schoolwork. Only adults were surveyed. Surveying students could result in different or additional insights.

Professional Development for Teachers

As we examine the need for technology and connectivity in the home, teachers are conflicted, with many, but not all, eager to implement technology in an effective way in their classrooms (Fullan & Smith, 1999). In addition, the eagerness to add technology in the classroom is often a top down decision with teachers having little to no input on the type of device or software they are able to use in their classrooms (Buckingham, 2007). This can be difficult to achieve, especially with the sparse use of professional development in school districts, mostly because of time and resources. Teachers are attempting to implement the Common Core State Standards, where students will be required to use resources to analyze and respond to questions across the curriculum (New Mexico Public Education Department, 2012). Beyond that, the problems with the implementation of technology in the classroom are logistical: "technology often proves more difficult to use than its advocates suggest, and it is hard to secure convenient access given the constraints of school accommodation and timetables" (Buckingham, 2007, p. 51). The dialogue among teachers about the use of technology in their classrooms not only changed practices but raised additional issues:

> Technology is challenging the way we need to deliver professional learning to people; it's the way we engage people with professional dialogue and building new understandings about pedagogy from that…It has to do with the dialogue in some ways I probably place more emphasis on that, it is about the quality of the conversations with teachers, for me it is about how to enter into those conversations with people in their classrooms about their own practice, work with them at their own pace, then we're going to have more effective change…it is

also about legitimizing de-privatized practice where teachers work with other

teachers or someone from system, they open up their doors to focus on

understanding effective teaching with technologies and improving student

learning. (Edwards-Groves, 2012, p. 104)

More recently, when examining teacher use of technology, "a host of national and

regional surveys suggest that teachers are far more likely to use technology to make their

own jobs easier and to supplement traditional instructional strategies than to put students

in control of their own learning" (Herold, 2015, p. 8). In public schools in the United

States, there is now at least one computer for every five students, more than $3 billion per

year is spent on digital content, and "nearly three-fourths of high school students now say

they regularly use a smartphone or tablet in the classroom" (Herold, 2015, p. 8). A recent

survey found that 92% of teachers reported that accessing the internet is a major part of

their content, resources, materials, and overall the ability to support creating an

interactive classroom environment (Tahnk, 2014).

The discussion of changing practices in the classroom with technology to ensure

interactivity could foster the establishment of professional learning communities.

Teachers who take on the challenges are more apt to hear and discuss feedback from their

peers (Edwards-Groves, 2012). Overall, this will have a positive effect not only on the

academic achievement of students but also on the development of each individual

teacher. Technology can support the teachers' focus on their classroom, "freeing them

from 'tedious paperwork' and allowing them to concentrate on what they do best, which

is interacting with students" (Buckingham, 2007, p. 33). But, more recent studies have

found that teachers believe that they don't have enough time nor incentive to explore and

experiment with technology in the classroom, including inefficient training and support

from administrators and overall their personal lacking of technology expertise (Herold,

2015). As teachers take on the professional development to properly implement

technology they should always keep in mind that, "the challenge to popular technology is

to turn negative technological experiences into a resource for, rather than a barrier to,

learning and engagement" (Eubanks, 2012, p. 32).

The importance of professional development with technology cannot be

overstated. In fact, the No Child Left Behind Act requires that 25% of state federal

technology funding be allocated for professional development and that such professional

development be research based (Cradler, Freeman, Cradler, & McNabb, 2002; Fullan &

Langworthy, 2013). This is important because surveys often show that teachers do not

feel that they are technologically savvy and that they are in need of professional

development; in fact only 20% of teachers consider themselves well prepared to use

technology in their classes (Cradler et al., 2002). As technology continues to rapidly

infiltrate the classroom, teachers need to understand how to use it effectively. As

teachers' pedagogical practices change to embrace technology, the changes will be

significant with "learning [becoming] easier, deeper and more engaging. Students and

teachers will be putting in long hours, but what they do won't feel like work" (Fullan,

2013, p. 21).

This can be seen as an important way to personalize learning beginning with

teacher preparation programs. Technology use is found to be more effective in

classrooms when pre-service teachers incorporate it into their own learning, for example,

when making presentations for classes where they are the students. Colleges of education

need to embrace technology in pre-service training and support new teachers so they

come to work in districts prepared to use technology effectively in the classroom (Cradler

et al., 2002). This is important because of the need for strong student engagement where

teachers will "change their pedagogy for learning to become relevant and meaningful for

students to acquire the necessary knowledge and skills to be productive citizens in a

global economy" (Fullan & Smith, 1999, p. 3). Teachers need to be aware of what

should be expected of them in a student-centered, technology driven classroom. This is

clearly laid out by the International Society for Technology in Education (ISTE):

> In the digital age, the ISTE standards say, teachers should be expected, among
>
> other strategies, to "engage students in exploring real-world issues and solving
>
> authentic problems using digital tools and resources." They should also "develop
>
> technology-enriched learning environments that enable all students to become
>
> active participants in setting their own educational goals, managing their own
>
> learning, and assessing their own progress." (Herold, 2015, p. 10)

The sooner teachers understand the importance of how and why to introduce

technology in the classroom, the better. It is important that they follow important

standards: "It must be irresistibly engaging; elegantly efficient (challenging but easy to

use); technologically ubiquitous; and steeped in real-life problem solving" (Fullan, 2013,

p. 33)

The impact of technology in the classroom and the effect on pedagogy do not

come without a cost. Without changing pedagogy, technology will not provide value for

the amount of money it costs (Fullan, 2013). Glover and Miller (2003), for example,

found that the impact of technology in the classroom was largely dependent on teachers'

peers were using it. If they saw a difference with student interaction in their colleague's classroom, there was more peer pressure or persuasion that resulted in teachers using the technology themselves to engage students (Glover & Miller, 2003). A critical mass of teachers is required to "[appreciate] the pedagogic benefits of the technology" and this leads to the "[adoption] of new practices, the pressure for the allocation of resources becomes stronger and the Luddite element becomes marginalized" (Glover & Miller, 2003, p. 22). When individuals resist change in their schools, others who have seen the benefits of change will respond by stepping up to ensure that the change moves forward for the good of the students. This is simply peer pressure or professional pressure to do the right thing for students (Glover & Miller, 2003).

The investment of technology sometimes means sacrificing other things in the educational environment that already have a proven track record of improving academic achievement. Districts spend time and money implementing technology while forgoing providing investments in intervention materials and other basic classroom needs such as textbooks. The argument here is that the technology will provide those interventions and even can support moving away from hard copy textbooks to digital textbooks (Fullan & Smith, 1999; Glover & Miller, 2003; Morse, 2004). Moreover, it is important to understand how these investments affect the pedagogy of teachers and their practice in the classroom. In an exploration of technology and interactivity, "the technology was either installed with minimum IWB [Interactive White Board] training or installed with a general technological and pedagogic introduction or installed with continuous mentoring either from advisors or a 'missioner' member of the department" (Miller & Glover, 2007, p. 319). In addition to properly introducing technology through adequately administered

professional development, it is important that individualized and specific instruction for teachers be applied so that there is sustainability in the classroom. When individualized support is part of the induction phase of technology implementation, there is a pedagogic change that happens inside the classroom (Fullan, 2013; Glover & Miller, 2003). When teachers are not supported and are not able to get specific answers to their questions or issues that arise, the technology may go unused and at the very least not used to the level that it should be.

Teacher pedagogy was specifically changed when the use of technology and interactive whiteboards was embedded in all aspects of their teaching and learning (Lewin, Somekh, & Steadman, 2008). Teachers changed their practices and used new skills and possibilities to interact with the students because of the technology and professional development they had completed (Fullan, 2013; Lewin et al., 2008). The interesting note is that teachers were more inclusive and cooperative in supporting learning and they embedded interactive changes in their pedagogy (Lewin et al., 2008). What they learned more frequently was the need to differentiate interactive lessons with students to ensure everyone was engaged. If a student is gifted but shy about demonstrating knowledge in front of a class, it might be best to allow that student to respond through a learner response system (Lewin et al., 2008). This still allows the student to be engaged in the interactive activity without having to go in front of the class. In addition, teachers had to expressly understand when to back away from being too interactive, by being able to modify those classroom lessons that pair well with interactivity and understanding that individual or small group collaboration was better for a lesson. Students should be able to interact using their device of choice, which may be

to stand up and present in front of the class or which may be to respond anonymously or only with the teacher knowing what their response is. By using learner response systems, teachers are able to evaluate the content knowledge of each student almost instantly (Lewin et al., 2008). They can then respond to the individual needs of the students in the classroom. One teacher describes how these interactions benefited the students:

> I also knew quite quickly whether they had understood or not because their hands went up before I had even said anything to them – and then you can see whether she needs to say something to them and re-word and re-phrase and just bring them back a step and help them – and then you can almost see the penny drop, or that she is still going. So you think, "Right, I won't ask them that question', because they haven't quite got there yet. So sometimes you might pick up – she's still talking to them – and the rest of the class has got to the point where they've answered. (Lewin et al., 2008, p. 299)

This teacher was able to keep the entire class engaged in the lesson while one student was interacting with the technology (Lewin et al., 2008). This is an example of how all students can learn from the process as well as from one another.

When there is a substantial amount of time combined with a considerable amount of professional development and dialogue, true pedagogical change can happen (Fullan & Langworthy, 2013). Teachers were able to implement true interactivity into their classrooms only when they truly felt comfortable in its use and execution. It takes time to get to that point, "not only to learn the initial applications but also experiment with new technologies, share experiences with other teachers, and plan and debug lessons using new methods that incorporate technologies" (Servon, 2002, p. 111). It takes a three-stage

model of pedagogic change to involve interactivity. Stage one is teachers fitting new

technologies into established pedagogies; stage two is teachers engaging in collaborative

exploration of the new opportunities offered by these technologies; and stage three is

using the technology skillfully and intuitively in ways that extend or transformed their

established pedagogic practices (Lewin et al., 2008, p. 301).

        We have evidence that professional development affects teacher use of

technology and interactivity in the classroom (Edwards-Groves, 2012; Fullan, 2013;

Lewin et al., 2008). Strong and consistent professional development with continuous

support and practice is necessary to make technology an effective classroom tool. Actual

pedagogical change takes time. Teachers have to be able to implement the technology

and experiment with interactivity in the classroom. They have to be allowed time to

properly reflect on their experiences in the classroom (Mouza, 2009). Some of those

reflections may be on videotape or through exchanges with colleagues. Once teachers

feel comfortable about the impact of technology in the classroom and can prove to

themselves that it is effective at improving student achievement, pedagogical change will

happen (Mouza, 2009). This parallels recent studies about using technology in the

classroom, finding that the greatest obstacle "is in expanding teachers' knowledge of new

instructional practices that will allow them to select and use the right technology, in the

right way, with the right students, for the right purpose" (Herold, 2015, p. 12)

        This process is time-consuming. Educators and advocates are often looking for

the silver bullet in education (Fullan & Langworthy, 2013; Morse, 2004; Mouza, 2009);

technology certainly is not it. It is however a resource and tool that can impact student

achievement, one that will only increase and improve over time as opposed to simply

going away.

The focus on supporting teachers with technology up until now has been more on

how to use specific software packages than supporting teachers to change the way they

think about, implement and use technology in their classrooms (Fullan, 2013; Fullan &

Smith, 1999). It is important for teachers to be able to gain knowledge of technology for

the specific integration or application into their classroom practice. To support this

concept, in 2000 the International Society for Technology in Education (ISTE) developed

the National Education Technology Standards for Teachers. In their recommendations,

they emphasized, "the importance of helping teachers develop a sound understanding of

technology operations and concepts that can be later applied to the design and

implementation of curriculum plans" (Mouza, 2009, p. 1199). Professional development

for teachers with technology should be a career-long or life-long commitment because in

this rapidly changing technological world, it is essential that the professional

development that educators receive supports and encourages them to continually discover

new and unexplored tools including software and hardware (Fullan, 2013; Mouza, 2009).

This emphasizes the point that teachers must be given the freedom by their administrators

to try new things with the knowledge that if they do not work that they should not stop

trying to be innovative for students. What we know from professional development

opportunities for teachers that if they simply lack the confidence to try it out, they are

more likely to not even attempt it and thus nothing in the classroom changes or improves

(Herold, 2015).

Albuquerque Public Schools has made a commitment to sustained professional development that allows teachers to get continuous training on how to use technology effectively in their classrooms. District leaders believe that helping teachers move to 21st century teaching skills requires extending their work day so that they can get the professional development while being paid, support professional learning communities to support collegial mentoring for technology implementation in the classroom, and give specific examples of what effective technology use in a classroom looks like (Green & Jacobson, 2014). In addition, the district has collaborated with the University of New Mexico's College of Education for implementation of technology training for pre-service teachers (Albuquerque Public Schools, 2014c). This sort of collaboration is essential: "Teacher education programs and school divisions have a vested interest in forming alliances to support effective use of technology in local schools. The university-and school-based environments must reinforce one another by modeling effective technology use, and by supporting both teachers and teacher education students who wish to incorporate appropriate use of technology into classroom practice" (Cooper & Bull, 1997, p. 100). This is especially important because of the need for pre-service teachers to become prepared to hit the ground running when they enter in the school house door, especially in this current political environment. However, we must ensure that, "practicum experiences for teacher education students should also be selected with classroom technology use as an important criterion" (Cooper & Bull, 1997, p. 100). Pre-service training on effective technology implementation combined with on-going professional development will support the constantly changing technological and educational environment.

Some tools considered revolutionary when first introduced are now used daily to support teachers. For example, word processing software is used for creating handouts and exams; student information systems maintain student records, including attendance, grades, demographics and academic needs; the internet is searched for educational resources; and email is used for communications (Mouza, 2009). The use of technology tools provides for a more professional and student-focused teaching environment. These basic technology tools have to be mastered before teachers can integrate them into an interactive classroom. That might mean improving teacher knowledge, enhancing their practices and changing their beliefs via a cyclical path:

New knowledge stimulated changes in teachers' instructional practice. Teachers used computers for professional tasks (e.g., looking for instructional resources on the Internet) and experimented with integrating various forms of technologies (e.g., Internet, multimedia, and so on) into their classroom. Experimentation with technology over time and reflection on practice allowed teachers to witness positive outcomes for themselves (e.g., they became more efficient in locating instructional resources using the Internet) and their students (e.g., they became more motivated). These new insights influenced teachers' beliefs with regard to the role of technology in teaching and learning and, in turn, produced further changes in their professional and instructional use of technology. As a result, even though the relationship among the elements in the cycle appears linear, in reality, teachers frequently went back and forth between current and previous change elements (e.g., practice-beliefs-practice). (Mouza, 2009, p. 1199)

It is important that teachers continue to receive professional development so that they can

integrate interactivity into their classroom using the resources that they have available,

including technology.

The need to integrate technology into the interactive classroom can also be

examined through giving teachers laptops and showing them how to use them. When

teachers were first given laptops, it took them time to be able to use this resource

effectively in their classrooms (Khambari, Luan, & Ayub, 2012). The teachers went

from using the laptops to communicating more effectively and efficiently with their

colleagues to using the laptops as a tool for classroom lessons (Khambari et al., 2012).

This shows that teachers need additional time to familiarize themselves not only with the

tool that they are using but with how to make it applicable to their classrooms, which is

synonymous with other fields like the medical field when they implement new software

for creating and storing medical records. Once they are able to fully understand the

operation of this tool, they will be able to utilize it in their classrooms to the greatest

extent (Khambari et al., 2012).

One of the main pushes for school districts is to ensure that not only do students

have electronic devices but that teachers have those devices as well. Many people have

been concerned about the lack of communication that teachers have with various groups

of school actors including families and students themselves. Having a laptop for the

teachers to use has resulted in an increase in communication from the teachers primarily

through email (Cowie, Jones, & Harlow, 2011). During the 2014-15 school year,

Albuquerque Public Schools implemented a new Student Information System, which

requires teachers to use their email credentials to log on for attendance and record

keeping of parental communication (Albuquerque Public Schools, 2014b). The system is

the official gradebook for the teachers, which also allows parents to log on to the system

to check grades, attendance, calendars, and to easily communicate directly with the

teacher. The teacher is then able to respond to the parent communication and also to be

proactive about any concerns or celebrations related to the class (Albuquerque Public

Schools, 2014b). These types of strategic initiatives by districts will support better

communication for teachers as they continue down their professional development path,

which should be never-ending.

Collegial mentoring without specific boundaries is the best road to success when

it comes to technological interactivity (Jones & Vincent, 2010). This provides teachers

with an opportunity to become more adept in using the technology for interaction with

students because of a change in their pedagogy rather than a fear of being evaluated on

their abilities by a mentor (Jones & Vincent, 2010). It becomes something that they want

to do with their students rather than something that they have to do for their mentor. In

other words, the teachers were taken away from 'stand and deliver' methods of teaching

content and were more apt to engage with students during their lessons. These teachers

also became more comfortable using the digital software and hardware to present

information and allowing students to explore technology (Jones & Vincent, 2010). It is

especially important to understand the impact that teachers have on one another in the

growing trend of standards based test accountability and the impact that those tests scores

have on individual teacher evaluations (Herold, 2015).

Consistent, ongoing professional development is key to producing changes in

instructional practices, especially with the use of technology (Fullan & Langworthy,

2013; Mouza, 2009). What was paramount to the success of the integration of technology was the follow-up support after participation in professional development. In addition, experience in the classroom itself would not occur until the enactment of new practices, and reflection on those experiences, combined with professional conversations with other educators (Mouza, 2009). It is clear that time plays an important part in allowing for pedagogical change in teachers. Education advocates are often looking for the next best educational reform initiative that will immediately and drastically change education while improving student achievement and closing the achievement gap. True pedagogical change cannot take place without some experimentation, reflection and conversation (Fullan & Langworthy, 2013). Teachers need time to make substantial and substantive changes in their classroom and technology will not replace good teaching:

> Technology is not a panacea. Not all technology is good for pedagogy. And great pedagogy can and will exist without technology. We have, however, greatly miscast and underutilized technology's power. When we enlist technology in the service of exploratory learning for all, watch out! On the other hand, if we plod along with standards and assessment using technology only as a prop, we will get what we deserve: a higher level of tedium. (Fullan, 2013, p. 78)

Interactive Classrooms

It is important to understand the effect of technology on all students. One effective device that has become integrated in the classroom is interactive whiteboards (IWB). These large, touch-sensitive boards, which are controlled and connected to a computer and a digital projector, were originally developed for use in offices for brainstorming and note taking (Smith, Higgins, Wall, & Miller, 2005). Now they have

replaced traditional chalkboards and are multi-faceted (Smith et al., 2005). Students and

teachers report they are great teaching tools because of their interactivity. There is impact

in the classroom where "students are motivated in lessons with an IWB because of 'the

high level of interaction – students enjoy physically interacting with the board,

manipulating text and images'" (Smith et al., 2005, p. 94). This is important because it

supports the teachers' need to continue to differentiate for each student, and teachers can

then ensure that each student's learning style is addressed in a meaningful and substantial

way. Using the interactive whiteboard as a teaching tool can support how teachers

deliver overall content of lesson and then allow them differentiate instruction for small

groups or individuals as part of a promising practice in the classroom to address the

changing needs of each student (Smith et al., 2005).

These boards and other technology devices can create an interactive classroom.

The success of an interactive classroom can be identified by increased student

motivation, greater opportunity to participate and collaborate, success in dealing with

more complex concepts, differentiated instruction, and the ability for all students to

participate with the board whether they are abled or disabled (Beauchamp & Parkinson,

2005). This leads to a more equitable educational opportunity for all students.

Additionally, the interactive classroom results in less disruptive behavior from students

and more focus on the lesson at hand. Of course, this all depends on the technology

devices being used with fidelity and in the proper way so that students are engaged

(Smith et al., 2005). That kind of use by teachers is dependent on their level of

knowledge of and comfort with the technology (Mouza, 2009).

Albuquerque Public Schools has invested a significant amount of capital funds in

creating interactive classrooms. These classrooms are not only equipped with technology

devices such as computers and tablets, but more than 50% of all classrooms have an

interactive white board. Before purchasing and installing the more than 3,300 IWBs, the

district put out a request for proposals to elicit responses from all manufacturers. After

an extensive process and evaluation, the district has implemented Promethean Boards.

This company was selected not only for its innovation in the marketplace but additionally

because "technology-enabled environment is comprised of interactive whiteboards,

learner response systems, software, training and professional development, resources and

instructor communities, all proven to improve educational results" (Promethean Inc.,

2012, para 7). Teachers who volunteered to get training on their own time, without

substitutes or stipends, were rewarded with the installation of a board in their classroom.

Today more than 4,500 teachers and educational assistants have been trained in the use of

the Promethean Boards as it is a requirement of all educators who have a board in their

classroom.

Traditionally, teachers delivered and continue to deliver instruction through

lecture and textbooks. It takes professional development to help them move toward using

technology and creating an interactive classroom. This is especially important to the

special education and the learning impaired population as concepts become more difficult

and abstract, students with disabilities often have difficulty understanding the

information. Having the visual aspect of the information come alive in the classroom

"has shown promise as an intervention in supporting the receptive language needs by

increasing student understanding through visual support of learning materials, providing

a visual concrete representation of abstract concepts, and allowing for repetition of an

activity or model with-out the effort and risk of inconsistency" (Whitby, Leininger, &

Grillo, 2012, p. 50). It is important that teachers receive continual professional

development on the implementation of technology and interactivity in the classroom.

Student Views of Technology

The average child is influenced by various media, including television, the

internet, and various pieces of hardware that bring technology access and influence at

anytime and anywhere (Buckingham, 2007). Technology interaction is a common

practice among teenagers, usually at rates much higher than among their teachers. For

example, technology's use amongst teens is growing, "Aided by the convenience and

constant access provided by mobile devices, especially smartphones, 92% of teens report

going online daily – including 24% who say they go online almost constantly" (Lenhart,

2015, p. 2). This study found that African-American teens were more likely to have a

smartphone compared to their White and Hispanic peers, while African-American and

Hispanic teens say that they are almost "constantly" online compared to their White

counterparts (Lenhart, 2015). In their social and sometimes academic lives, students are

engaging with technology through social media such as Twitter, blogging, Flickr,

Facebook, YouTube, and text messaging. Social media continues to be a powerful tool to

connect with students, "Facebook remains the most used social media site among

American teens ages 13 to 17 with 71% of all teens using the site, even as half of teens

use Instagram and four-in-ten use Snapchat" (Lenhart, 2015, p. 2). Often, this allows

individuals to develop strong relationships with people that are not based on the physical

appearance, race, gender, socio-economic status or even geographical location (Long,

2004). These forms of communication show how students can be resourceful in creating actual written language or text. It is important for adults to pay attention to the different ways students communicate and "orienting teachers to the interactive nature of techno literacy pedagogies in contemporary writing classrooms, challenges traditional notions that information and communication are the central tenets of technology use" (Edwards-Groves, 2012, p. 99).

Many refer to the current generation as the iGeneration, replacing the previous Net Generation, which are those individuals who were born in the 1980s and 1990s (Rosen, Carrier, & Cheever, 2010).   This current school-aged generation can be described as "[spending] their days immersed in a 'media diet,' devouring entertainment, communication, and, well, any form of electronic media. They are master multitaskers, social networkers, electronic communicators and the first to rush to any new technology" (Rosen et al., 2010, p. 2). As described earlier, students now spend many hours on social networking sites, they prefer to text rather than talk on the phone, and are in constant communication with someone (Rosen et al., 2010). However, how technology is used to communicate varies along gender lines where "Teenage girls use social media sites and platforms – particularly visually-oriented ones – for sharing more than their male counterparts do. For their part, boys are more likely than girls to own gaming consoles and play video games" (Lenhart, 2015, p. 5).

As communication is the focus of most students' experiences online, it is also important to understand that many see it as a part of growing up, a "cyber world" where they "explore their identity, figure out who and what they want to be when they grow up, and connect, connect, connect. Net and iGeners have also adapted technology to

'represent' themselves in myriad ways" (Rosen et al., 2010). Many would argue that this cyber world is purely fantasy but many use it to augment their relationships in real life by communicating with friends in school on social network at all times of the day and night. This is what teachers and others who work with children need to understand. The simple fact is that today's children have grown up with technology around them and explore the world around them through that technology whether it be through Google or even Wikipedia (Rosen et al., 2010). It is important to understand that the level of the direct interaction that each student has had with technology is unique (Eubanks, 2012). As we move to implement the increased use of one-to-one devices and increased access to technology, we must understand the individual experiences that students have had with technology (or not) and build on those experiences to move them forward in their academic success. Although they have grown up with technology we must be cautious about the amount of digital access students have. One study found that "students who gain access to a home computer between fifth and eighth grade tend to witness a persistent decline in reading and math test scores" (Vigdor, Ladd, & Martinez, 2014, p. 1105). There should be strong connections between the academic needs of the student and the academic support in the home (Vigdor et al., 2014). As we have come to understand the needs of students, it is important to examine how teachers can and should work through with the technology for the success of their students. Taking into consideration these four areas would help students access and utilize their creative side along with technological tools at home and at school:

1. Technological tools: iGeners have access to a wide variety of software and hardware that allow them to create content of a very high quality.

They already know how to use the tools, which are either free or available at a low cost. Designing projects that tap into these skills will help educators connect to students' virtual lives, motivate them, and lead to outcomes of superior quality.

2. Purpose: Young children and teenagers are very creative online, but these creative projects aren't always done with learning in mind. Teachers can design projects that are simultaneously creative and purposeful. In other words, projects can be centered on the educational curriculum and yet avoid the static character of traditional learning techniques.

3. Audience: Today's students prefer to create projects that will have real audiences, and when talking about Web 2.0, the real audience is the online world. Posting student products online is easy and it provides a reality that infuses excitement, interest, enthusiasm, and motivation into students' minds.

4. New texts: How important is spelling and grammar to a project? If it's an English lesson for which spelling and grammar are the focus, then the young students' online writing skills might not be relevant to the project. However, with many projects in history, geography, art, etc., teachers can tap into their students' skills at creating new texts that combine media (audio, video, words, links) in novel ways and simultaneously demonstrate learning. (Rosen et al., 2010, p. 147)

This demonstrates the importance of technology. However, it is clear that technology cannot replace the need for students to have strong reading, writing, speaking,

math and overall critical thinking skills (Green & Jacobson, 2014). Preparing students to be ready for college and career includes supporting and nurturing their individual path, together with their personal assets and experiences. This goes above and beyond what technology can do. We must also understand how students' worlds are colliding with the school environment:

> In their leisure time, children are encouraged to see themselves as active
> participants, navigating their way independently through complex multimodal
> media environments. Yet in school, they are expected to submit to a pedagogic
> regime that is fundamentally premised on the testing of decontextualized skills
> and knowledge. (Buckingham, 2007, p. 178)

Parent and School Relationships

While it is important to understand the students that we are serving in our school districts it is equally important to understand the parents' views of technology. Parents play a critical role in supporting students' learning beyond the schoolhouse door and the hours that the student spends in school. This support can be formal or informal but it should be noted that some individuals feel that this is overstepping the bounds of the school and that the public education institutions should not try to influence family dynamics (Buckingham, 2007). School districts across the country, including the Albuquerque Public Schools, have adopted systemic and sustained efforts to integrate parents into the fabric of the school community and more importantly, focus on how parents can support the academic success of students. The U.S. Department of Education recently unveiled a family and community engagement model to encourage school

districts to focus on parent-engagement efforts that are linked directly to student learning (Reid, 2015).

Parents can support, emphasize, and even augment the instruction that is occurring in the classroom (Economics and Statistics Administration and National Telecommunications and Information Administration in the U.S. Department of Commerce, 2011; HART Research Associates, 2012; Hoover-Dempsey, Bassler, & Brissie, 1992). The average parent understands and is aware that technology will play a bigger role in their children's education. In a study similar to the one that I conducted, 1,200 parents of children said it was "very important" that schools provide technology for teaching in the classroom, that teachers and administrators embrace technology, and that there is significant money invested in classroom technology (Rosen et al., 2010). All of this work needs to be supported and coordinated by the school leader who should focus on fostering positive school-family partnerships (Auerbach, 2009). However, parents do not think of technology software or devices when they are working to improve their students' academic performance. They are more likely to turn to a book, toy, or activity (Center on Media and Human Development, School of Communication, Northwestern University, 2013).

Parents' views on the importance of technology in the home vary depending on the question that is asked, but research findings are dominated by parents' views that having internet access in the home helps their children with their school work and propels them forward in the academic achievement (HART Research Associates, 2012). Specifically, parents say that technology helps students improve their skills with reading, math, speaking, and creativity more than other tools used to improve academic

performance, however there is an overwhelming belief by parents that all mediums of

technology have a negative impact on children's overall physical well-being (Center on

Media and Human Development, School of Communication, Northwestern University,

2013). Additionally, parents of lower socio-economic status say that having television in

the home helps students with reading and creativity, which they are more likely to turn to

over other technology devices (Center on Media and Human Development, School of

Communication, Northwestern University, 2013). There is a link between parents' views

of success and their perception of having to be connected to the internet in the home.

These views span demographics, including high and low socio-economic and racial

divides. Parents of lower socio-economic status are less likely to be technology literate

thus affecting the availability of technology and children's usage of it in their household

(Shoefield Clark, Demont-Heinrich, & Webber, 2005).

       The Leading Education by Advancing Digital (LEAD) Commission issued a

report in 2012 about parents' and teachers' views on technology in education. The report

offers insight into parents' views on the importance of technology in the home and at

school for their children. This study of more than 800 low-income parents found that

"home access to broadband is viewed as important to learning and doing well in school,

and parents and teachers believe that students who do not have broadband are at a

disadvantage" (HART Research Associates, 2012, p. 6). A vast majority of parents in the

survey responded that they believe it would be better to spend $200 on giving each

student an internet-connected device like a tablet computer instead of purchasing new

science textbooks (HART Research Associates, 2012). It is clear from this study that

parents value technology in their students' educational environments.

What is important to understand beyond the perceptions of parents and technology is how the parents connect with the school and whether those relationships are positive or negative. Based on the theoretical framework of the funds of knowledge, positive teacher and parent relationships are critical for student success. When teachers and parents have an understanding of one another, "this relationship can become the basis for the exchange of knowledge about family or school matters, reducing the insularity of classrooms and contributing to the academic content and lessons" (Moll et al., 1992, p. 139). When such communication can take place, then there is the ability to truly have an impact on student success (Hoover-Dempsey et al., 1992).

Common perceptions of parent values and involvement in their children's academics often relate to the parents' educational and socio-economic level (Hoover-Dempsey et al., 1992). The level of parental involvement varies by individual parent just as the individual performance of students varies on standardized tests. Not everyone is going to be the same and is important to understand this. It is clear that the differences do not always match commonly held beliefs:

> Parents with a high school education reported spending more time helping their children with homework than did parents with a college education. The fact that a group with lower education reported more homework help may reflect several different possibilities: the lower efficacy parents may be more determined to see their children succeed; they may use a set of less efficient helping strategies; or they may be responding to a pattern of greater school difficulty experienced by their children. (Hoover-Dempsey et al., 1992, p. 291)

The differences may be because of the two environments where the students spend the majority of their time, at school and at home. There is a convergence of the impact of parental involvement in both areas where "parent involvement at school promotes connections between adults in two of the child's primary microsystems, the home and the school, while parent educational involvement at home conveys congruence in the attitudes and behaviors governing these two microsystems" (Lee & Bowen, 2006, p. 196). For example, it is important to understand that if a parent is a mechanic or construction worker that the lessons that students can draw from their parents are not just related to those career paths but the experiences, knowledge, educational preparation, and other life lessons that have impacted the adult's career and life path. It is important to understand that the students see and hear the complexities of life through their parents' lenses. This can have a significant impact on a student's success, "by drawing on household knowledge, student experience is legitimated as valid, and classroom practice can build on the familiar knowledge bases that students can manipulate to enhance learning in mathematics, social studies, language arts, and other content areas" (Gonzalez et al., 2005, p. 43).

There is a strong connection between the student's ability to perform academically and their parents' involvement in their academics. With the increasing complexities of our society, it is even more important for teachers to know how to navigate between school and home (Gonzalez et al., 2005). What is also telling is how welcome the parents feel at the school and how the teacher makes them and their children feel beyond the confines of the classroom. The quality, not the quantity, of interactions between the teacher and the parent are important to creating solid relationships (Powell,

Son, File, & San Juan, 2010) with multiple points of contact "[contributing] to parents'

perceptions of their child's teacher" (Powell et al., 2010, p. 288). This sort of relationship

supports the understanding of a student's culture in a new light and can help "[bridge] the

chasm between household and school, the instantiation of reciprocal relationships

between parents and teachers, the pedagogical validation of household knowledge with

which students come to school, and the development of teachers as researchers go beyond

the view of culture as a 'problem'" (Gonzalez et al., 2005, p. 40). It is incumbent upon

the teachers and the schools to create better environments and communication so that the

positive two-way interaction can occur to support student success. This is especially

important as we look at the implementation of technology devices for each and every

child, which will also have an impact on students doing better in school, staying in school

longer and enjoying the educational experience (Henderson & Mapp, 2002). What is

clear is that, "Children at risk of failure or poor performance can profit from the extra

support that engaged families and community provide" (Henderson & Mapp, 2002, p.

73).

There are many things that teachers can do besides spending time conducting

home visits that may not only be time consuming but often emotional draining. Teachers

can learn to actively listen to their students who will give clues about their interests and

the talents of their parents and grandparents. Additionally, conversations can be built

around articles of clothing worn by children and their families, having students doing a

set of interviews of the people they live with, developing school projects that need

specific help from parents, and finally incorporating the occupations or interests of

parents inside the classroom and through specific academic projects (Gonzalez et al., 2005).

Technology Impact on Parenting

As technology increasingly becomes part of our American culture, the impact can be felt in the homes of students and their families, and with that comes a sense of lower control because of the myriad technology devices that children are using (Buckingham, 2007). This impact goes beyond the common battle in many households to move students away from video games to focus on their academic performance, and impacts the way parents interact and support their students. Parents buy computers, tablets, and other devices to support students in the learning but often those devices are used for video games and other entertainment (Buckingham, 2007). Earlier in this chapter, I defined the Digital Divide and parents' perceptions of how technology impacts student success. We must also take into account the impact of technology on parenting. As is clear from a recent survey, these devices in the homes do not replace human interaction:

> About 37 percent of parents said they're likely to turn to a smartphone or tablet to distract kids while cooking dinner, and 17 percent said they had relied on tablets or other mobile devices to placate an upset child. More often, parents used technology as carrot or stick: either as punishment for bad behavior or a reward for good behavior. (Ghose, 2013, para. 9)

Although parents are using these technology devices to support their children while they multi-task, parents do not believe that overall technology has made their jobs easier (Center on Media and Human Development, School of Communication, Northwestern University, 2013).

As I set out to explore this very topic, I was faced with an unfortunate turn of events with my own eight year-old son. We have respected and supported his increased interaction with technology, even allowing him to have his own iPad and access to the iTunes store for purchases of apps and games. Up to this time, he has been very respectful of the hardware and access that he had, even gaining access to the iTunes password. That trust and respect came to a problematic head when we recently found he spent more than $100 on purchases to support a game that he was playing on the iPad. It made us rethink how we will allow him to use these devices on his own in the future and made us realize again that we must be aware of what he is doing on the device at all times.

We commonly assume that allowing more and more access to technology is the right thing to do for our students and for our own children. This is the opposite approach of most technology corporate executives for their own children where "they strictly limit their children's screen time, often banning all gadgets on school nights, and allocating ascetic time limits on weekends" (Bilton, 2014, p. E2). The dangers that most technology executives cite about technology in the home include electronic bullying, access to harmful content like pornography, and violence, and predominately, the fear that the children will become addicted to technology (Bilton, 2014).

Children's access needs to be constantly monitored and the limits on the use of technology should be based on the child's age. We have evidence that:

> children under 10 seem to be most susceptible to becoming addicted, so these
> parents draw the line at not allowing any gadgets during the week. On weekends,
> there are limits of 30 minutes to two hours on iPad and smartphone use. And 10-

to 14-year-olds are allowed to use computers on school nights, but only for

homework. (Bilton, 2014, p. E2)

There are also commonly held beliefs that video games are detrimental to a student's

academic skills with most parents rating "video games as having a negative effect on

children's reading, math, speaking skills, attention span, creativity, social skills, behavior,

physical activity, and sleep than any other medium" (Center on Media and Human

Development, School of Communication, Northwestern University, 2013, p. 6).

The literature on the impact of technology on parenting is limited, but what is

consistent is that parents, especially non-traditional parents such as grandparents, need to

be more aware of what their children are doing with technology. Using technology is a

way to support the children, but one-on-one contact needs to be determined by age:

About three in ten parents say that when their children are watching TV (32%),

using the computer (29%), or playing on a smartphone (29%), the parent is doing

so along with the child 'all or most' of the time. Interestingly, fewer parents report

that level of co-viewing when using an iPad or similar device (20%). This type of

joint media engagement decreases as the child gets older, so that among 6- to 8-

year-olds, the comparable rates are 22% for TV, 20% for computers, and 11% for

smartphones, tablets, and other mobile devices. (Center on Media and Human

Development, School of Communication, Northwestern University, 2013, p. 7)

What can be seen from this information is that as children get older parents believe that

they can allow them to use the devices more freely, something I experienced with my

own son. Often times this is done so that parents can have more time to address the

myriad responsibilities they have, including bringing the office home with them through their personal electronic devices.

One-to-One Initiatives

Educators across the country have begun to focus their attention on the work of implementing one-to-one technology devices for every student (Herold, 2014; Nott, 2014). It has been done on a small scale in districts of just a few hundred students to the attempted rollout in one of the largest districts in the nation, Los Angeles Unified School District (Herold, 2014). Even as some districts watched the rollout of this initiative in Los Angeles and took note of the problems, others have made similar attempts to "put digital devices in the hands of their students" as was the case with the Houston Independent School District that began distributing more than 18,000 laptop computers to high schools" in 2014 (Herold, 2014, p. 1). On the surface, the view of many school districts is that providing this technology and internet connectivity will improve academic performance of students while ensuring that they have access to the use of the technology twenty-four hours a day, seven days a week. The view of this technology is simple: "The decreasing costs, combined with the lighter weight of laptops and increasing availability of wireless connectivity, are all making such initiatives more feasible to implement on a broad scale" (Penuel, 2006, p. 329). However, it is not sufficient to provide the devices with connectivity. There needs to be significant investment in professional development for all the school actors, to ensure that the use of the technology is for the benefit of every student on the path to increasing student achievement (Eubanks, 2012; Fullan, 2013).

In 2001, the U.S. Department of Education commissioned research on the use and effectiveness of one-to-one initiatives and found that because of the small amount of

research and the small number of projects that were being implemented at the time, their impact was unknown (Penuel, 2006). The earliest initiatives began in the 1990s when Microsoft launched its Anytime, Anywhere Learning (ALL) program where students could lease or purchase laptops while their teachers would be provided technology to be used in the classroom (Penuel, 2006). In recent years, Apple, Inc. has launched similar programs to try to attract the market to use its computers and more recently iPads (Herold, 2014).

Before looking in-depth into any of the one-to-one initiatives, it is important to understand the common definitions of what these programs do including: "providing students with use of portable laptop computers loaded with contemporary productivity software (e.g., word processing tools, spreadsheet tools, etc.); enabling students to access the internet through schools' wireless networks, and a focus on using laptops to help complete academic tasks such as homework assignments, tests, and presentations" (Penuel, 2006, p. 331). This definition of a one-to-one initiative separates it from other projects in which students are offered computers at discounted or regular costs but the assurance of equitable distribution of computers to all students is not taken into account. What the one-to-one initiative does attempt through transformation of schools is allow students access to technology anytime they need to use it, including inside and outside of school. This will provide students with much more access to the technology than visiting a computer lab only once or twice a week and "makes it possible for students to access a wider array of resources to support their learning, to communicate with peers and their teachers, to become fluent in their use of the technological tools of the 21st century workplace" (Penuel, 2006, p. 332).

What we also know from the research is that providing laptops to all students ensures an equitable distribution of resources and may have an impact on achievement gaps for all students. The early implications of these studies examining the academic achievement of all students are promising:

Early evaluation studies of laptop programs reflected this emphasis on equity; in studies of the Beaufort (South Carolina) Learning with Laptops initiative, for example, researchers examined the extent to which providing laptops narrowed gaps between students of color and White students and between low-income and more advantaged students. Further, analyses conducted on some of the first tests of computer proficiency administered by states suggested that home access to computers helped to explain differences in student performance on those tests. These studies together confirmed both the potential and significance of providing more ubiquitous access to computers to all students. (Penuel, 2006, p. 332)

The idea that every student should have access to the same type of device inside and outside the classroom provides the opportunity to improve the academic performance of all (Santa Fe Public Schools, 2012; Shoefield Clark et al., 2005). Helping students through technology allows them to improve their inquiry skills into complex problems and issues (Rosen et al., 2010). The use of the technology also helps them learn how to interact with peers inside and outside the classroom as they work on collaborative projects (Jackson et al., 2006; Shoefield Clark et al., 2005).

Examining the best practices for successful implementation of one-to-one initiatives makes it obvious that the use of the technology by the teacher plays a critical role in the use by the student (Fullan, 2013; Penuel, 2006). Additionally, it is important

to note that when states or school districts begin to put forward their plans for these

initiatives they must not forget the need for professional development:

> Teachers' beliefs are influenced by the nature and frequency of messages they
>
> hear in their environment, and teacher professional development activities are a
>
> source of information about how and what to teach; these activities also prepare
>
> teachers to use technology effectively. The amount of professional development
>
> that teachers have received has been found to be related to teachers' feelings of
>
> preparedness to use technology with students. Teachers who reported spending
>
> nine hours or more in educational technology professional development activities
>
> were more likely than teachers who spent less time in such activities to report
>
> feeling well- or very well-prepared to use computers and the Internet for
>
> instruction. (Penuel, 2006, p. 333)

Professional development needs to be tied directly to how teachers will use the

technology aligned to the curriculum they are teaching in their classroom. The practical

use of the professional development to their specific subject or grade level has been

shown to ensure that teachers are more engaged and use the technology with their

students (Fullan, 2013; Jones & Vincent, 2010; Khambari et al., 2012; Penuel, 2006).

At this stage of implementation of one-to-one laptop initiatives in several states,

large districts and even private or parochial schools show that the biggest impact on

students' learning is giving them practice on using the technology, which will benefit

them long into their careers (Fullan, 2013; Penuel, 2006). The research of these

implementations shows literacy skills improve along with writing skills because of the

use of the technology for collaborative practices. It still is not clear how or if one-to-one

initiatives have a clear impact on academic achievement for students in core subjects like

reading, math, science and social studies (Fullan, 2013; Penuel, 2006). There is much

more study on academic achievement that must be done and a better understanding of

how "one-to-one initiatives would need to be part of a larger, more comprehensive effort

to improve instruction" (Penuel, 2006, p. 341). The definitive answers to questions that

policymakers will ask about the return on investment are still unclear. The bottom line

from most studies is that even though direct relationships between the implementation of

and access to technology and student performance are difficult to identify, providing

equitable access to technology does have positive impacts on students' lives, which may

not be quantifiable (Goldin & Katz, 2008; Higgins, Beauchamp, & Miller, 2007; Jackson

et al., 2006; Mouza, 2009; Penuel, 2006).

One-to-One Initiatives – Maine. Maine has embarked on a major initiative to

provide all seventh and eighth grade students and their teachers with laptop computers.

The Maine Learning Technology Initiative (MLTI) also provided technical support and

professional development to schools and teachers to ensure the technology was integrated

into their curriculum and instruction (Silvernail & Lane, 2004). The MLTI began by

following best practices in implementing technology through professional development

by "developing a statewide network of teacher training" and the "identification of

Regional Integration Mentors (RIM)" (Silvernail & Lane, 2004, p. 3). The "RIMs helped

to develop practices and procedures for laptop use within their Exploration School, as

well as assist MLTI staff in the development of a statewide network of professional

development related to technology integration in middle schools and within each region"

(Silvernail & Lane, 2004, p. 3).

Teacher use of laptops in the Maine LTI increased when they got help using the technology available to develop instructional materials. Access was related to instructional practices and improved communication with colleagues by sharing lessons and connecting with their peers on a regular basis (Silvernail & Lane, 2004). Teachers who were not proficient users of the technology made significant gains in their technology literacy and professional development propelled them even further with the use of the technology. The teachers reported the laptops helped them develop lessons that they could tailor to meet individual student needs and overall helped them support the learning goals set forth in their classrooms.

One major impact on the MLTI was the decision at the state level to allow local school officials to establish and implement policies to allow students to take home the laptops. Fewer than half of the schools supported the idea of allowing students to take home their devices, which many teachers found troubling on equity grounds, and to allow students the ability to continue working at home. Allowing email access via the laptops across all schools and districts presented another logistical problem because "only one-half of the teachers surveyed report their students are allowed to use e-mail, which has had an impact on the level of interaction between teachers and students" (Silvernail & Lane, 2004, p. 31). Finally, the damage rate to the laptops was extremely low - only 2% of the laptops were damaged beyond repair. The Maine project demonstrates the possibilities of implementing a One-to-One device initiative on a large scale. They have ensured the best practices in professional development and supported students. Although empirical research is needed to examine the academic impact of the MLTI, there are many lessons that can be learned.

One-to-One Initiatives – New Mexico. The talk of one-to-one initiatives in New Mexico is not new. In fact, the State was in on the ground floor of conceptualizing such initiatives when Governor Bill Richardson proposed the idea in 2003. Hoping to gain education momentum, state bureaucrats supported the idea, seeking to connect all students, seeing the internet as "the conduit where education in public schools transfers the crux of curricula. The Internet is an indispensable research tool where information from libraries and databases are linked, and from where public schools will inevitably connect and disperse curriculum resources" (Rutledge et al., 2007, p. 340). At the time of the launch of this initiative, the New Mexico governor said it was not only about innovative curricula but about global competitiveness.

Between 2004 and 2007 the state of New Mexico invested more than $8 million in this initiative. The funding was focused on purchasing a small number of laptops each year:

> The pilot phase of the program for six schools was $1.7 million. With this appropriation in FY 2004, 740 students received laptops. The same appropriation funded an additional 561 laptops in 10 schools, for a total of 1,301 laptops. In FY 2005, 2,894 laptops were distributed as part of a $4 million appropriation, and then 756 students and teachers received laptops in FY 2006 as part of a $1 million appropriation. At the end of FY 2006, roughly 5,000 laptops had been distributed as a result of governmental appropriations. The latest appropriation of $2 million occurred in FY 2007. (Rutledge et al., 2007, p. 342)

This funding did not include the money that individual school districts spent on improving infrastructure and facility upgrades to support the laptop initiative. The pilot

project provided 717 laptops to seventh grade students and 80 teachers in six different

sites in New Mexico including Southwest Secondary Learning Center in Albuquerque,

Chama Middle School and Tierra Amarilla Middle School in Chama, Tohatchi Middle

School in Gallup, Highland Junior High School in Hobbs, and Cyber Middle School in

Las Cruces (Rutledge et al., 2007).

> Qualitative research from year one of the pilot project showed positive results:
> Teachers reported more creative, customized, collaborative lessons; students were
> more interested in school and focused on their work; parents increased
> involvement with their student's education and communication with the school. In
> addition, community businesses demonstrated interest and support for this
> program by offering discounts on computer services and products for participants.
> Administrators, teachers, and students started out strong as they stumbled toward
> this innovative teaching practice. (Rutledge et al., 2007, p. 346)

Teachers and students reported the laptops allowed them to go further in their

exploration of topics that they were investigating or researching. The teachers described

students as being more engaged and attentive during lessons because of the use of

laptops. They also said that students went further with their questioning and analysis of

topics (Rutledge et al., 2007). The impact of the laptops extended past the classroom into

the homes of the students. Parents were "more involved and their siblings are more

involved" because the laptops were "not being exclusively used by the students, but their

siblings are using them at home" and "that it is increasing the interaction between

students and parents" (Rutledge et al., 2007, p. 349). The initiative from the state did not

contain directed professional development but the teachers who were part of the pilot

sought out opportunities where they could learn how to use technology more effectively in the classroom (Rutledge et al., 2007).

In the second year of the New Mexico Laptop Learning Initiative, the program supplied more than 900 students and more than 80 teachers with technology solely in the school district of Rio Grande Public Schools. Students in Organ Middle School, Nieve Middle School, Cyber Middle School, and the Santo Domingo Learning Center became part of the program (Rutledge et al., 2007). The findings from year two of the initiative mostly replicated the findings from year one, but the demand for technology and the proper infrastructures increased at each school site. In year two, the major challenges included:

> Implementing sufficient infrastructure such as wireless access points, telephone lines, and technology maintenance support; introduction of additional professional development that targets the specific technology skill levels of the teachers; implementing a manageable appropriate use policy; and implementing a streamlined system for teachers to request access to websites used for instruction in a way that is timely. (Rutledge et al., 2007, p. 358)

Findings from the year three report on the statewide initiative showed that there were major systems and problems associated with the program (Rutledge et al., 2007). It also became clear that there was lack of communication between state officials, school districts and teachers in the classroom. The researchers concluded that although it was "a single initiative," it must be "used as a mechanism for building more complex educational technology initiatives. Perhaps one day technology initiatives and educational initiatives will be synonymous, that is, educational initiatives will carry the impression

that technology will be implemented and that our culture will collectively believe that computers are needed in every corner of society" (Rutledge et al., 2007, p. 362). To move forward, the findings of the three years of implementation of the New Mexico Laptop Learning Initiative showed a need for workshops for educators to share the lessons learned and exchange ideas, formal professional development on the use of technology in the classroom, and the need to establish appropriate use policies for students and teachers (Rutledge et al., 2007).

Santa Fe Public Schools is moving forward with a plan to have all 14,000 students have a computer or tablet within the next five years. The total cost of the plan will be between $50 and $55 million (Nott, 2014). The Santa Fe district plans to pay for the devices through funds from Educational Technology Notes. The Educational Technology Notes use a small percentage of money collected from property taxes. To use these funds the district does not need to seek voter approval but simply needs a majority of the board of education to vote in favor of the tax imposition (Nott, 2014). Santa Fe's plan for one-to-one devices also will use funds from a mill levy that will pay for professional development for teachers and install updated fiber-optic cable and wireless internet connectivity. The district says that half of the money will be spent on devices while the other half will go to funding updating and maintaining the technology infrastructure (Nott, 2014).

One-to-One Initiatives – Albuquerque Public Schools. The state's largest school district has released its plan for implementing a one-to-one initiative called "1 to World" (Green & Jacobson, 2014). The vision as laid out in the plan calls for students "to become college and career ready, giving them a window to the world through

personal learning devices" (Green & Jacobson, 2014, p. 8). As proficiency in reading,

writing, and mathematics are the foundation for content knowledge the one-to-one

initiative for the district will support students learning through creativity, problem solving

and critical thinking skills (Green & Jacobson, 2014).

      Beyond providing a device to all students in the district, the 1 to World plan is

focused on community support through providing family informational trainings and

meetings and other learning opportunities to help the collective impact of the initiative on

the family and the entire school community (Green & Jacobson, 2014). In addition, to

get past the struggles with Wi-Fi connectivity the district hopes to partner with business

to provide students and families access to the internet "in a family-friendly environment

during off-school hours" (Green & Jacobson, 2014, p. 10). Beyond the community Wi-Fi

initiative, there is no discussion about getting connectivity into students' homes. The

Albuquerque Public Schools plan has many areas that are not complete including

communication and marketing plans, an identified budget, and the exact devices that will

be used for students and teachers. The district has taken steps to identify best practices of

how to distribute the devices, technology acceptable use information, and other logistical

documents that will support the eventual implementation of the major initiative to more

than 90,000 students in the state's largest urban area. Additionally the district has put

devices through durability tests like carrying them without a protective case and treating

them like a student might. Jami Jacobson, former APS Executive Director of Curriculum

and Instruction described to *Education Week* how during one vendor meeting she noticed

the back of the tablet appearing flimsy so she pulled it apart, when asked what she was

doing she replied, "I'm acting like a five-year-old. If this can't survive me, it can't

survive a room full of kindergartners, It doesn't matter what's on a device if it doesn't work" (Flanigan, 2015, p. 16).

Collective Impact

As the issues of the educational environment continue to be compounded by low graduation rates and other achievement rates, many groups of well-intentioned people try to put their support behind isolated initiatives that fall short (Fullan & Smith, 1999; Morse, 2004). Community leaders in different parts of the country, such as Cincinnati and northern Kentucky, have come together to work on common educational projects to improve the lives of students in an approach known as collective impact (Kania & Kramer, 2011). This focus on working together has been successful in these communities because "a core group of community leaders decided to abandon their individual agendas in favor of a collective approach to improving student achievement" (Kania & Kramer, 2011, p. 36). This emphasis on a true collaborative and collective focus on issues is especially important when supporting social challenges, "but to ensure that this concept leads to real improvements in the lives of those we serve, we must bring rigor to the practice by drawing on lessons from a diverse array of communities and defining in concrete terms what makes this work different" (Edmondson & Hecht, 2014, p. 7).

Collective impact work is successful because all of the actors in the community are brought together to work on common goals in individual networks. They are not asked to create new programs but to support each other's organizations to reach common goals (Kania & Kramer, 2011). For example, if one of the networks is working on truancy reduction, all of the community organizations that are focused on truancy

reduction meet and develop common goals. After those common goals are established,

an action plan is laid out and each member brings to the table the support their individual

organization can provide. It is important to understand that this work goes beyond simple

collaboration where "collective impact initiatives involve a centralized infrastructure, a

dedicated staff, and a structured process that leads to a common agenda, shared

measurement, continuous communication, and mutually reinforcing activities among all

participants" (Kania & Kramer, 2011, p. 38). However, local policies must be examined

so that the partnerships can be successful and so that rigid funding models or excessive

reporting requirements do not get in the way of achievement collective results (Ferber &

White, 2014).

What makes collective impact different is that it is not focused on a single

initiative or even a single goal, it is focused on broad social issues that require all of the

relevant partners to be able to support the work that is outlined in the networks. This is

different from what is referred to as isolated impact, which results when individual

organizations receive grants for isolated activities and initiatives, which are often short-

lived (Kania & Kramer, 2011). The collective impact approach works because of five

main conditions that, if aligned, produce powerful results, including a common agenda,

mutually reinforcing activities, shared measurement systems, constant communication,

and backbone support organizations (Kania & Kramer, 2011).

School communities and other organizations can take a lesson from the Collective

Impact work. In order to get collective impact up and running there are three phases that

should be followed:

1. Initiate Action: Requires an understanding of the landscape of key players and the existing work underway, baseline data on the social problem to develop the case for change, and an initial governance structure that includes strong and credible champions.

2. Organize for Impact: Requires that stakeholders work together to establish common goals and shared measures, create a supporting backbone infrastructure, and begin the process of aligning the many organizations involved against the shared goals and measures.

3. Sustain Action and Impact: Requires that stakeholders pursue prioritized areas for action in a coordinated way, systematically collect data, and put in place sustainable processes that enable active learning and course correcting as they track progress toward their common goals.

(Hanleybrown, Kania, & Kramer, 2012, p. 2)

This would be difficult for a school or even a school district to take on because of the underlying financial and logistical impact. To have true community and collective impact the community groups should be supported by a backbone organization that has as its sole purpose to convene community actors who are all trying to effect and support change and initiatives in a concentrated area (Hanleybrown et al., 2012; Kania & Kramer, 2013). Once this is done, the funds of knowledge can be accessed where positive multi-way communication can occur in an open and supportive fashion that ultimately benefits the school and the students.

It is important to understand the collective impact that all actors in a school community can have because "many digital divide programs actually work to restrict the

scope of the high-tech equity agenda because they rely on a deficit orientation that labels

neighborhood 'poor' or 'underserved' and therefore underestimate the considerable

resources, skills and experiences of these communities" (Eubanks, 2012, p. 36). Once

this is complete then an action plan can be formed as to how to best support the entire

school community on how they can support these initiatives. However it is important to

put the technological skills into the context of the lives and individuality of all the actors

by:

1. Building a collective consciousness about important concerns in their lives,

   including livable wages, existing resources and alternatives to them, personal

   and community capabilities, etc.;

2. Using that knowledge to make empowered decisions about navigating the

   existing [social service] systems; and

3. Providing opportunities to take action concrete action (by joining social

   movements) to change the system. (Eubanks, 2012, pp. 119-120)

This can lead to full participation in any initiative but especially in technology

supports for schools and students. This will allow for all parts of the school community

to be supportive and present because "participation requires that we co-create knowledge

while recognizing that everyone's perspective is incomplete, that power relationships

systematically distort our communication, and that there are limits to understanding the

lives of others" (Eubanks, 2012, p. 147).

As we examine the supports that are needed for families, school leaders, teachers,

and community members, it is important to recognize that the way that everyone comes

to the table and that what they bring to the table is different (Furman, 2002). When

examining how collective impact can support a social area or school community what we know is that previous perceptions about what is and what is not possible disappear:

> Instead, the rules of interaction that govern collective impact lead to changes in individual and organizational behavior that create an ongoing progression of alignment, discovery, learning, and emergence. In many instances, this progression greatly accelerates social change without requiring breakthrough innovations or vastly increased funding. Previously unnoticed solutions and resources from inside or outside the community are identified and adopted. Existing organizations find new ways of working together that produce better outcomes. (Kania & Kramer, 2013, p. 2)

It is important to be conscious of the role of power and how it is used when looking at collective impact work. New power dynamics are natural when new organizations are developing; these should be clearly understood along with the tactics on how to deal with the power struggles in any collaboration (Ryan, 2014).

I believe that this research study contributes to our understanding in terms of what is possible when all school actors come together to support initiatives for the benefit of student success. Truly successful collective impact initiatives lead to an understanding that there are continued opportunities for success and influence in the community and that they need to be agile in the face of these consistent and constant changes (Kania & Kramer, 2013). Changes should not be seen as setbacks but as sources of insight in how to continue to grow support for positive impact on a community (Kania & Kramer, 2013).

As we examine the complex social issues of education, collective impact can be a solid guide to ensure everyone has an equal space at the table and that authentic

collaboration occurs. It is clear that collective impact is not just ordinary collaboration. It

must be followed with fidelity to ensure the optimal success for the entire community:

> The five conditions for collective impact similarly serve as rules for interaction
>
> that lead to synchronized and emergent results. A common agenda, if authentic,
>
> creates intentionality and enables all participating organizations to "see" solutions
>
> and resources through similar eyes. Shared measurement, mutually reinforcing
>
> activities, and continuous communication enable participants to learn and react
>
> consistently with the common agenda to emerging problems and opportunities.
>
> Meanwhile, the backbone organization supports fidelity by the various cross-
>
> sector players to both the common agenda and rules for interaction. (Kania &
>
> Kramer, 2013, p. 3)

With these rules in mind, we can truly appreciate the importance of collective impact and

apply it to the work, whether it be for simple technology initiatives or extensive one-to-

one initiatives.

After several years of focusing on collective impact work in many communities, it

is understood that there are four principles that underlie the work that can lead to long

term-sustainability. The first is to focus and build a culture of continuous improvement

(Edmondson & Hecht, 2014). As the work progresses it must be focused on getting rid of

disparities through "[disaggregation] of data to understand what services best meet the

needs of all students enables communities to make informed decisions" (Edmondson &

Hecht, 2014, p. 6). This can be addressed by not only looking at the achievement gap but

also focusing on the opportunity gap. The third step in this work is to ensure that assets

are being leveraged properly; this is the assurance that collectively we are looking at the

strategies that have the most impact on schools and ultimately students. Finally, it is important to engage local expertise and ensure that there is community voice through engagement with "partners who represent a broad cross-section of the community [to] not only to shape the overall vision, but also to help practitioners use data to change the ways they serve children" (Edmondson & Hecht, 2014, p. 7).

Community Schools

Just as collective impact looks at creating organizations to support common educational goals and opportunities, for many years work has been conducted to create school groups called community schools that bring all agencies under one umbrella. This approach is beyond the routine focus of improving academic needs of students (Dryfoos, 2002, p. 393). These programs focus on ensuring that students are well nourished and in good physical and mental health. This in turn allows them to be able to focus on their academics during the school day. Such support is provided by bringing in organizations that are already attempting to support the community (Dryfoos, 2002). In 2007, several organizations including Albuquerque Public Schools, Bernalillo County, the City of Albuquerque, United Way and the Albuquerque Business Education Compact formed the Albuquerque Bernalillo County Community School Partnership. The agreement between the different entities calls for "state officials, higher education institutions, business leaders, unions, community partners, in schools to intentionally align resources" to support students and community needs (Bernalillo County, 2015, para. 5). In 2007, there were four schools that were supported through the initiative now there are 23.

The premise that a school is the center of the community is well known and understood in our culture and in our community (Dryfoos, 2002; Hoover-Dempsey et al.,

1992). What is new is how the community works (Furman, 2002) to support the initiatives of the school in a collective fashion and by ultimately supporting the individual child. Not all communities want to be treated in the same way. (Dryfoos & Quinn, 2005; Furman, 2002; Hoover-Dempsey et al., 1992). We must value individuality when taking up community schools work (Furman, 2002, p. 61). What this means is that even as we take on the community focus of a school we must still value individuality. A new definition of community is even proposed: "Postmodern community is community of difference. It is based on the ethics of acceptance of otherness with respect, justice and appreciation, and on peaceful cooperation within difference" (Furman, 2002, p. 61).

Just as individuality is important, there are still some key conditions that represent a strong community school that supports all of the actors in the school environment. They include:

1. The school has a core instructional program with qualified teachers, a challenging curriculum, and high standards and expectations for students.

2. Students are motivated and engaged in learning, both in school and in community settings, during and after school.

3. The basic physical, mental, and emotional health needs of young people and their families are recognized and addressed.

4. There is mutual respect and effective collaboration among parents, families, and school staff.

5. Community engagement, together with school efforts, promotes a school climate that is safe, supportive, and respectful and that connects students to a broader learning community. (Dryfoos & Quinn, 2005, pp. 99-100)

Once these conditions are in place, then a school can be labeled a community school. Another idea is to be able to focus support needed by all actors of a school community. One example is Community Technology Centers through which "communities nationwide are working to bridge the digital divide. These centers allow residents of communities to have access to technology as well as take classes to improve their technical skills" (Pearson, 2002, p. 19). By having all the actors in the school community focus on the collective needs of a school and embracing technology, there are potential benefits including access to limitless information, giving teachers more freedom and the ability to be more creative, adapting to different learning styles and allowing students to truly be excited about their education (Tahnk, 2014). The convergence of funds of knowledge, collective impact, and community schools could have a huge impact on schools and in this case a school in need of major improvements like Emerson Elementary School.

Summary of the Literature Review

I examined and analyzed the literature on the Digital Divide, poverty and education, connectivity, professional development for teachers, interactive classrooms, students' views of technology, parent and school relationships, and one-to-one initiatives.

The Digital Divide is a description of the inequalities in access to internet connection and computers that are based on social identities that have been constructed (Gorski, 2005). This term has evolved and will continue to evolve as technology continues to permeate our society. It is commonly viewed that poverty can be impacted by education. Simply providing technology access and hardware will not magically have

an impact on poverty, but it should be used as means to produce better educated and resourceful citizens.

Connectivity across the country continues to be an issue as one-to-one initiatives are implemented in many communities. In New Mexico the connectivity issue is exacerbated by the fact that we are dead last in the country in the number of individuals who are connected to the internet (Bureau of Business and Economic Research, 2013). We must be conscious of this as we look for policy recommendations from this study and through our evaluation of connectivity via this case study.

As we try to impact the academic success of students with technology, the discussion must include how to properly design and deliver professional development for teachers so that they can foster interactive learning environments to support students. Teachers want and continually need professional development, and it is especially true when implementing technology initiatives and given the emphasis placed on interactive classrooms.

Students practically demand the use of technology not only for their social lives but for true engagement in their academics. They are continually involved in social media and teachers must take up the challenge of increasing opportunities for interactivity with students through various means. This carries over into the home where parents can play a role in ensuring that learning continues through various means including using technology resources to support students. In addition, this has a major impact on parenting, which has still not been sufficiently explored via empirical research.

The goal of this case study was to understand how the one-to-one initiative can be supported to work most effectively for all students so that there can be a real impact.

This approach, known as collective impact, means understanding the needs that all actors

in a school community have to support such initiatives.

Chapter Three

Research Design

Purpose and Research Questions

This study examined technology access and connectivity of students at home in a large urban school district and was guided by the following questions: (a) Which technology devices and what kind of access do students from one large urban elementary school have? (b) What are parents' perceptions and knowledge of the impact of technology access on student success? and, (c) What supports does the school community need for technology knowledge and use at home to benefit student success?

This research contributes to our deeper understanding of how students at one urban elementary school have access to technology and the internet at home. The study provides evidence and resources to the local school district and policy makers who are moving to implement one-to-one initiatives. There has been some research conducted regarding parents' perceptions and knowledge of the impact of technology access on student success. This study adds to the literature by focusing on a certain population and parents' views around how technology can impact student success. Currently, the literature does not provide any insight into the kinds of supports the school community at large, which includes families, teachers, school leaders and other community members, need to support technology knowledge and use at home. There is a growing body of literature about the effect of collective impact on a community, including school communities. In thinking about the third research question, I was interested in identifying common themes and ideas regarding what community members say they need so that policy makers can take into consideration these needs as they move forward with

technology initiatives. Many school districts and even some states have implemented

myriad technology initiatives but have never considered the collective impact of

supporting the entire school community. This study offers insight into what educational

leaders must consider when taking on such an initiative.

Research Design and Rationale

I conducted the study through a postpositivism research paradigm, meaning that it

contains "elements of being reductionist, logical, empirical, cause-and-effect oriented,

and deterministic based on priori theories" (Creswell, 2013, p. 24). I chose the

postpositivism approach for this study because I believe that the research needs to be

conducted in logical steps and the instrumentation will help support the ability to

entertain multiple views from families, teachers, and community members, who

responded to the survey questions and who participated in the qualitative interviews

(Creswell, 2013). The mode of inquiry for the study was a case study that included

qualitative and quantitative data. This allowed me to focus on one school in a large urban

school district that presents a real-life case that is "in progress" so that I could "gather

accurate information not lost by time" (Creswell, 2013, p. 98). In addition, the

administration of a survey to the entire school population and follow-up interviews with a

small number of participants helped inform the survey results. The population that I

studied lent itself to a case study because, "of the particularity and complexity of a single

case, coming to understand its activity within important circumstances" (Stake, 1995, p.

xi). This is important because it is an examination of a single school in a large urban

school district, one that has demographic characteristics similar to many schools in the

country.

In addition to collecting quantitative data via the survey instrument, I spent time observing the school community. Being present in the population I studied validated the quantitative responses that come from the surveys (Yin, 2009). For example, attending the parent nights for the school, including spring registration, helped me collect evidence that supported or contradicted the findings of the study.

The strength of the approach of developing a mixed methods case study is the "ability to deal with a full variety of evidence – documents, artifacts, interviews, observations – beyond what might be available in a conventional historical study" (Yin, 2009, p. 11). For this case study, I relied on interviews and observations to collect qualitative data. I did not collect, use or analyze any documents or artifacts for this study. Although most of the study was focused on a survey instrument that was disseminated to parents of students from the school (see Appendix A), a survey instrument with questions targeting the school community's support needs was replicated with the teachers and community members (see Appendix B). A semi-structured interview was conducted with the principal and other school leaders such as the instructional coach and the assistant principal (see Appendix C). In addition, parents and teachers volunteered to be interviewed through a semi-structured interview process (see Appendix D, and Appendix E). Enclosed in the survey packets was a postcard where individuals could volunteer to meet individually with me for a semi-structured interview (see Appendix F). For the case study, it was important that I have at least three parents and teachers to interview but I did not need more than five to gain greater insight from the survey responses (Creswell, 2013). This allowed for validation of the survey questions that I analyzed through quantitative methods as well as allowed for probing

questions to help me gain a deeper understanding of the findings. Unfortunately, none of the community members who completed the survey agreed to a semi-structured interview. Consequently, I was not able to get deeper information from them about their perspectives.

Unit of Analysis

As school districts continue to implement one-to-one initiatives and increase the amount of technology that is used in the home, it is important to conduct an instrumental case study that is bounded (Creswell, 2013). This allowed me as the researcher to focus on this school community as the bounded case to illustrate this issue of collective impact and to understand what each school actor needs to make such an implementation successful (Creswell, 2013). As displayed in Figure 3, the case is bounded by four different groups of school actors, which include families, community members, teachers, and school leaders that make up the Emerson community. The school community members may be family members of students who attend the school, but I specifically define them as individuals or groups who interact with the school on a continual basis through direct or indirect ways. These individuals are separate from teachers and school leaders because they are all are defined as not being paid by the school district for any support or services that are given. It is important to get information from each of these school actors because of the unique lens that each of them brings to the students' educational environment.
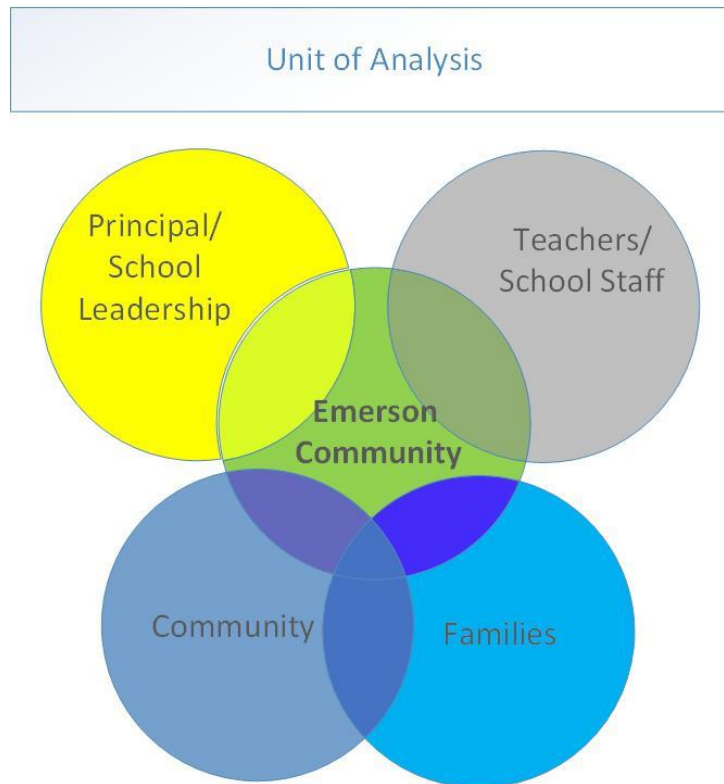
Figure 3. Unit of analysis for supporting a school community for technology knowledge and use to benefit student success.

In this case I used purposeful sampling, and additionally used purposeful maximal sampling by selecting "cases that show different perspectives on the problems, process or event I want to portray" (Creswell, 2013, p. 100). This is done by getting perspectives from the various school actors, which include families, community members, teachers and school leaders. This enabled me to examine the alignment of the support needs identified by each group. Common understanding of the supports that can be given to all four groups provides substantial insight into how a district or school community goes about supporting technology initiatives, including the implementation of one-to-one devices. It is the study of the responses from the different groups through the common survey questions that make this case study unique.

Additionally, this case study focused on one school community that is diverse and it took into account the diversity of the families and community members. The school has a student population where 100% qualify for free or reduced priced lunch and more than 80% are Hispanic and 45% are English Language Learners. This represents greater diversity than the Albuquerque School District as a whole, where 68% qualify for free and reduced lunch, 66% are Hispanic, and only 17% are English Language Learners (Albuquerque Public Schools, 2014a; Genne & Brigman, 2014). However, it is important to take into account the school's focus on improved academic performance through reforms that are supported at all levels in the school. This must be understood because the school, unlike many others in the district, has received additional financial support, professional development, and overall attention to improve the academic outcomes at the school.

Context for the Study

Tucked away in Albuquerque's southeast heights, in the middle of the International Zone, sits Emerson Elementary School–a historically low performing school. Plagued by myriad challenges for years, Emerson had gained a reputation that mirrors the community it anchors. Researchers from the Albuquerque Public Schools (APS) conducted qualitative interviews with staff members to get a description of the area the school is set in, finding, "We would have CYFD people coming in almost daily. We had police coming on campus because of crime situations. That's not okay. That's not what a school should be" (Heath & Damle, 2012, p. 9). However, with a fresh vision this dismal picture of Emerson is about to change from a site of despair to one of hope; hope infused with new leadership and a massive redesign effort.

During the 2012-2013 school year, Albuquerque Public Schools and the

Albuquerque Teachers' Federation (ATF) spearheaded a dramatic redesign at Emerson

Elementary. The redesign efforts were initiated as a result of persistently low proficiency

levels in both reading and mathematics. Only 16.3% of third through fifth grade students

tested proficient or advanced in math and only 12.7% in reading on the spring 2011 New

Mexico Standards Based Assessment (NMSBA) (Heath & Damle, 2012). However, after

the redesign those numbers changed dramatically. After only one year of implementation,

the third through fifth grade students who tested proficient or advanced on the NMSBA

shot up to 28.4% and 31.4% in math and reading respectively (New Mexico Public

Education Department, 2013). In addition, the school rose from an "F" on the 2012 New

Mexico Public Education Department School Grading Report to a "C" on the 2013 report

(New Mexico Public Education Department, 2013). The school grade continued at a "C"

when the 2014 report was issued (New Mexico Public Education Department, 2014).

The district's research staff have examined the success of the school's academic

achievements:

> It can be seen that Emerson is exceeding its predicted performance in reading and
>
> performing at the high end of its predicted performance in math. The large gains
>
> in reading scores may be attributed to the degree of professional development
>
> received by the teachers, the intensive support of bilingual students, and the skill
>
> set that comes with teachers who are TESOL and/or bilingual endorsed. It cannot
>
> go unstated that leadership has also played a role. All of these elements have been
>
> introduced in this reform project. The sense of mission and passion for improving

the school has been well articulated by the administration and accepted by the

staff. (Genne & Brigman, 2014)

This collaborative effort between APS and ATF outlined a number of guiding

principles for Emerson's redesign in April 2012. APS provided the school with a new

title, "A Common Core State Standards Demonstration School with a focus on English

Language Learners Magnet" (Heath & Damle, 2012, p. 19). Part of the redesign efforts

include one extra hour per day and five extra days in the work-year for professional

development; inclusive, democratic and distributed governance; resources for "authentic

collaborative efforts;" and training and support for school staff in implementing a

proactive, prevention-based school discipline program (Heath & Damle, 2012, p. 19).

The most significant change for the school came during the 2012-13 school year when

the majority or 76% of the staff applied and were hired to support the school in a new

way. Staff changes included the "principal, assistant principal, instructional coach, 23

teachers and five educational assistants. In addition, the school counselor and librarian

are new to Emerson" (Heath & Damle, 2012, p. 22).

Collaboration was one theme identified through a case study analysis of the

Emerson redesign efforts. According to the interviews and readings, collaboration led to

the development of clear norms, new rules, and cross grade level teacher group work.

This in turn led to 100% of the staff finding Emerson to be a "supportive and inviting

place to work" (Heath & Damle, 2012, p. i). The new commitment to collaboration was a

daily effort; they learned as a team and all staff was committed to making the redesign a

success (Heath & Damle, 2012, p. 35). Additionally, since 2012 the staff changes at the

school have been minimal. It is important to note that when teaching vacancies become

open at Emerson there is no shortage of teacher applicants for any position (Genne &

Brigman, 2014).

In addition to the work of the redesign, the school leaders worked collaboratively

with many different organizations to move the school towards a community school

model. Now the school has an array of offerings for students, families and the Emerson

community that are fully up and running including:

- For Students:

  o Boys and Girls Club with activities including arts and crafts,

    computer lap, sports/fitness, science club, and homework or

    extended learning opportunities

  o Sports Clubs including soccer and football

  o Operation School Bell, which provides shoe vouchers for students.

  o Roadrunner Food Bank Weekend Snack Bags

  o National Dance Institute (NDI)

  o Trout Habitat project from the New Mexico Game and Fish

    Department

  o La Luz Academy from Kirtland Air Force Base

- For Parents

  o Abriendo Puertos, a literacy development program for parents.

  o GED/ESL Classes

  o Skills Up Testing Center

- For Families

  - GED

  - SW Family Guidance Counseling Services

  - Boys and Girls Club

  - Monthly Family Nights focused on math, science, fine arts

    integration and literacy. (Genne & Brigman, 2014)

Currently, the school does not offer any community classes that are focused on

technology for families or students.

Participants

The participants in the study consisted of families, teachers, school leaders and

community members who are from the Emerson community. It was important to study

these four groups as they are the major actors in the school community and can provide

insight into the assistance that each of them needs to continue to support student success.

This group of individuals was selected as a purposeful sample (Creswell, 2013). The

families represent the individual students in this school and how they support them. It is

important to talk about families in the broad sense because like most schools in the

United States, these students go home to a wide variety of parents, grandparents, foster

parents, relatives, friends, and others who are responsible for their well-being.

Emerson Elementary had a total of 499 students enrolled at the time I received the

database with student addresses. After sorting for duplicate addresses, there were 372

homes that were eligible to receive survey packets. The 35 teachers and the three school

leaders were predetermined by the district and school level administrators who had been

asked to become intimately involved in this work of redesign with a focus on school

improvement. Finally, the community members are made up of those individuals who do

not work for the school district but are involved in support work for the school through

formal and informal avenues. There were more than twenty different community

organizations that support the school but only fifteen were present at the community

school meeting I attended to distribute the survey packets.

The survey instrument was made available to each household of the entire

population of Emerson Elementary School. For this study, I elected to use a census

rather than a sample due to the small size of the total population.

I conducted semi-structured interviews with all of the parents who volunteered to

be interviewed. This is important because observations of technology use and access in

the home were not conducted in the study. Enclosed with each questionnaire was a post

card that asked for volunteers to meet individually with me for a semi-structured

interview (See Appendix F). For the case study, it was important that I had at least three

parents to interview to gain greater insight from the survey responses (Creswell, 2013).

A similar process was used to gather information from the 35 staff that are at the

school. All staff members who are assigned to the school were asked to respond to the

survey. The survey was introduced during an instructional council meeting attended by

all of the teaching staff of the school. I asked the teaching staff to fill out the survey and

to put it in an envelope that I provided for them. The teachers were asked to put the

envelope into a box that was located in the exit area of the Instructional Council meeting.

I asked for volunteers to fill out a post-card that was attached to the survey if they were

willing to participate in a semi-structured interview. I was able to interview three

teachers, which was the minimal number of interviews I should have had to be able to

provide greater insight into the survey responses (Creswell, 2013).

In order to gain insight into the community groups, I attended a community school support meeting at the school where all of the support organizations, businesses, and other community groups that provide support for the school in a variety of ways but are not directly employed at the school by the school district attended. This was one of their normally scheduled monthly meetings. Twenty different community groups support Emerson Elementary School in activities that are not contracted or directly paid for by Albuquerque Public Schools. Fifteen community members attended the monthly community school meeting that I was able to attend and where I distributed the survey packets. I asked them in person to complete the surveys and return them to the main community schools coordinator when they were completed. I asked for volunteers from the community members to participate in semi-structured interviews but no one responded on the postcard enclosed with their survey that were willing to be interviewed.

Finally, I invited the principal, assistant principal, and instructional coach of the school to participate in a semi-structured interview to gather qualitative data around the support needs of the school. The semi-structured interview questions were similar to the ones used for teaching staff and for the community groups. Some of the questions were replicated for the school leaders during the semi-structured interview and there was an opportunity for me to ask probing questions to gain a deeper understanding of the school. This helped me develop an overall feeling for the school and gain greater knowledge about the assets of the school. It is important to understand the needs of this population because, "elementary schools are critical for laying the foundation for academic success as well as contributing to self-confidence" (Moore, Laffey, Espinosa, & Lodree, 2002, p. 5).

Instrumentation

In order to develop a deeper understanding of the accessibility to smartphones or computers including connectivity to the internet and parents' perceptions of the academic impact of internet connectivity in the home, I developed a questionnaire for distribution to the entire parent population of an urban elementary school. I conducted cognitive interviews with four parents from the community who were English speaking only. The focus of these cognitive interviews was to assess the phrasing, tempo and duration of the survey instrument. The feedback from these cognitive interviews was focused on the phrasing of questions. Several reviewers suggested changes to the question phrasing that would make them easier to understand. I did not make any of the changes that were recommended about phrasing because I wanted to preserve the original phrasing from the survey instruments from which I adopted the items. Those studies included one by the United States Census and the LEAD Commission (2012), one statewide study conducted by the Bureau of Business and Economic Research at the University of New Mexico (2013), and one by Rosen, Carrier and Cheever (2010). The instruments in these three studies were independently validated.

The interviewees did find several typographical errors in the survey, which I corrected. Following these interviews, I conducted cognitive interviews with four parents from the community who spoke and read Spanish and English. In these cognitive interviews I was assessing the phrasing, tempo and duration of the survey instrument, but also was assessing the Spanish translation. This is important because many parents of the students in the urban elementary school that was the site of the study are monolingual Spanish speakers. For the purposes of this study, the survey instrument has been

designated "Case Study Survey on Technology Use at Home" (CSSTUH). I received

minor suggestions to correct the Spanish translations of the questions. The suggestions of

changes to the Spanish translations were contradicted by several of the interviewees, due

to regional Spanish definitions of the vocabulary. I reconciled this by having two

Spanish speakers who were native to New Mexico read and ensure understanding of the

final translated questions.

Teacher and Community Surveys

In order to develop a deeper understanding of the supports that a school

community needs to impact student achievement using technology, I developed a

questionnaire for distribution to all members of the teaching staff at Emerson. Cognitive

interviews were conducted with four teachers from other schools who were English

speaking only. The focus of these cognitive interviews was to assess the phrasing, tempo

and duration of the survey instrument. The feedback from these cognitive interviews was

focused on the phrasing of the questions. Several reviewers suggested changes to the

question phrasing that would make them easier to understand. Although some

interviewees suggested these changes, no changes were actually made to the survey

because as was the case with the instrument I developed for the parents, I utilized items

from four previous studies (Bureau of Business and Economic Research, 2013; Bureau of

the Census for the U.S. Department of Commerce, National Telecommunications and

Information Administration, 2012; HART Research Associates, 2012; Rosen et al.,

2010).

The interviewees did find several typographical errors in the survey, which I

corrected. I conducted cognitive interviews with four community support providers who

spoke and read Spanish and English. In these cognitive interviews, I was assessing the phrasing, tempo and duration of the survey instrument, but also was assessing the Spanish translation. This is important because many parents of the students in the urban elementary school are mono-lingual Spanish speakers. For the purposes of this study, the survey instrument has been designated "Case Study Survey on Technology Use at Home" (CSSTUH). I found minor suggestions to the translations that should be changed, but did identify some contradictions between individuals and their use of Spanish. The changes were mostly due to regional Spanish definitions of the vocabulary.

Semi-Structured Interviews

In order to more deeply understand and validate the survey responses, I developed semi-structured interview protocols that I utilized with the school leaders, volunteer parents, and volunteer teachers (see Appendices C, D, and E). Additionally, because of the semi-structured nature of the interviews, I was able to probe the interviewees to gain a more complete understanding of their responses. No one from the community groups volunteered to be interviewed.

Quantitative Data Collection Procedures

To gain a broad understanding of the parents' views, I conducted a school wide family survey. The primary challenge in administering questionnaires is low response rates. I confronted this problem using three strategies: 1) direct mailing to homes, 2) direct interaction with families at spring registration and an English Language class, 3) and through direct backpack mailing. All of the surveys were tracked using a numbering system to identify how many had been sent out and how many had been returned. Each family received a mailing through the U.S. Postal Service. The mailing announced the

intentions of the survey and requested that each student have their parents complete the survey in a timely fashion and return it in the self-addressed stamped envelope.

One week after the initial announcement of the survey I mailed, the questionnaire directly to parents homes via the U.S. Postal Service using the address provided through the school. I submitted a request to the Albuquerque Public Schools Custodian of Public Records for the names and addresses of all students attending the school (See Appendix G). The information is directory information that the district is allowed to provide through the New Mexico Inspection of Public Records Act (NMSA 1978, Chapter 14, Article 2) and The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99). Each questionnaire was assigned a number so that I could track the number of surveys that were sent out and returned. I used the list from the FERPA directory information that I receive from the district. For example, the first student on the class roster in the first kindergarten class was coded "K1-01." I destroyed the lists with the numbering system once the questionnaires were returned. The numbering system helped me identify the questionnaires that were not returned and allowed me to calculate the response rate. There was a self-addressed, stamped post card included in the mailing where individuals could provide contact information if they were willing to participate in a semi-structured interview (See Appendix F).

For the initial mailing of the questionnaire I took the mailing list provided by Albuquerque Public Schools and sorted the MS Excel spreadsheet by address. Through this process I was able to eliminate the possibility of more than one survey going to the same address and family. This helped ensure that every family, no matter how many students they had attend Emerson Elementary, only received one survey through the mail.

This resulted in 372 surveys being mailed out to families. Eighty-nine surveys (23.9%) were returned to me as undeliverable because the home was vacant and the families did not provide a forwarding address.

As a result of the low response rate from families, I presented the study to the parents during any available parent meeting or event that took place at the school. During the time of the study the school held a spring registration event and a parent class for those wanting to learn the English Language. I was able to be present for both of these events. I introduced myself to them as a doctoral student and explained a little bit about my research, I then gave each parent (one per family) a survey packet. I asked them to fill out the survey while they were filling out registration forms at the spring registration event. At the event, I was able to distribute 13 surveys and had 10 returned to me. During the English Language class, the instructor used the survey as a lesson and asked everyone to fill it out as one of their class activities for the day. Four parents attended the class the evening I attended, and all four received and completed the survey. After the mailings and the face to face interaction at the school, I had received 37 surveys and had a response rate of 12.3%.

After attempting to get survey responses in person, I went on to using the third collection method. I identified those surveys that were not returned through the original mailing and sent a copy of the questionnaire and self-addressed stamped envelope through backpack mail with the assistance of their homeroom teacher. The parents received a self-addressed stamped postcard on which they could enter their contact information if they wish to volunteer for an interview (See Appendix F). It should be noted that sending information home through direct backpack mail is standard operating

procedure in Albuquerque Public Schools. Schools throughout the district, including

Emerson Elementary, send information home to parents through backpack mail on a

weekly and sometimes daily occurrence. This information includes direct information

about a student, general announcements, and other survey instruments that the district

provides. In addition, in speaking with the school leaders and teachers at Emerson, this is

the best avenue to get parents to respond to information. There were 260 survey packets

that were distributed to each homeroom teacher with a label indicating which child

should receive the survey packets through back pack mail. There were 9 surveys that

were returned because the students had dis-enrolled from the school. This resulted in a

total of 251 valid surveys being sent out, with 27 being returned completed. Through

direct mail, distribution at school events, and backpack mail, I received 63 surveys for a

total response rate of 11.6%. Three parents volunteered through the post-cards for a

semi-structured interview. I conducted those interviews and transcribed them.

The teaching staff of the school meets almost daily in an instructional council

meeting where they discuss the issues of the school and also receive professional

development. I requested from the instructional council chair that I be given the

opportunity to present an overview of this research project. Additionally, I asked the

staff to immediately fill out the questionnaires and return them to me during this meeting.

I provided snacks and drinks for the instructional council to thank them for their

participation. These questionnaires were also tracked using an alphanumeric system to

ensure proper coding of the responses for the analysis part of this study. Enclosed in the

packets that the instructional council received was a post-card where they could volunteer

for a semi-structured interview. During the instructional council meeting I distributed 35

surveys and received 30 completed surveys (85.7%). Six teachers agreed to participate in

a semi-structured interview, but because of scheduling problems, I was able to complete

only three interviews.

The community members were compiled using a list that was provided by the

principal of the school and from the community partner lists that have already been

provided in Albuquerque Public School research reports about the reform initiative at the

school. The community group members included individuals from the Boys and Girls

Club, Sports Clubs, Operation School Bell, Roadrunner Food Bank, National Dance

Institute, La Luz Academy from Kirtland Air Force Base, Abriendo Puertos, SW Family

Guidance Counseling Services, and representatives from the city and county housing

authorities (Genne & Brigman, 2014). Those individuals gather once a month at the

school's community school meeting to discuss school issues and how they can

collectively move student success forward. I requested to be able to present the research

study to the community school members and asked them to complete the survey

immediately. These surveys were also tracked using an alphanumeric system to ensure

proper coding of the responses for the analysis part of this study. Enclosed in the survey

packet was a post-card where they could volunteer to participate in a semi-structured

interview. All fifteen of the community school meeting participants received and

completed the survey, but none of them volunteered for a semi-structured interview.

Qualitative Data Collection Procedures

Due to the small number of school leaders (principal, assistant principal and

instructional coach), I conducted in-person interviews with them using the same

questions that teachers and community members answered on the questionnaires (See

Appendix C). I asked probing questions in a taped interview so that I could gain an even

greater understanding of the school and the issues faced by the school leaders. It was

also important to understand from their perspective the supports needed by the school

community to ensure technology knowledge and use at home in order to contribute to

student success.

It was important to conduct semi-structured interviews with volunteers from each

of these groups to validate the responses from the questionnaires that were disseminated

to the parents, community members and teachers. Creswell suggests conducting between

five and twenty-five interviews (Creswell, 2013). From the three groups, I conducted

three interviews of parents and three interviews of teachers. Unfortunately, I was not

able to get any volunteers from the community support groups so I do not have any

qualitative data to support their survey responses.

I utilized a semi-structured interview protocol to solicit responses to 17 questions

that I identified as important questions to gain a deeper understanding of the phenomenon

of technology and its role in student achievement. Creswell recommends that the

questions begin with "two broad general questions including: What have you

experienced in terms of the phenomenon? What contexts or situations have typically

influenced or affected your experiences of the phenomenon?" (Creswell, 2013, p. 81).

He adds that it is important to include other open-ended questions but beginning with

these will ensure that the understanding of the common experience of the participants is

understood and evaluated in the research (Creswell, 2013).

As a result of this guidance for this case study, I asked the same questions during

all of the interviews, with various probing and related questions added to ensure that each

interviewee provided a full response (see Appendices C, D, and E,). Additionally, there were specific questions that applied only to the groups of individuals that were being interviewed.

I interviewed the participants individually. The interviews ranged in duration from 10 to 20 minutes. I began each interview with a statement explaining that the interview would be used in a study and gained written consent. The purposes of the research, the duration of the interview, the subject's participation, and a description of the procedures to be followed were provided to each participant. The interviewees were kept anonymous. In reporting the responses from the different interviews, I used general terms in referencing who I interviewed. For example, I interviewed three parents and have labeled their responses parent #1, parent #2, or parent #3. This allowed me to show how their responses differ without having to identify the individual I interviewed. Additionally, this is within the guidance that I was given by the Albuquerque Public Schools Research Review Board (see Appendix I). They required me to guarantee the confidentiality of participants, but I am able to use the district's and the school's name in this study.

All of the interview questions are open-ended questions with follow-up questions for clarification and elaboration. This is important to fully understand the interviewee's views on technology and the impact on student achievement. The full narrative of each participant's response was recorded using a digital audio recorder to ensure that the full and accurate responses to the questions was gathered. This will also allowed me to devote my full attention to the responses that were being given by the participants.

Regardless of the length of the responses and/or the interview in its totality, the entire interview was captured and later transcribed.

In addition to the work of conducting semi-structured interviews, I conducted observations of teachers in various settings as they interacted with students mostly inside their classroom. During observations I was a nonparticipant/observer, which "is an outsider of the group under study, watching and taking field notes from a distance. He or she can record data without direct involvement with activity or people" (Creswell, 2013, p. 167). This was important to be able to write notes and my observations as teachers interact with students to give an additional dimension to the qualitative research. During the observations I recorded field notes following an observational protocol recording the topics and general conversations that were taking place, if the individuals specifically discussed technology, and the overall perception that I have of the interactions (Creswell, 2013). The observational protocol allowed me to record descriptive notes about the interactions and then to also record reflective notes. In addition, I provided context for the field notes such as a clear label and description, which assisted in using the field notes during the development of the findings section of the case study (Creswell, 2013).

Data Analysis

I used the variables I created from the survey to develop a summary of the participants' responses. I calculated descriptive statistics for the responses to all of the items on the questionnaires.

It is crucial to understanding the connectivity of students to the internet and their parents' views of the impact of having internet access at home and the impact on student achievement. Consequently, I collected these data not only to inform this study, but to

also provide data for future studies that may be conducted by the researcher or other individuals with this data set.

I calculated descriptive statistics for each of the variables, including mean, median, minimum, maximum, and frequencies. This provided a general understanding of the responses. In addition it gave me the ability to compare the data to other national studies that have been collected using these questions in other large scale studies including the U.S. Census (2012), the Bureau of Business and Economic Research at the University of New Mexico (2013), the Lead Commission (2012), and work by Rosen, Carrier, and Cheever (2010).

Additionally, I used descriptive statistics to analyze the responses from the survey instruments that were disseminated to the teachers and community members. I used those statistics to write a summary of the responses. Additionally, I compared the responses from the surveys used in this case study with the results from the previous studies that used the same questions and showed where the respondents in this study differ from the previous research. This provides an understanding of the support that a school community needs. I included in this analysis a qualitative approach to group the responses to the questions that focused on the assistance that the families, teachers, school leaders, and community members say they need to support knowledge and use of technology at home to contribute to student success.

I also conducted contingency table analyses (crosstab) to examine the parents' responses. This provided greater insight into the parents' responses and a deeper understanding of their beliefs about technology and connectivity.

I transcribed the recorded interviews. After I completed the transcription process, I undertook "horizontalization," meaning a "highlight of significant statements, sentences or quotes that provide an understanding of how the participants experienced the phenomenon," (Creswell, 2013, p. 82). I used the common themes to develop recommendations as to how the entire school community can support the technology initiatives.

Standards of Quality

The questions that I included in the data collection instruments for this case study have all been tested for reliability in other studies. This has allowed me to compare the findings from this study to other studies. In addition, I coded each questionnaire using an alphanumeric system so that I was able to document the number of questionnaires printed, sent out, and returned. This allowed for a quality check not only to ensure that the proper number of questionnaires but also so that there were not copies of surveys being returned that I did not issue. Additionally, the information gathered from the interviews with principal and assistant principal guided me in ensuring that everyone who needed to respond to the study had the capacity, tools and the time needed to support the research.

Limitations

Although every family in the school received a copy of the questionnaire through direct mail, and through their child's backpack mail, some parents have multiple children who are attending the school. I addressed this by requesting class rosters for each class and then alphanumerically coding the questionnaires. During that process, I identified identical addresses so that each household only received one survey packet. Once I used

the rosters to code the questionnaires that were sent out, I destroyed the rosters so that I could not link responses from the surveys to one particular family.

Additionally, the survey instrument for the parents, teachers and community members was translated into Spanish. We know that the majority of the students at the school are of Hispanic descent, but I could not ensure that each parent who received the survey would either speak English or Spanish, so there may have been some surveys that were not returned because the parents speak a language other than English or Spanish.

Concluding Remarks

The primary purpose of this study was to develop a deeper understanding of patterns related to access to devices and internet connectivity for students at home, their parents' views on academic impact of using technology, and the supports the entire community needs to ensure that technology knowledge and use at home is undertaken with the intention of supporting student success. Through analysis of these data, I hope that school districts can better understand the importance of internet connectivity as they implement digital learning plans including one-to-one initiatives. This case study provides a better understanding of students from one urban elementary school, use of the internet at home, and if that use is through traditional internet access in the home or through cellular phones or smartphones. In addition, I hoped to gain a deeper understanding of parents' views of how internet connectivity impacts student achievement. I utilized the interviews with the school leaders, parents, and teachers to gain greater insight into the supports that should be in place to help successful implementation of technology initiatives such as one to one initiatives. In addition, the semi-structured interviews helped me validate the survey responses. This information

helped me gain deeper insight into the collective impact approaches we must take to successfully implement technology initiatives in schools and to inform policy makers in school districts.

Chapter Four

Findings

Introduction

The purpose of this study was to identify and describe the support systems needed by a school community when planning and implementing student technology initiatives intended to increase student academic success. This study examined technology access and connectivity of students at home in a large urban school district and was guided by the following questions: (a) Which technology devices and what kind of access do students from one large urban elementary school have? (b) What are parents' perceptions and knowledge of the impact of technology access on student success? and, (c) What supports does the school community need for technology knowledge and use at home to benefit student success?

The first section in this chapter presents the school-level context for this case study including information about the participants or those who responded to the questionnaires. This section focuses on the families whose children make up the student population of Emerson Elementary school. Following that section, I organized my findings from the questionnaires and interviews using the themes from the literature review including the digital divide and technology skills for the 21st century, connectivity, one to one initiatives, and professional development. An unanticipated theme from this analysis included the need for computer skills for all school actors, including families, school leaders, teachers and the community groups and organizations who are supporting the school and community through various efforts.

In this chapter, based on the data analyses I conducted, I have offered substantiating evidence that the digital divide at Emerson is not the same as it is in the State of New Mexico, including connectivity at home and through various devices. In fact, students at Emerson have better access to technology devices and connectivity to the internet than the rest of the state. Additionally, families of the students at Emerson Elementary are more likely to use their cell phone to access the internet to support their child's school work than they are to use their computer or tablet to do the same thing. Connectivity remains an issue with some of the members of the Emerson families because of the expense of having high-speed internet in their homes. Additionally, when asked, the majority of individuals in this study say that the responsibility of ensuring connectivity in the home remains with the families and not the school or community. However, it is clear that the majority of the respondents feel that having high-speed internet in the home gives a student a big advantage on their path to academic success. Finally, all school actors asked for additional general technology classes and other courses and support so that they could become assets at school, in the community and at home to support continued learning using technology.

Emerson Elementary School

Emerson Elementary School is one of 89 elementary schools in Albuquerque Public Schools, but remains unique because of its location in the city's International Zone, having 100% of their students on free lunch, and the declaration that the school is a community school (Genne & Brigman, 2014). All of these factors put it on par with the typical urban elementary school in the country (Rumberger, 2015). The school is minority majority, with Hispanics representing more than 80% of the student population

(Genne & Brigman, 2014). Beyond the simple demographics of the school, it has

undergone major educational reform developed by the school district and the teachers'

union. Each teacher gets paid for working a longer contract day that equals eight hours.

In addition, each and every staff member must be specifically trained to support students

who are learning a new language and are all members of the school's instructional

council (Genne & Brigman, 2014).

Upon first glance, the school is traditional with a large manicured green lawn

leading up to the front entrance of the school. It is surrounded by single-family homes

and is just blocks away from many multi-family homes that make up the attendance

boundary of the school. One house, immediately across from the main entrance of the

school has the traditional white picket fence, a home to the same couple for more than

sixty years. Just blocks away, the community changes to multi-family apartment

buildings that are part of the city's public housing project and have not been properly

maintained. Many of these apartments have broken windows, doors with holes in them,

and other signs of non-maintained facilities like graffiti. All of this is prevalent as you

walk or drive through the attendance boundary.

Inside the hallways of the school, red brick walls and wooden doors show the

building's age of more than 50 years. As part of the reform or turnaround efforts at the

school, about $300,000 in upgrades were done at the school to literally open up

classrooms to natural sunlight by replacing non-operational window blinds, replacing

nonfunctioning light fixtures, and replacing or completely doing away with the carpet in

every classroom of the school (Genne & Brigman, 2014). As you walk into classrooms,

you can see that technology plays a major part in instruction, the majority of classrooms

have interactive whiteboards. As part of the turnaround efforts in the school (Genne &

Brigman, 2014), the teachers received professional development onsite on providing

more interactive instruction with the interactive whiteboards. The school contains two

large computer classrooms that have more than 30 state of the art computers in each; one

is intended for use by students only and the other was designed for community use.

Supporting the school's technology is one computer technician and one technology

teacher. Both work together to support students, offer pull out classes for each teacher,

and coordinate the school's standard based assessments, which must be done using the

same computers in the computer classrooms. This technology resource team, made up of

the computer technician and the computer teacher, is a unique use of resources in this

district. No other elementary school in the district has made this financial commitment to

technology and instruction. The school received funds from the state of New Mexico's

School Improvement Grant and the school leaders then made part of that funding

available to be able to implement this technology team. The school applied for these

funds intended to align with the turnaround efforts of the school, which began in 2012.

Their collaboration and impact on student learning is promising and something that was

an intentional move on the school leader's part. The school leaders have a clear passion

to give all students equitable opportunities to engage with technology inside the school

walls, in this safe, nurturing and caring environment that is clearly becoming the

heartbeat of the community.

The Participants

As with any large urban elementary school the families or parents in the study

reflect the student population of the school. It was important to engage the families in

this research to better understand the digital divide and which technology devices and type of connectivity access that students had at home. I used three different methods to disseminate the questionnaire designed for parents: direct mail, attending school events, and back pack mail. This process spanned about a month-long period because of the surprisingly low response rate that I received from direct mail, which resulted in my attending school events and using back pack mail to get an understanding of the familial environment of the school for this study.

The parent questionnaire was lengthy and asked for minimal demographic information. There were 372 survey packets mailed out to families and 23 (8.1%) were returned completed, but 89 (23.9%) were not deliverable or the home was vacant. At the school events I distributed 17 survey packets and received 14 (82.4%) completed. Through backpack mail there were 260 survey packets sent home and 27 (10.8%) were completed with 9 survey packets not going home because the students had withdrawn from the school. Those demographic questions included understanding how many children lived in the household, education levels, employment status, and race. The participants had an average of 2.3 children per household, as defined in the questionnaire as someone who was under the age of 18. The range of children living in a home was a minimum of one child to a maximum of five children. Additionally, it was important for me to understand the educational levels of the families from which the students come. Previous studies have shown the impact of educational attainment and the relationship to technology knowledge and use (Bureau of Business and Economic Research, 2013; Bureau of the Census for the U.S. Department of Commerce, National Telecommunications and Information Administration, 2012). As seen in Figure 4, only

46% (29) of the respondents had more than a high school education including some

college, completing a college degree or participating in graduate courses. Additionally,

14% (9) of the respondents had less than a high school education and only one person

refused to provide a response to this question. This is significant because of the recent

studies that show those individuals who have more education tend to have more access to

technology devices and connectivity (Bureau of Business and Economic Research, 2013;

Bureau of the Census for the U.S. Department of Commerce, National

Telecommunications and Information Administration, 2012).
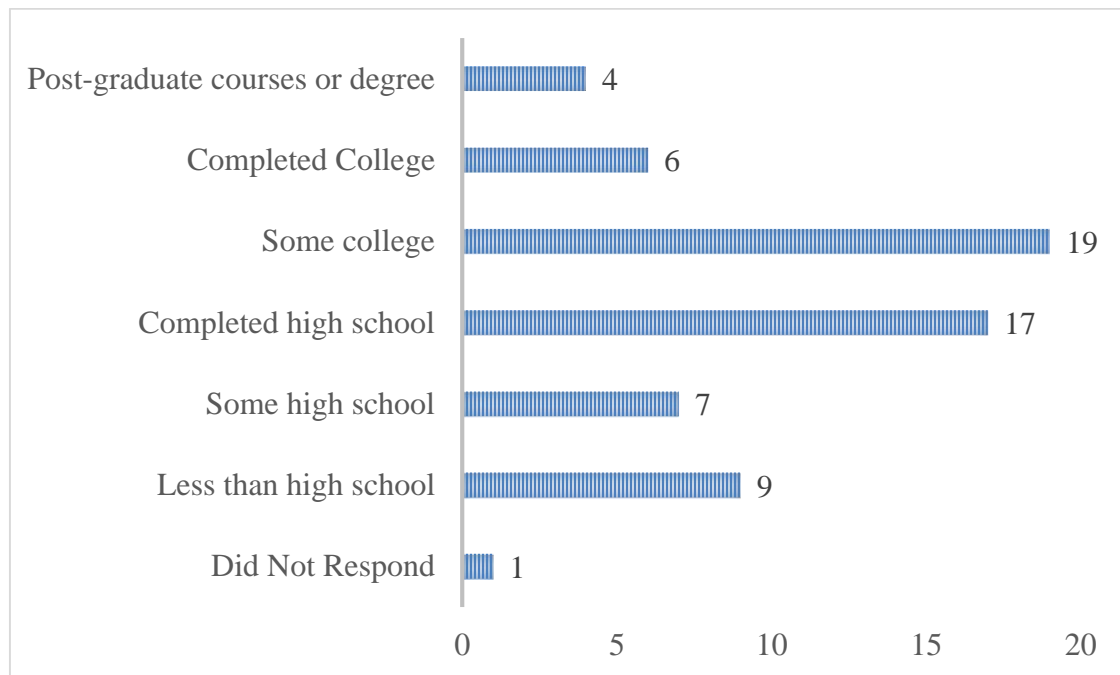
Figure 4. Parents' educational levels (n = 63).

Educational level and employment status are both linked to how important

technology is in individuals' lives and how that translates into access in the home. Those

who are employed usually have more access to the internet. Among the respondents, as

seen in Figure 5, the majority say that they work part time or full time. Only a small

percentage of the respondents said that they were unemployed. However, 8 (13%) of the

respondents said that they were homemakers. The designation of homemaker has been

declining across the country over the past decade but represents a notable part of the

respondents in this study (Cunningham, 2008). Only one respondent selected full-time

student, while no one responded that they were going to school part-time or were retired.

What is clear is that the families that responded to this questionnaire work part time or

full time to support their students financially.
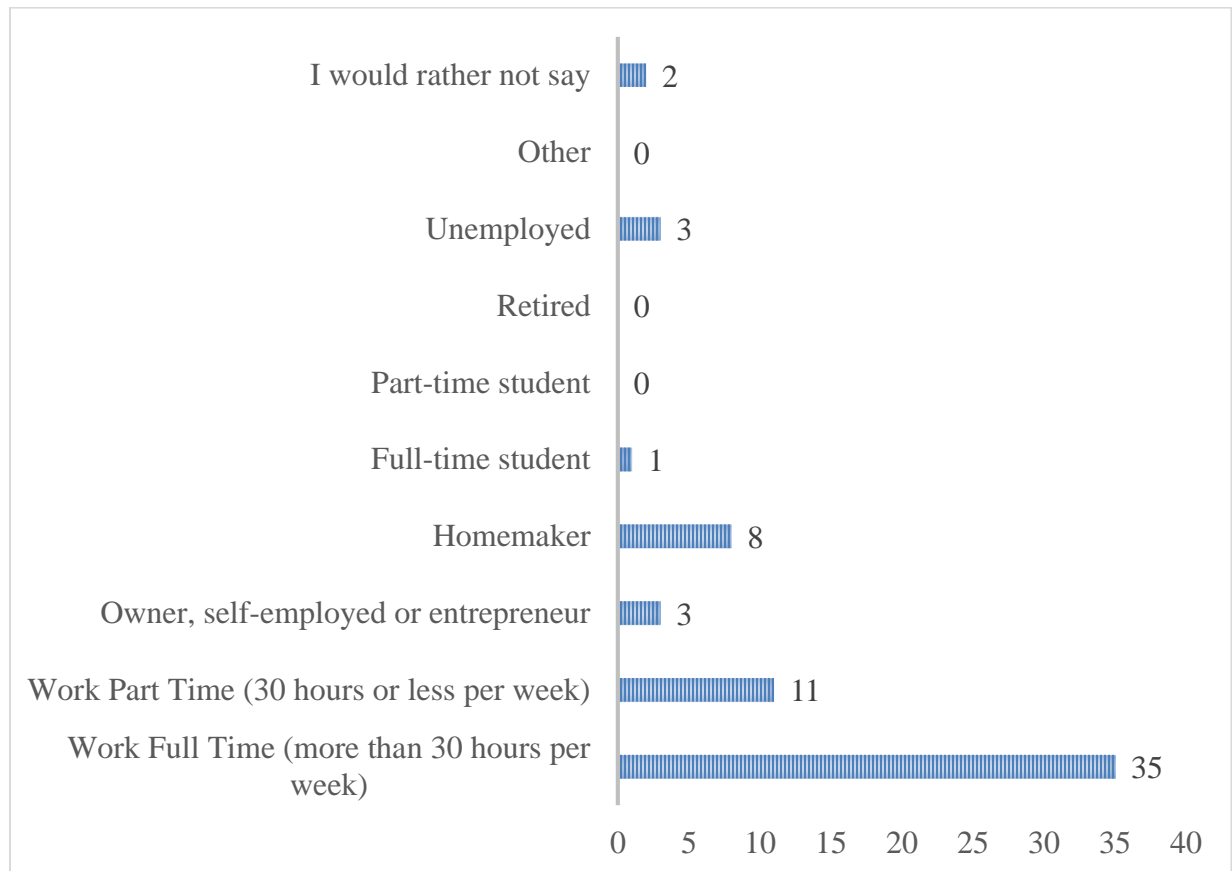
*Figure 5*. Parents' employment status (n = 63).

        The respondents to the survey mirror the racial population of the school. As seen

in Figure 6, 76% (48) of the respondents said that they were Hispanic or Latino, this

closely parallels the student population of 80% Hispanic (Genne & Brigman, 2014). The

second largest racial/ethnic group that responded was White or Caucasian. A very small

number of respondents were Native American, Asian or Asian-American, Black or

African American, which is similar to the student population of the school. This

compares with the demographics of the school where 6% are Native American, less than

1% are Asian or Asian-American, and 4% are Black or African American (Genne &

Brigman, 2014).
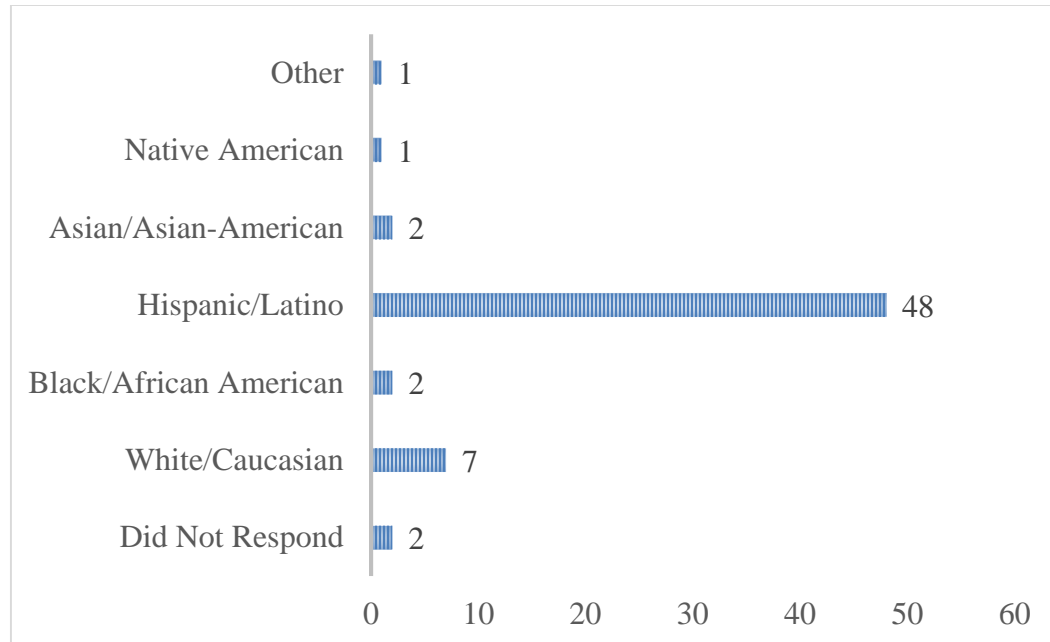
Figure 6. Parents' racial/ethnic identification (n = 63).

From the demographic information that was provided on the questionnaires, the

respondents to this survey had on average 2.3 children under the age of 18 years old

living in their homes, less than half had more than a high school education or college, the

majority worked part-time or full-time, and the racial make-up mirrored the school with

the majority of respondents being Hispanic.

Parent Involvement

A key factor in understanding the school community and the role that families

play in their child's education is the level of parent involvement in various circumstances.

We know from previous studies that the greater the level of parental involvement in a

child's education the greater the education success they are likely to have (HART

Research Associates, 2012; Henderson & Mapp, 2002; Hoover-Dempsey et al., 1992).

Additionally, continued learning at home provides additional benefit to students,

especially over days off and during the summer (Lee & Bowen, 2006). As part of the

qualitative data collection for this study, I was able to interview three parents who also

responded to the questionnaire. In the interviews, I asked parents about their

involvement in their child's education. This included asking them to talk about how they

help their children with homework, participating in field trips, and serving on the PTA. It

was important that the definition of parent involvement be as broad as possible because

of the diverse opinions about the definition of parental involvement. All three parents

talked about the lack of time that they had to participate in their child's education:

> Parent #1: Because of society and you know how it is today, I don't have much
>
> time to go with them on the trips and stuff, but I do the homework with them,
>
> every day. I sit down, I read with them, and I try to avoid internet at that time, it's
>
> just me and them only.
>
> Parent #2: I just help them with the homework and with field trips. Not in the
>
> PTA because one day I was going to join the PTA but they have meetings often
>
> and sometimes I have them here at school, too, and I can't go. So I think being in
>
> the PTA is a lot of responsibility and you need to have a lot of time, and I don't
>
> have that much time.
>
> Parent #3: I've been to a field trip, he's only in pre-k so it was my first one. I do
>
> try to go to the events. I'm a single parent so it's kind of hard and tough to put in

a two-week notice and that's if they tell me two weeks ahead. Education wise it

would be a lot easier to hand him an app and say do this, they evaluate it for me

but since we are not there yet I have to watch him do the things and kind of

explain it more. If there was a computer involved it would make being a single

parent a lot easier.

All three parents talked about the impact time has on their role of being an

involved parent inside the classroom and at home. However, all expressed a sincere

desire to support their children's ongoing learning and educational opportunities at home

and even at school. The parents I was able to interview all worked part-time or full-time.

This could account for the pressure to find time in this complex society where the push

and pull between home and work becomes confounded. It was clear from the parents that

I interviewed that they want additional support from the school on how to continue

learning at home. One parent even stated that they wished the school would spend time

creating an app for every subject with evaluations built in so that they could know exactly

what to do and how their students were doing.

I asked the parents I interviewed to describe the school culture, including whether

it was welcoming and if parents were involved in supporting students. One parent

described the lack of parental involvement:

It's welcoming but parents are not involved in supporting students. Some of them

are involved and we can tell right away who by how the kid works and how he is

developing. But sometimes we ask the parents to help us a little bit but

sometimes they say they don't have time. Sometimes when I go to my kid's field

trip they ask for four chaperones in order to go and so they are begging on parents

to go, please go, please go. Sometimes when I go to the meetings for my kids

sometimes there is not enough parents, so the teacher sometimes says we are

going to do a dinner but sometimes in school they don't go. Even though the

teachers are asking what else can we do to make and get the parents involved into

education with their kids, but everything they do, translators, they have translators

and everything and the parents still don't show up.

The lack of parental involvement is a concern in moving any school forward. As

Emerson Elementary has gone through school reform efforts the hope was to get more

parental involvement (Genne & Brigman, 2014). However, one teacher said they are still

working hard at engaging parents with little success:

It's hard to have an open house and you get two signatures, those kinds of things,

but then something else is hosted and there is a bunch of parents. I still can't

figure out why. We had a huge turnout for our summer school meet the teacher,

but we were giving out different things. We were giving out the bus pass, we

were giving out things, and we had pizza, so those were all things we noted for

next year. Other than our teacher night during the school year we do not get

much attendance, but we are looking at the way we are planning our parent nights.

I really want to think about differently this next year, and what days of the week

and just combining maybe multiple things.

I witnessed this as part of my observations of the school community. I attended an

evening event where parents could register for the upcoming school year. At the event, I

observed whole families attending together including parents, all of their children, and in

some cases extended families. Those parents who could not speak English, used their children of various ages as the translator.

As the school continues to move forward with its reform efforts and placing an intentional focus on parental involvement and engagement of all families, the language barrier on both sides of the equation must be acknowledged. One parent expressed her frustration about a recent meeting:

> I went to a meeting after school and it was in Spanish. They had to have a translator because it was kind of different, she even asked in Spanish if the English people here need to have a translator, but in Spanish. So if you did not know any of that, you wouldn't know to raise your hand, which was kind of awkward for me. I felt kind of embarrassed. I felt out of place, so just in that school, a lot more detail goes toward Spanish speakers. That's one of the reasons I chose that school because I wanted to make it more diverse for him because I wanted him to get the whole world in that classroom (but do they treat the parents good) oh yeah the teachers are great, there is no issue, I mean education wise he did very well.

When the parents were asked what the school can do to be more welcoming to families, one parent encouraged the continuation and expansion of parent and teacher conferences, supporting families in the education of students and telling them what they can do at home. The parents said they wanted clear communication about what they can do and why they were there at the school for an event. One parent described it as, "when it came down to it, I have no idea what I was there for, I know she went over some stuff

but it's kind of common sense to me, so it was kind of like I wasted my time, if I would have known it would have been in Spanish only, I would not have gone."

The Digital Divide and Technology Skills for the 21st Century

One of the critical questions that guided this research was taking a look at the digital divide that was present in the Emerson community, specifically among families and in the home. To understand the digital divide is important prior to asking and evaluating the responses from the families in this school community. The literature shows that the digital divide has "traditionally described inequalities in access to computers and the Internet between groups of people based on one or more dimensions of social or cultural identity" (Gorski, 2005, p. 3). After the year 2000, the digital divide was seen as an informational divide in which individuals either knew or did not know not how to use and create items using technology. For this study, it was important to not simply look at the digital divide and show what we know may already exist, but to go deeper to understand what can be done to support the entire community to become more techno-literate. What we know and must understand is how to use the ever-changing devices, hardware and software in an effective way to positively affect our lives, whether for student use, personal use or everyday business. Beyond just the ability to connect to the internet, smart phones allow the ability to participate in social networking and even educational opportunities in the comfort of their own homes even if they have made the decision to not purchase a land line (Moddares, 2011). The ability to connect to the internet through smart phones can be seen when examining how the type and quantity of cell phones a family owns and how the internet is being used.

Emerson Elementary has two computer classrooms or labs, one that is exclusive to students and one that is open at sporadic times to the community. However, when families are asked if their child has access to the internet from a computer at school, 22% (14) of the respondents to the survey said "no," which is a surprising lack of connection between what students are experiencing in school and what the parents know about those experiences. This may be because of lack of communication from students to parent or even teacher to parent but the disconnect remains for almost a quarter of the respondents. It should be noted that the majority of the respondents did know that computer and internet access was being used to support their child's learning at school, including access to the internet from a computer.

The school offers computer and technology classes for each grade level, as a pullout or support class and teachers have the opportunity to schedule computer lab time for their classes. This can be used to support lessons the teacher is teaching or to supplement time during a specific project that may be computer based. From the results of this survey question, there is a communication gap about what is going on at the school and what parents know about their students' instructional experiences.

Families believe that it is important for the school to make good use of technology. As seen in Figure 7, the school actors including community, teachers and parents said that it is very important for the school to make good use of technology.
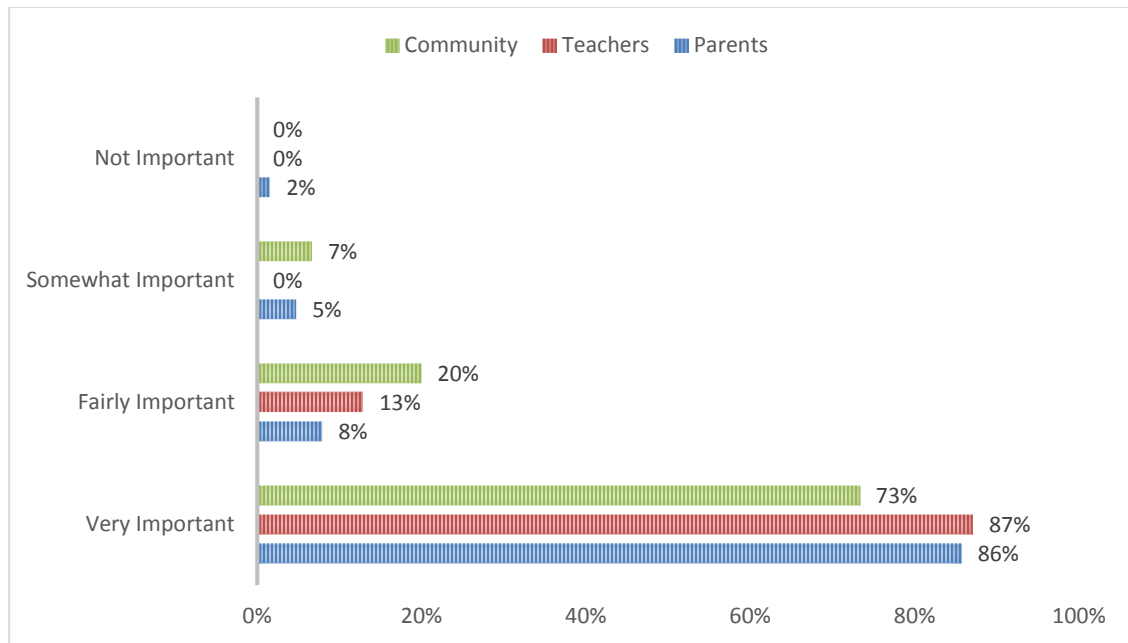
Figure 7. Importance for schools to make good use of technology (Community members n = 15, teachers n = 31, and parents n = 63).

It is important to understand the background about these beliefs as technology plays a more important role at school and in the classroom. When asked if it was important for the school to make good use of technology and why or why not, one parent told me:

> Yes it is good, because students learn a lot through technology, nowadays
> everything is through technology, in my opinion, I'm not too good at technology
> but I think it's good for them because they are the ones that are going to be
> working in the future, but for me it's better to use my dictionary like I used to in
> the back days. But for them it's easier to search or look up on the internet.

While another communicated: Yes because I mean we are getting to point that the internet is necessary for a lot of things, it wasn't that way when I was growing up but, I wish I would have had an earlier start. Finally, the third parent I interviewed commented

about the need to have technology but says, "I think that they still need to use the books, go to the library and it's not all about the internet. And sometimes the internet is not all true all the time."

The beliefs of the role of technology in education and what it will be ten years from now are important to understand. When asked, the majority of the school actors said that technology will be much more important in education looking ahead a decade. As can be seen in Figure 8, it is interesting to examine the responses of community and teachers who only said that technology would be somewhat more important or much more important in education ten years from now. No teachers or community members said that the role of technology would be the same or less important, while a few parents did. Using contingency table (crosstab) analysis, I examined parental responses to this question to determine if parents that had a college education or advanced degree responded differently from those who had a high school education or less. The responses between the two groups had 24 respondents in each group saying that the role of technology would become much more important. It is evident from this analysis that their educational levels did not influence their response as to the impact of education in ten years. Each group had only one person respond that technology would become less important.
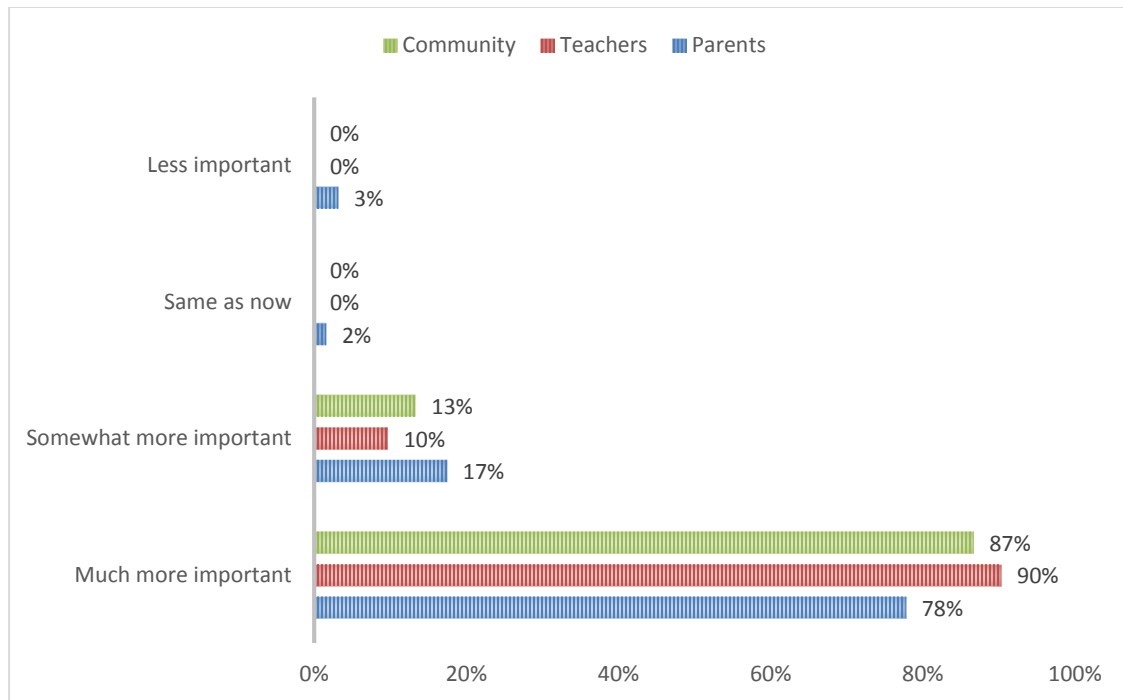
Figure 8. Role of technology in education in 10 years (Community members n = 15, teachers n = 31, and parents n = 63).

It is important to understand the digital divide through the lens of what type of access students have to technology devices in their homes. To gain a greater understanding of this, the participants were asked to share how many desktop, laptop, netbook, notebook, and tablet computers were in use in their households. The average of the 64 respondents was 1.96 of these devices per household. Examining the responses from the questionnaires, the responses for households having a desktop, laptop, netbook, notebook, and tablet computers ranged from a minimum of zero to a maximum of six. There continues to be inconsistent research about the impact of technology at home on academic success (Becker, 2006; Center on Media and Human Development, School of Communication, Northwestern University, 2013; Cleary et al., 2006; Eamon, 2004; Eubanks, 2012; Mardis, 2011). Parents' views on the importance of technology often

varies widely in the literature (Buckingham, 2007; Center on Media and Human

Development, School of Communication, Northwestern University, 2013). In this study I

asked the parents how important it was for students to have technology at home in order

to have academic success:

> Parent #1: No I don't think that's completely true (laughs). It is important for
> them to have internet access at home because some teachers today just a lot of
> homework have to do with the internet or access online but it doesn't have to do
> with their success.

> Parent #2: I really don't think that they need that technology at home but it's a
> requirement in order for them to do their assignments for school. Like I have two
> kids who are going to UNM and in order to their homework everything needs to
> be on the computer. They need to send it at a certain time to the teachers and then
> they get back the answers and all of that. One of my sons is also doing some
> counseling through the internet and they ask him questions and he answers them
> back.

> Parent #3: Of course, I think it's better that they learned from supervised adults
> or parents but also from teachers being supervised at school just because they
> know the difference. You can play games when mommy is watching but you
> really can't do that at school.

I did not seek to identify the impact of technology at home on academic success.

However, from the mixed reactions from parent responses more research needs to be

done in this area. Furthermore, the qualitative responses from the parents I interviewed

and their perceptions of the impact of technology remain inconsistent.

The misunderstanding may be as clear as understanding which devices can connect to the internet and which cannot. Many times individuals do not realize that their smartphone is a computer, just in a smaller form. As indicated in the research, smartphones are increasingly the means by which individuals access the internet (Bureau of Business and Economic Research, 2013; Bureau of the Census for the U.S. Department of Commerce, National Telecommunications and Information Administration, 2012). Beyond just the ability to connect to the internet, smart phones allow the ability to participate in social networking and even educational opportunities in the comfort of their own homes even if they have made the decision to not purchase a land line (Moddares, 2011). However, cell phone-based internet access does have its limitations even for tasks such as applying for jobs or doing complicated searches for information. In addition, connectivity speeds make using cell phone-based internet unreliable for users to be able to truly be able to depend on it (Stover, 2014).

The majority of the participants in this study do use their smartphones to access the internet for their child's school work, where 59% (37) said that they use their smartphones for their child's school work as opposed to 41% (26) who said that they use their smartphone to access the internet for other uses. This is important to note since technology is becoming a bigger part of supporting student success beyond the school house doors. There is a growing need for parents and other school actors to keep the learning of students moving forward beyond the school hours. School districts must acknowledge that there is a majority of the population that are only using their cell phones to access the internet as opposed to using computers. In the school district in which the study took place, Albuquerque Public Schools, the district has launched a

campaign to get parents to check grades and attendance using the online student

information system (Albuquerque Public Schools, 2014b). They have made sure that it is

accessible through cell phones, which is especially important based on the responses to

the questionnaire. This population of the city and the district, which replicates many

urban school districts and schools, is using cell phones to access the internet. This is

done more so than other devices, however when they are accessing the internet on the

smartphone, they are more apt to be using it to support their child's school work. This is

being done at higher rates, at least in this response group, than those who use the internet

on devices such as a laptop or desktop in their home.

        The literature suggests that certain populations will use whatever devices they

have access to, such as gaming devices to access the internet (Buckingham, 2007).

Research has shown that individuals may make good use of their access to the internet no

matter what the device is, especially those who live in poverty and are of minority status

(Bureau of Business and Economic Research, 2013; Bureau of the Census for the U.S.

Department of Commerce, National Telecommunications and Information

Administration, 2012). My findings contradict the literature. Only a small number of

children are using their game systems such as a Wii, XBOX, or PlayStation to access the

internet. Although these gaming systems are able to connect through Wi-Fi to the

internet, out of the 63 respondents to this survey only 29 (30%) said that they use the

gaming device to access the internet. I did not ask what they were accessing on the

internet through their gaming devices, so it remains unclear the impact having these

gaming devices in the homes has on academic achievement.

Connectivity

As technology continues to become embedded in our educational environment, we need to examine the access to technology and the internet connectivity that students have in their homes. Beyond just access and connectivity is the need to understand how school communities use technology to benefit student success. In addition, it is important to understand how all school actors can benefit from connectivity to better themselves, the community at large and then will translate into support of student needs and success. As more and more school districts begin to implement one-to-one initiatives, they also must ensure these resources are available for home use with connectivity. According to the United States Department of Commerce, households with lower incomes and less education, as well as African Americans, Hispanics, people with disabilities, and rural residents, are less likely to have internet service at home. In addition, 81% of Asian households and 72% of Anglo households had broadband at home, compared to 57% of Hispanic households and 55% of African Americans households (Vahey, 2011). What is clear is that the current digital divide in the country is synonymous with racial, ethnic, class and gender lines but extends to geographic and age divides as well (Moddares, 2011).

According to a recent report by the University of New Mexico's Bureau of Business and Economic Research on *Broadband Subscription and Internet Use in New Mexico* (Bureau of Business and Economic Research, 2013; Mayfield, 2014), New Mexico is dead last in the country when it comes to internet connectivity. The barriers to home internet access are aligned to affordability and, as seen in other studies, are linked

to the perception that the internet is of little personal use (Bureau of Business and

Economic Research, 2013).

Forty-six (76%) of the respondents in this survey said that they use the internet in

their homes. This is significantly above the connectivity rates of all New Mexicans.

Just more than half (54.9%) of New Mexico residents have access to the internet in their

homes (Bureau of Business and Economic Research, 2013). The state lags significantly

behind the rest of the country; in 2010 the U.S. Census Bureau found that Utah had the

highest number of households with access to the internet with 83%, neighboring states

Arizona and Colorado had 75% (Economics and Statistics Administration and National

Telecommunications and Information Administration in the U.S. Department of

Commerce, 2011). The rural nature of the state of New Mexico may play a role in

connectivity percentages across the state. In this study, it can be seen that the majority of

the respondents do have internet access and each house hold has almost two computers,

laptops, or tablets in their home to access the internet. This is significant, especially

when examining connectivity in the nation and country (Bureau of the Census for the

U.S. Department of Commerce, National Telecommunications and Information

Administration, 2012 & Bureau of Business and Economic Research, 2013).

The majority of the respondents said that they access the internet at home using

cable modem service or a Digital Subscriber Line (DSL) service. As seen in Figure 9, 10

(22%) respondents said that they access the internet using mobile broadband, which may

include using it to access the internet from a computer, cell phone, smartphone or tablet.

This parallels information from this study that demonstrates the majority of respondents

are using their smartphones to connect to the internet. When I examined what they were

accessing when using the internet on their smartphone, a majority of the respondents said that they were using it to support their student's schoolwork.
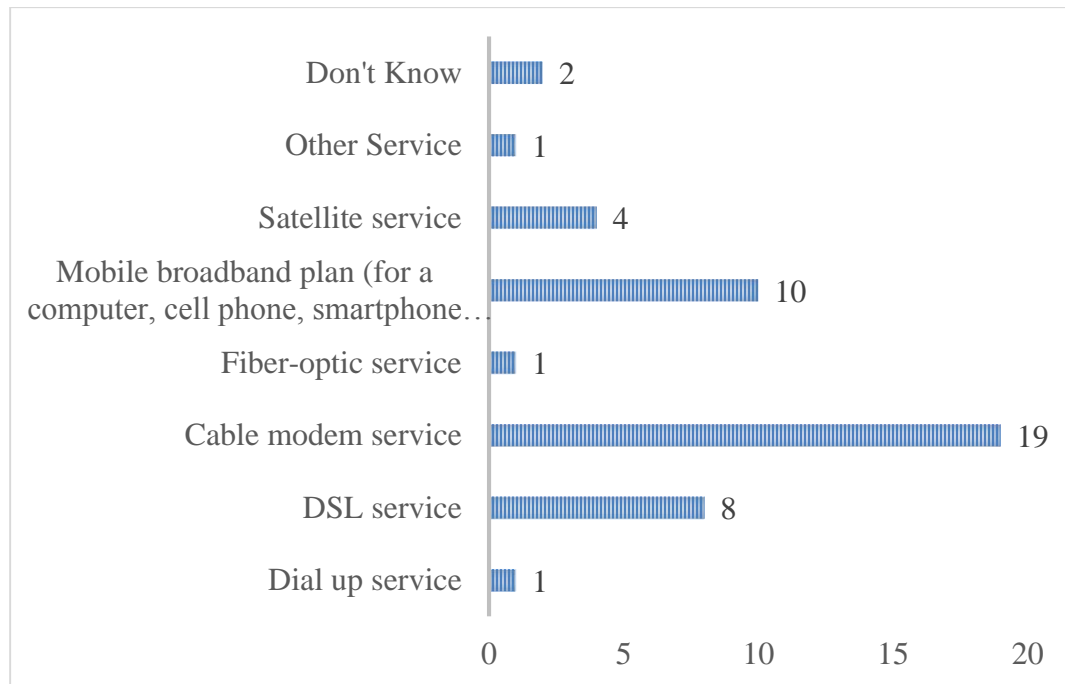
Figure 9. Type of internet access (n = 46).

Internet connectivity remains a concern in many areas and many policy makers turn to community service centers and libraries to make up the connectivity gap (Bureau of Business and Economic Research, 2013; Bureau of the Census for the U.S. Department of Commerce, National Telecommunications and Information Administration, 2012). The majority of families (75%) said no, when asked if their child goes to a library to access the internet. The majority by far are not taking advantage of the opportunity to not only connect but have a safe and easily accessible place where they may continue their academic studies. In addition, if a student is not connected to the internet at home, they may not experience the internet during the summer months when schools are closed. The library and other public facilities can support the connectivity gap, but again are not being accessed by this community.

The majority (60.3%) use their home internet connection for purposes other than their child's school work. Only 25 (40%) of the respondents said that they use the internet at home to support their child's school work. This directly contradicts the responses I already reported where the respondents said that that the preferred method to access the internet to support their student's schoolwork is from their smartphone or mobile device. This is critical as we continue to look at the expanding role that families play in supporting the improvement of the educational success of students beyond the school time and place.

When asked why they do not have internet access at home, out of the 17 respondents who said that they did not have internet access, 71% (12) said that it was because it was too expensive. Three individuals said that they did not have a computer or that it was inadequate, and one person said that they can use the internet elsewhere so they did not need it at home. This supports previous research about cost being a major inhibitor to having access to the internet or connectivity in the home (Bureau of Business and Economic Research, 2013; Bureau of the Census for the U.S. Department of Commerce, National Telecommunications and Information Administration, 2012). This is especially prevalent in homes where there is a cross-section of poverty with lower educational levels and a large population of Hispanics or African Americans (Vahey, 2011). The cost of being connected to the internet at home is a concern for many families who are on fixed incomes. Parents, including those in rural communities, want clear information about the impact of internet connectivity on their families and their students (Mardis, 2011). What also has been shown is that families that chose not to get internet broadband because it was too expensive are predominantly minorities, which is

noteworthy when examining the achievement gap of students in this country and in this community itself (Vahey, 2011). With more than 80% Hispanic students at Emerson Elementary, this must be taken seriously not only as representative of the new traditional school population but as a reality for Albuquerque Public Schools (Genne & Brigman, 2014).

However, the majority of the respondents, as seen in Figure 10, said that they would ensure connectivity in the home if the cost for internet were set at $10 or $5 per month. It is interesting that there was not a notable change in the number who would ensure connectivity if the price were $5 rather than $10. In fact, in this group of respondents the number decreased slightly. This contradicts previous research that those who are without home internet reported they are unwilling to pay even $5 per month for broadband service at home (Bureau of Business and Economic Research, 2013). In addition, it is important to acknowledge that non-subscribers to home broadband do very little to substitute other means of access to "offset the absence of access at home" (Bureau of Business and Economic Research, 2013, p. 7). The findings of this study provide deeper understanding as to how families in this community connect to the internet and their knowledge of how to use the internet. This can support the education that must be offered for all community members as technology becomes a more important part of the educational experience.
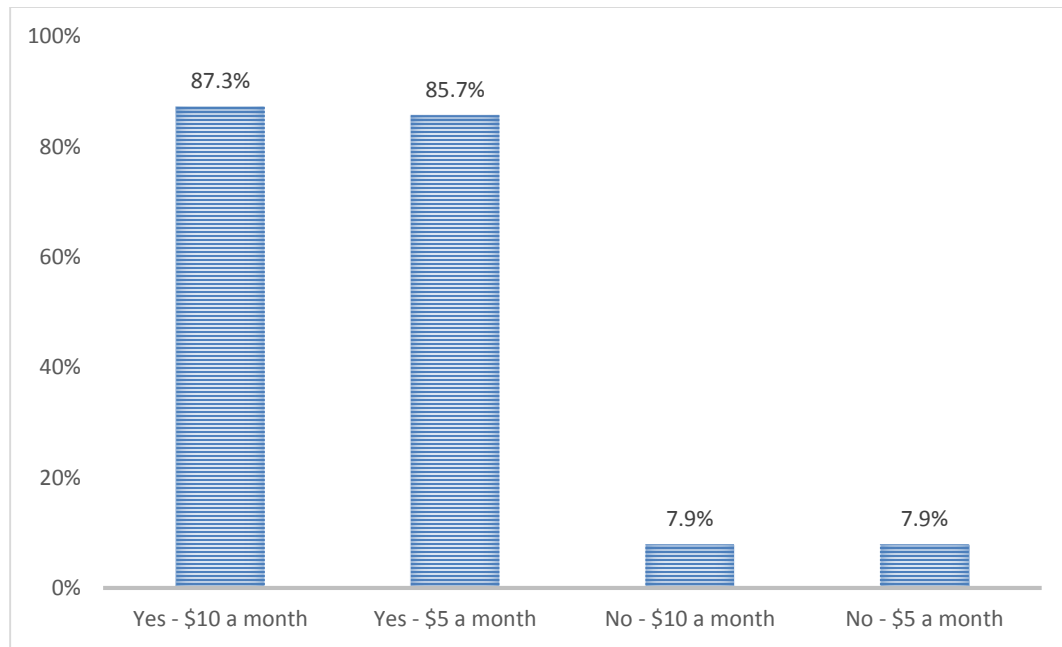
Figure 10. Internet connectivity for $10 or $5 a month (n = 63).

Because of the cost of connectivity and the increasing digital divide, there has

been much debate about who is responsible for providing internet to students (Bureau of

Business and Economic Research, 2013; Chang et al., 2004). This debate has ramped up

as more school districts have been implementing one-to-one initiatives, which essentially

provides a device for every single student. What is not clear is how students will be

connected to the internet at home, especially in locations with low internet connectivity

like many in New Mexico. The divide on whose responsibility it is to provide internet in

the home can be seen in Figure 11. What is apparent is that the majority of parents,

teachers, and community members believe that it is the parents' or families'

responsibility. However, only parents believe that the responsibility resides solely with

the school. Although it was not specifically asked as an option, many of the respondents

marked all three groups, indicating that it is everyone's responsibility to ensure

connectivity. Using contingency table (crosstab) analysis, I examined parental responses

to this question by educational level. Those with a college education or advanced degree said it was parental responsibility at the same rate of the responses from those with a high school education or less.
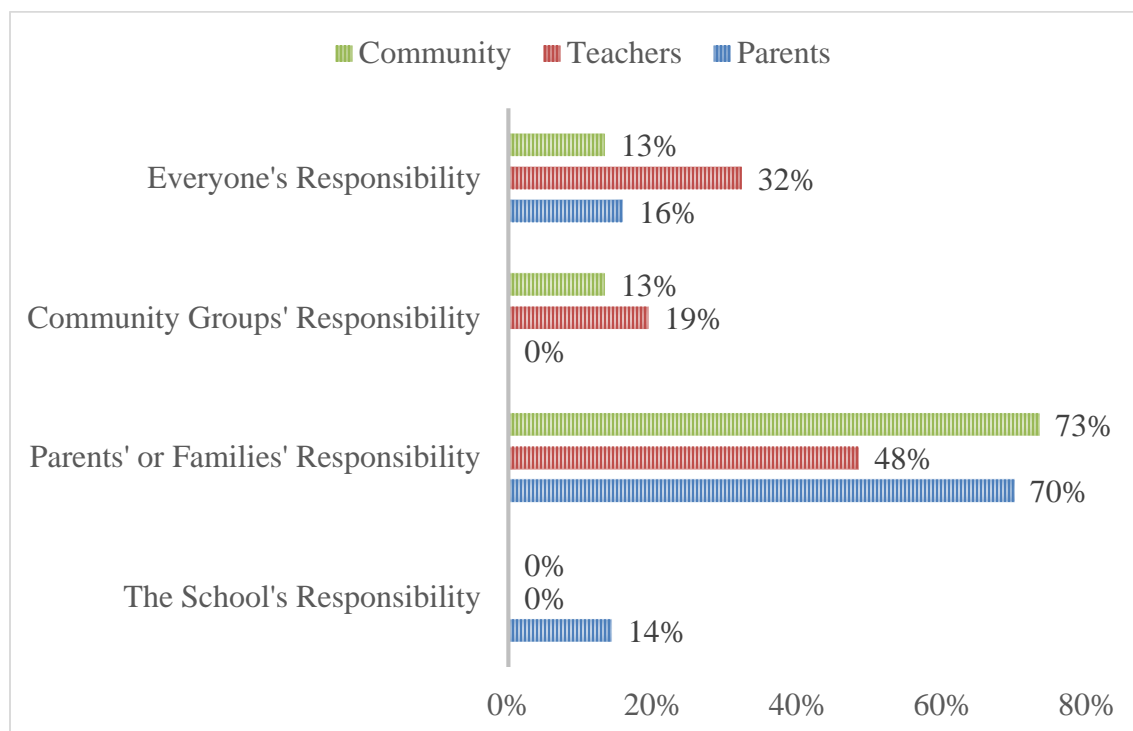
Figure 11. Responsibility for internet connectivity at home for 15 community members, 31 teachers, and 63 parents.

One school leader said that responsibility is dependent on everyone:

It is a community as a whole. I cannot, I can't mandate what people do in their homes. I don't want to mandate what people do in their homes if people want access to technology in their homes. Especially in a community school to try to figure out how to do that, even if it is we are going to open the lab for access here, but then you run into guest accounts and fire walls and those kinds of things. I don't know if it's my responsibility to step in their home and provide that. I think it's information as to places like the library where you can go to use computers.

It is important to understand how that access or lack of access impacts student success and overall academic performance. Community members, teachers and parents were all asked how much of an advantage having home access to high-speed internet gives a student. As seen in Figure 12, the vast majority of all respondents said that having high speed internet at home gives either a moderate or big advantage. Only a few parents said that having high-speed internet at home does not provide any advantage. In addition, the likelihood of families having internet in the home has a cultural tie, especially in some homes. Parents in Hispanic households "that traditionally prized time spent working over personal discovery on the Internet" seemed to "lack understanding of the internet's educational advantages" (Mardis, 2011, p. 11). The findings of this research parallel what other researchers have found, especially when the majority of the responses came from Hispanic families who make up the majority of the school population.
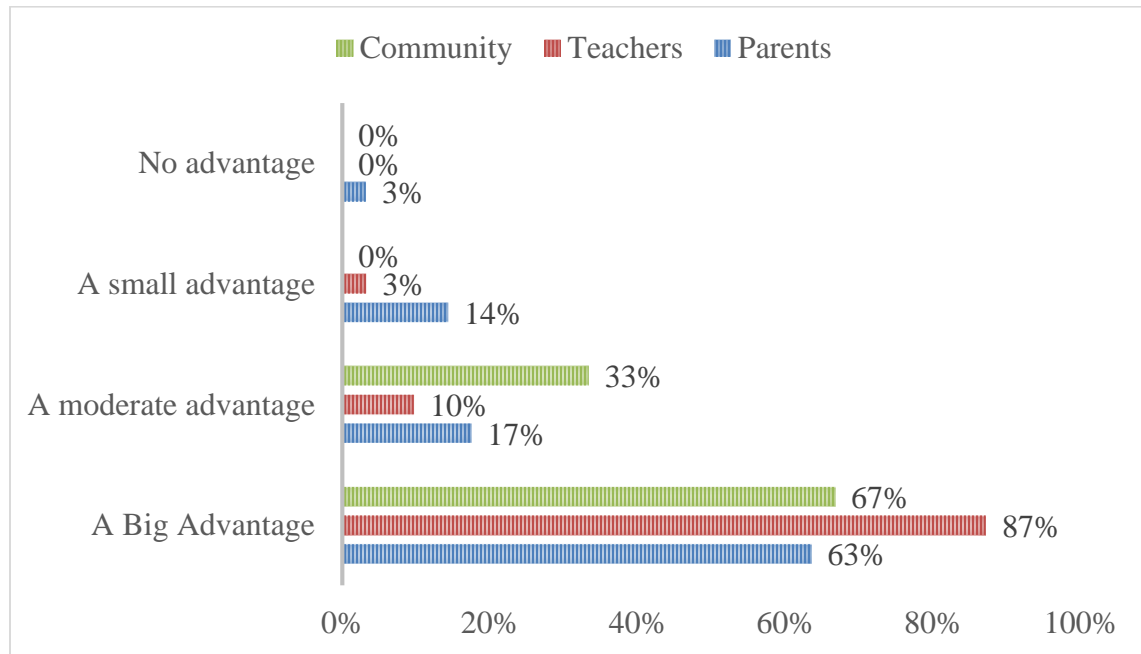
Figure 12. Advantage of high-speed internet access at home (community members n = 15, teachers n = 31, parents n = 63).

The parents I interviewed about the impact of high-speed internet in the home and how big of an advantage it gave students in their academic success differed in their opinions:

Parent #1: No, I don't think so. (laughs) I still believe that the internet does not make who you are, you still need to go to the library, research, interview people, ask and find out on your own.

Parent #2: Yes, a lot because right now I do have the internet for them to look up, and then the assignments that they do. They don't type them or they don't want them written, sometimes the teachers want the assignments done on the computer so they type it and check the writing and everything and then they print it.

Parent #3: I have internet at home currently and he knows how to do things that I didn't know at that age. So if he is already starting at that point, I don't know what he will be able to do when he is like my age. He will be able to do everything, I'm hoping.

One school leader talked about the advantage of technology access on a family when students are taught how to use technology:

I think having families that understand how to use technology and I think many of our families, now working in this area, they really don't have access to high speed internet or any kind of internet so I think it's the children who are teaching their parents about how to use technology. I think the advantage if anything, students who come from a Title I campuses, can teach their families. Where I think those outside of the Title I areas, you have parents who are teaching their children how to use technology. But I truly think that when you have children teaching their parents or even themselves utilizing the skills they have they have learned in school and really kind of polishing their experience teaching someone else how to use it through cooperative learning then you have success. Most have their family members that they teach.

All of the teachers who I interviewed talked about it being an advantage or a benefit:

Teacher #1: Yes it does give a student an advantage because they have access to more information in compared to their peers to who have not, maybe they would have the opportunity to see some sort of story or research that they would need for their science project or other materials, where someone would have to wait to get

to school to borrow the technology or the library. So they could do a lot of at

home reading and lessons, which their peers have access to, to take them ahead.

Teacher #2: Definite advantage because of all the research that they can do about

any subject that they are interested in learning and any online games and activities

that are related to learning that they have exposure to and that they are willing to

do. Sometimes we hand them a homework sheet and they go, 'really'? But they

go home and we say play on Math Vantage, then they are a lot more willing to do

that and they frankly learn a lot more than a math work sheet.

Teacher #3: I don't know that's…ummm…I think it's a benefit again, I don't

know if it's an advantage. I have some, over 11 years I have seen some students

very academically successful and they don't have a lot at home and then you see

the other end and they do and sometimes they are not as successful. I don't think

it hurts; it's about being well rounded.

One-to-One Initiatives

Districts across the country are implementing one-to-one initiatives that they say

aim to change the way education is not only delivered but understood. It is important to

understand the common definitions of what one-to-one initiatives are, "Providing

students with use of portable laptop computers loaded with contemporary productivity

software (e.g., word processing tools, spreadsheet tools, etc.)" with connectivity (Penuel,

2006, p. 331). This definition of a one-to-one initiative separates it from other projects in

which students are offered computers at discounted or regular costs but the assurance of

equitable distribution of computers to all students is not taken into account.

Educators across the country have begun to focus their attention on the work of implementing one-to-one technology devices for every student (Herold, 2014; Nott, 2014). It has been done on a small scale in districts of just a few hundred students to the attempted rollout in one of the largest districts in the nation, Los Angeles Unified School District (Herold, 2014). However, it is not sufficient to provide the devices with or without connectivity.

In this study, it was important to understand how community members, teachers and parents feel towards the implementation of one-to-one initiatives. This is especially important since there is a significant investment of financial resources in any district when one-to-one initiatives are implemented. This goes beyond professional development in connectivity because the simple purchase of hardware devices easily escalates into the tens of millions of dollars. When I asked respondents, what would be the best use of $200 per student, either purchasing new science textbooks or giving each student an internet connected device like a tablet computer, the response was overwhelming for the technology option. As displayed in Figure 13, parents were not as sold on the technology option as teachers and community members. However, a majority of parents did say that they would recommend giving each student an internet-connected device like a tablet computer. What is also interesting is how willing and interested the teachers are to move towards technology and away from textbooks. This is a significant finding especially as school districts like Albuquerque Public Schools have one-to-one initiative plans sitting and waiting to be implemented.
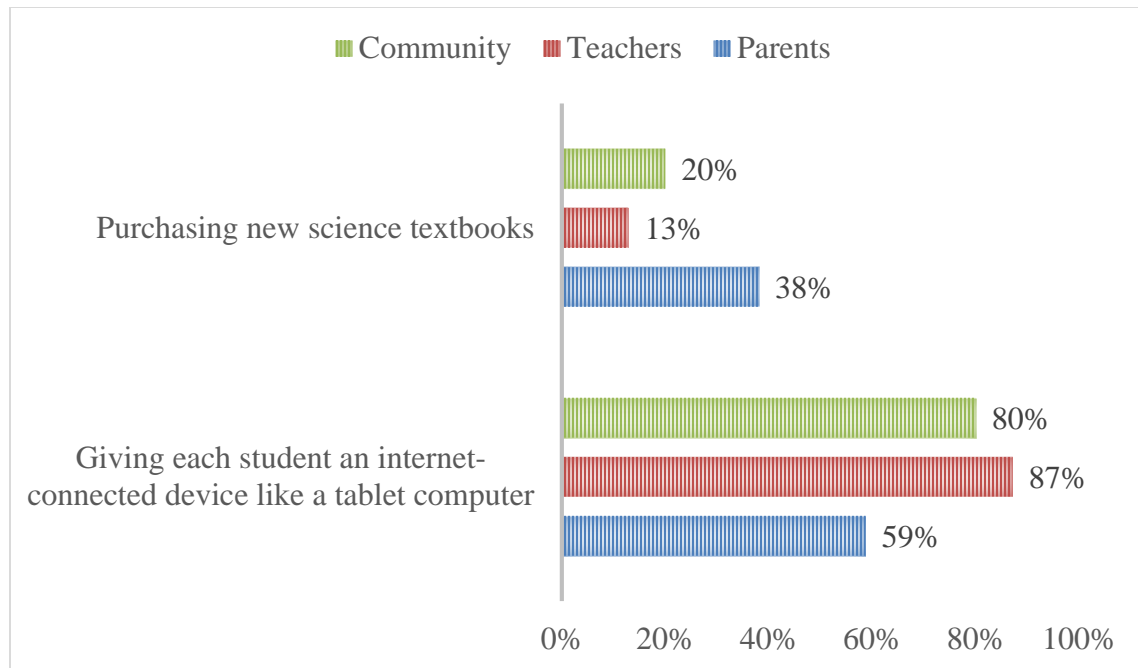
Figure 13. Best investment of $200 per student according to community members (n = 15), teachers (n = 31) and parents (n = 63).

Figure 14 shows parental responses to the question about what is a better investment of $200 per student. This contingency table analysis shows their responses by employment levels and is revealing as to the perceptions that the parents have of school or district technology investments. Almost every group of parents was split, except for the students and the homemakers. There was only one parent who was a student and who also responded that there should be an investment in new science text books. Additionally, the homemakers were not split on the question. By far, the majority (87.5%) said that the investment of $200 per student should be made in order to provide each student with an internet-connected device like a computer. What can be learned from this deeper analysis of the parental responses is that there is not a clear preference among parents as to what the investment should be, especially when you look at their employment levels.
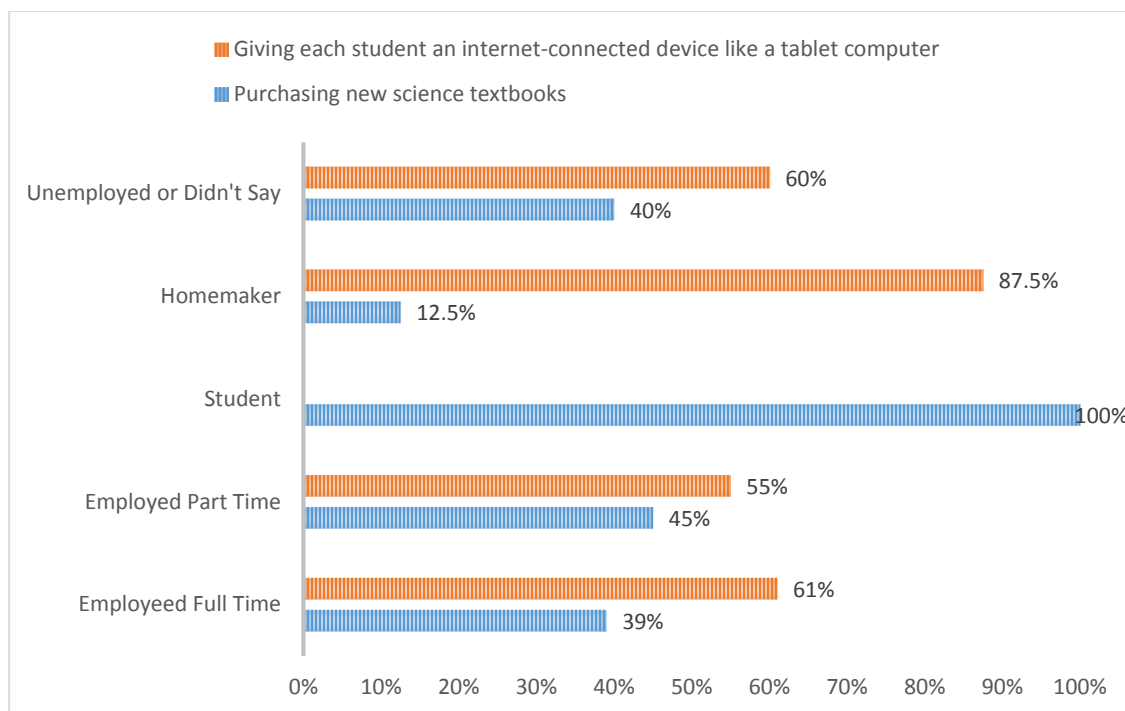
Figure 14. Best investment of $200 per student according to parents (n = 63) by employment level including employed full time (n = 38), employed part time (n = 11), student (n = 1), homemaker (n = 8) and unemployed or didn't say (n = 5).

The teachers I interviewed all agreed that the best investment is to spend the money on technology rather than on textbooks. The teachers argued for additional resources for handheld, classroom manipulatives that the students can use, saying:

I would definitely say, some type of technology that we can keep in the classroom for years to come. So an iPad for each student, the problem in investing in technology is it becomes obsolete as technology develops. In my opinion, we definitely need manipulatives, hands on things for our children to see and feel and work with, for example today's math lesson they had to build their own 3-d shapes so it would be amazing if we had five sets of shapes for each group or classroom, books for them to be able to explore while the teacher is teaching or

learning that are actually useful instead of just passages, I think that providing technology for each student is amazing but a lot of teachers do point out that in five years it's the next thing just came out six months later.

The school leaders all agreed that technology was the best investment, with one saying:

I think it should be in things like iPads that are in classrooms and can be monitored, some good quality iPads that can be used as resources in lot of different ways, different apps where students will have access to as many as possible so that teachers can use them in learning centers for research with students, guiding them and using them, using those really great apps that are moving us beyond what we can do with paper and pencil.

Support for those devices when they go home is a growing issue across the country (Buckingham, 2007). Students must learn how to use them, teachers must learn how to engage the students, and parents must be able to be a resource for critical continued learning at home. As can be seen in Figure 15, the majority of all respondents said that they have the current knowledge to support continued learning at home. However, community members and parents showed that they needed greater support to continue learning. This was in contrast to the responses of teachers who said that they were sufficiently prepared.
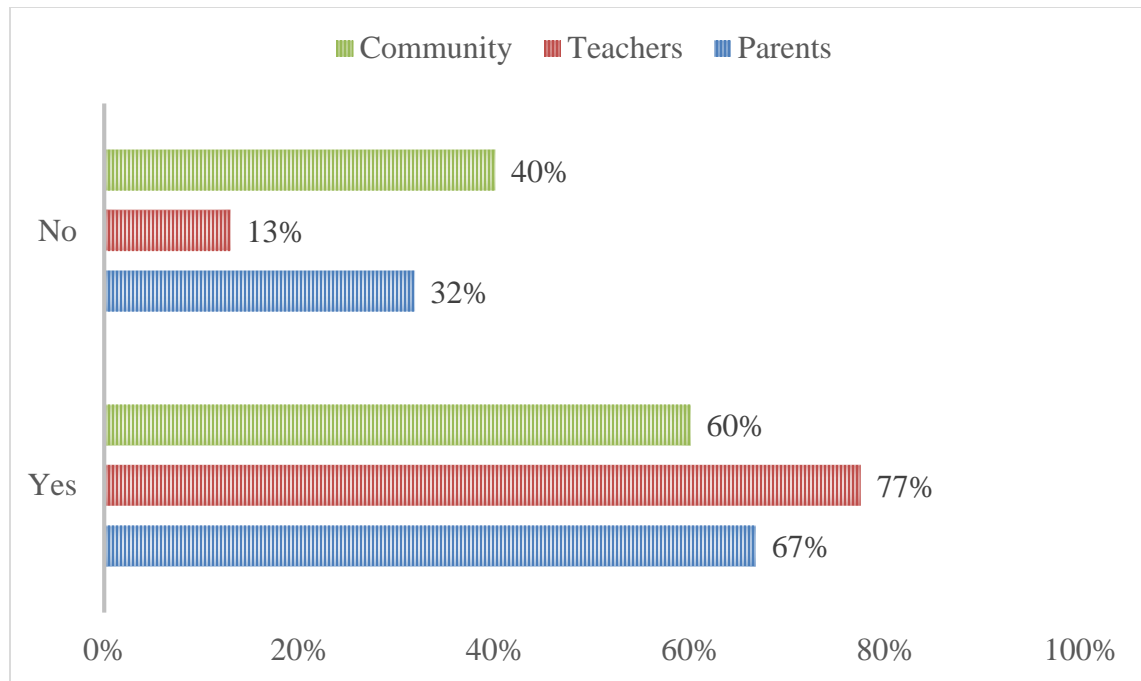
Figure 15. Technology knowledge to support learning at home for 15 community members, 31 teachers, and 63 parents.

Using contingency table analysis, I examined parents' responses according to their educational level. Those with a college degree or beyond responded that 21% did not have the knowledge compared to 79% who said that they did, while 39% of those with a high school education or less said that they did not have the knowledge compared to 61% who said that they did.

Although there is a significant amount of feedback on the best investment in moving towards technology, there is a wide spread sentiment among educators that this could be the next best school reform effort. At the same time, one school leader expressed great concern about moving to one-to-one initiatives:

> It would not make a bit of sense for us as teachers, as educators, or even as a
> school to maintain a really great website that had extensions or had access to
> examples from our math program, interventions, or continuing support of any

kind, Discovery Ed, or any of those things. It would be such a waste of our very

limited time to do that. We have to worry about that here because this is where the

students have access to technology and the parents do not and even if we were to

do these things, for example, if we were to purchase an iPad for every student in

our school, it would be a disaster guaranteed, it would be a disaster. If we

compared it to library books, so there is a huge percentage of library books that

we checkout to students that we never see again for a lot of different reasons.

When you have upwards of 80% mobility and 40% truancy you are not going to

get things back.

This is an issue that has been documented in literature when examining mobility.

Schools that have a high percentage of mobile students often score lower on test scores,

are more apt to have a negative school culture with less student cohesion, and simply put

supplies go missing. It is often the case that textbooks are not returned at the same rates

in schools with high mobility (Rumberger, 2003). There have not been any studies done

showing student return rates of technology but it can be assumed that mobility would

have the same impact on these higher priced items.

Technology Support

An examination of the digital divide must take into account that it is not

something as simple as a lack of computers or providing computers as a ladder out of

poverty. This study has gone beyond looking at the availability of technology in homes

and how they are connected, to taking a look at the supports the families need to foster

their students' academic success. What is also important is the need for training or IT

literacy, which is "the ability to use IT for a range of purposes, and the knowledge of how

and why IT can be used as key resource" (Servon, 2002, p. 7). I designed this study to

look beyond teachers and focus on all the school actors including school leaders,

teachers, families, and community support providers.

The need to support the entire group of school actors is an important and

unexpected finding from this study. By far, parents have said that they want general

technology classes and classes to support using technology in the home for school work.

Teachers say they want the same but also want technology devices that are open for use.

Community members added that they would also want support and guidance in

purchasing technology devices or connectivity. The responses, seen in Figure 16,

demonstrate that the school actors know the needs to help them move forward with their

technology knowledge and the responses illustrate what the school can begin to do to

engage all of the school actors as they move to more technology use.
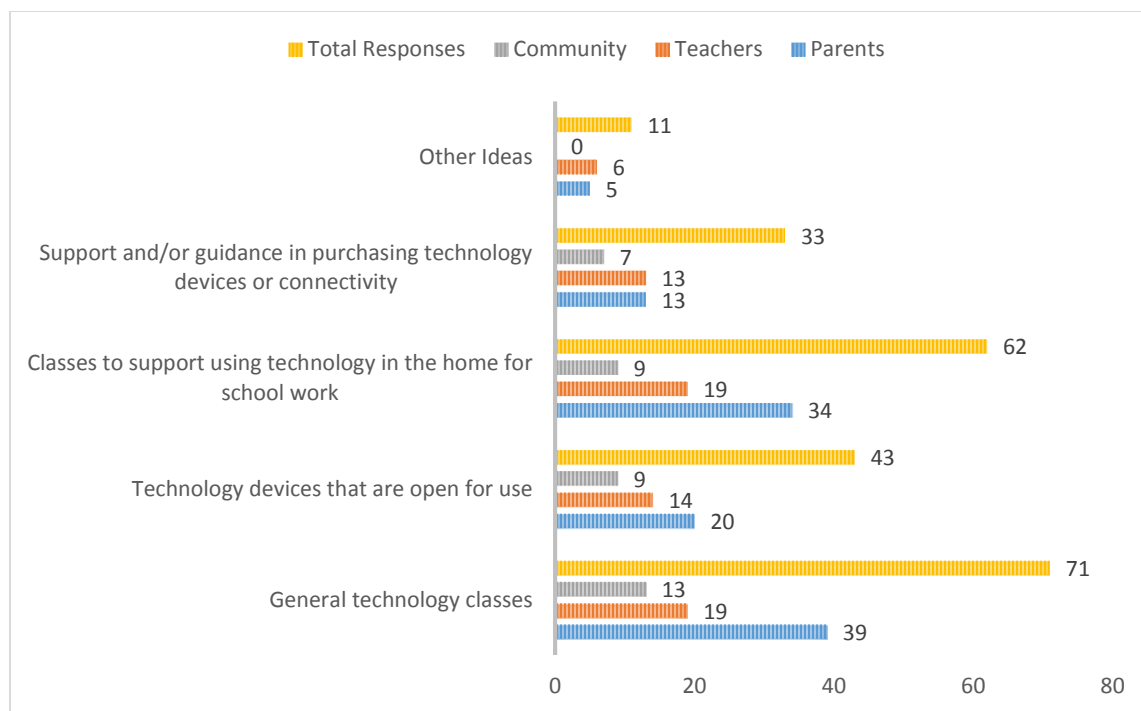
Figure 16. Technology supports for continued learning at home (n = 109).

The parents that I interviewed all reiterated in their responses the need for general technology classes to help them learn the skills that their students have or that they are receiving. One parent said that to be able to help with technology and continued learning at home it would mean, "Taking classes, taking technology classes, computer classes, I have taken some and then if I have a computer here I would really grow and be able to support my child."

It is important to understand what school actors need to support student success at home if technology and continued learning at home are going to make a difference in a student's academic progress. Although in this study I was able to distinguish between the responses from the different school actors, I was not able to examine associations among age and racial groups because I did not ask those demographic questions of community

members and teachers. However, there tends to be a technological divide by age, an

issue that was expressed by one school leader:

>It's true and that for me is my aging, you know I'm almost 60 here, I got a smart
>
>phone I use my smart phone, I use an iPad. I have no idea the ins and outs of an
>
>iPad. I can take a picture, I can run a video, and I can download pictures for our
>
>students. I think that you have teachers and administrators who tend to be older
>
>than the parent, and child base so you have to build in iPad training like we have
>
>just done here and we have another iPad training started, scheduled for April and
>
>one for May because you have to build in a learning for the adults that are
>
>working with the kids.

However, beyond the age of a person, one school leader talked about supporting

teachers and their pedagogical practices in the classroom no matter what the obstacle:

>I think teaching teachers how to teach students, how to become more fluid in what
>
>they do. I always think, that even though we get so busy throughout the school
>
>day that we don't have an opportunity for teachers to share information and I
>
>think by doing so we can have teachers help other teachers become more fluid.
>
>That helps those teachers help students become more fluid and helps students
>
>permeate that same information back into their families and they become more
>
>understanding of how we can better use technology. So I think just really
>
>building community within a school, by utilizing your resources, your human
>
>resources, in your campus but always distributing in a very purposeful way so that
>
>technology is driving your information but also that there is a comfort ability level
>
>on your campus where parents understand what's happening and they are invited

to utilize resources which we are doing now as a community school, so I think

that we are kind of trailblazing in that particular direction.

Computer Skills for All School Actors

Education is important for students to be able to master the technological skills

that they need to navigate the complex world not only of their school, but the society in

which they live. Just as it is important to have an informed population who can

understand the needs of the society, it is essential that every student "develop basic

technology literacy skills to be afforded the opportunity to become a full participant in

our society" (Morse, 2004, p. 267). To be able to develop these technology skills,

students must be able to acquire skills in using technological devices earlier rather than

later so that they can use the devices to reinforce the educational lessons they are being

taught (Cleary et al., 2006).

As the importance of an education has grown in our society over the past century,

the impact of technology on our society over the past decade has also grown. As these

technology innovations continue to come of age they have and will continue to have an

impact on our democracy. This is important to consider when understanding how

technology will be used inside the classroom. There are three major ways that

technology impacts democracy: "access to information; access to the political process;

and, access to the topics or issues that are debated, discussed, and legislated" (Crowe,

2006, p. 111). Having an informed group of citizens is important to democratic practices

and to ensuring that the government operates effectively and efficiently.

Word Processing. I asked a series of questions about how proficient the

respondents were in different technology skills, particularly using specific computer

programs. As can be seen in Figure 17, the majority of respondents say that they are able

to operate a word processing program. However, there is a divide between parents and

community members and teachers. Teachers responded that their skills were at much

higher levels in word processing than parents and community members.
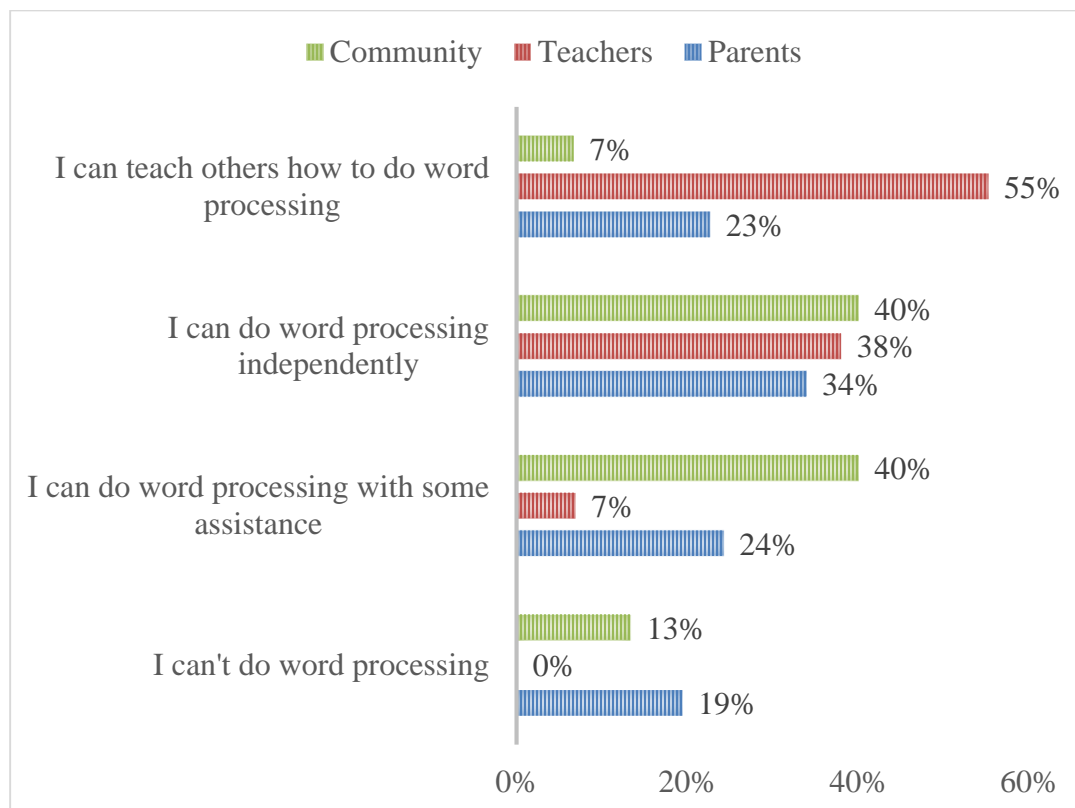
Figure 17. Levels of word processing computer skills for 15 community members, 31

teachers, and 63 parents.

Spreadsheets. The computer skills gap among the respondents only increases

when they are asked if they can operate a spreadsheet computer program. As seen in

Figure 18, there were no community members that believed like they could teach

someone how to use a spreadsheet program, where very few parents and teachers

responded that they could teach as well. Most respondents said that they could operate a

spreadsheet program with assistance from someone.
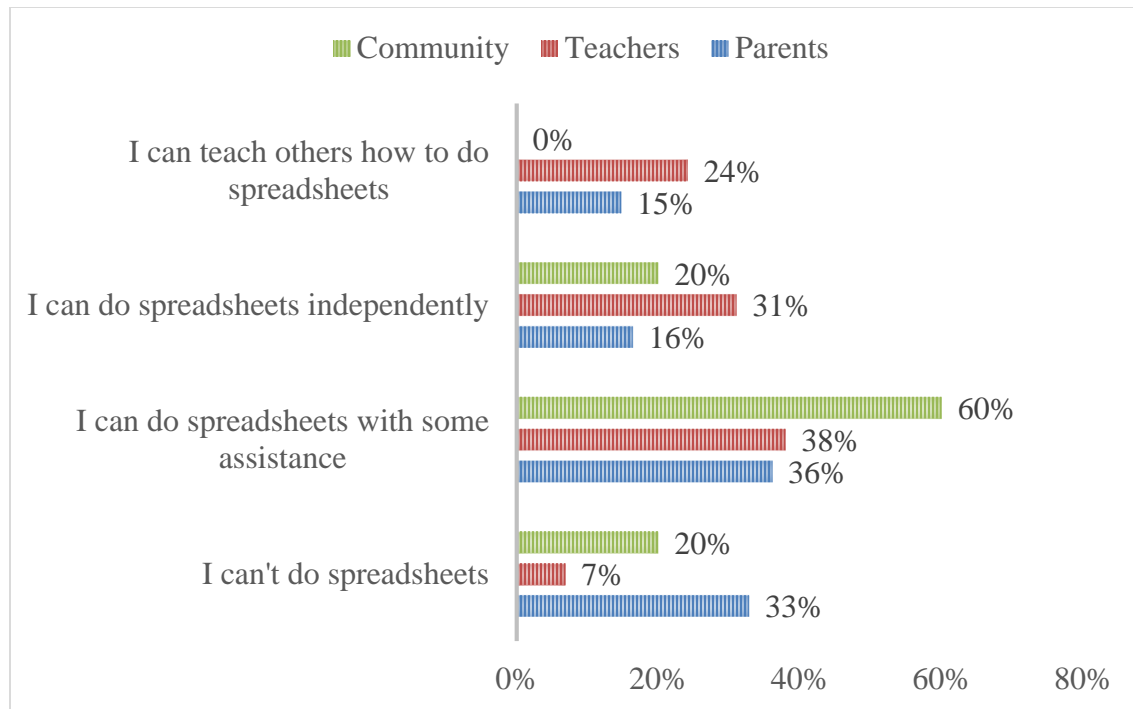
Figure 18. Levels of spreadsheet computer skills for 15 community members, 31

teachers, and 63 parents.

One school leader expressed the need for some major help in using spreadsheet

software, "I can take a table, I don't even know what you call them (a data file) I can take

that and I can change it and I can sort, I know how to do that, but to create my own, I

have not a clue."

Email. When asked how well they use email, the respondents had more positive

responses. This is important to understand as individuals are able to use email to

communicate to various individuals including educational leaders who are working with

their children. As displayed in Figure 19, the majority of the respondents said that they

could use an email program independently or teach someone how to use it. This can be

understood as individuals have a wider access to email through their smart phones and

other mobile devices, and they do not necessarily need a laptop or computer to access their email.
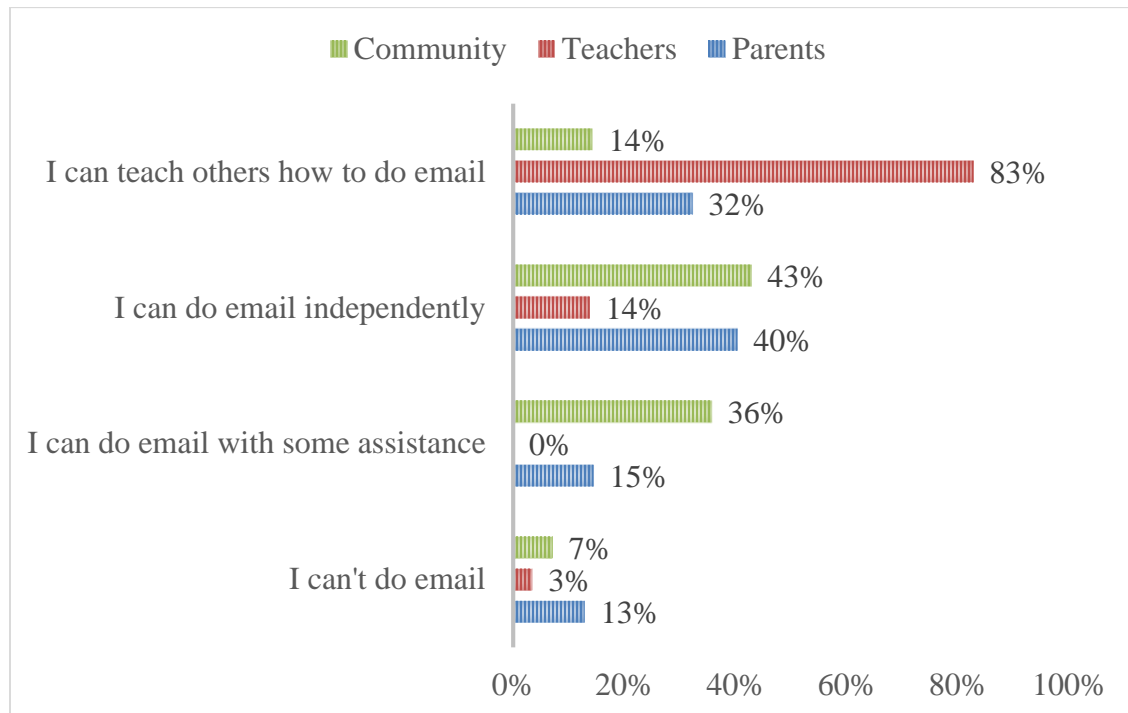
Figure 19. Levels of email computer skills for 15 community members, 31 teachers, and 63 parents.

Navigating the Web. The majority of teachers and parents felt comfortable that they were able to navigate the web. The use of web devices can be seen in different situations including how you use the web through your smart phone compared to how you use it on a computer or laptop. As can be seen in Figure 20, the majority of the community members said that they needed support in navigating the web, independent of the device that they were using.
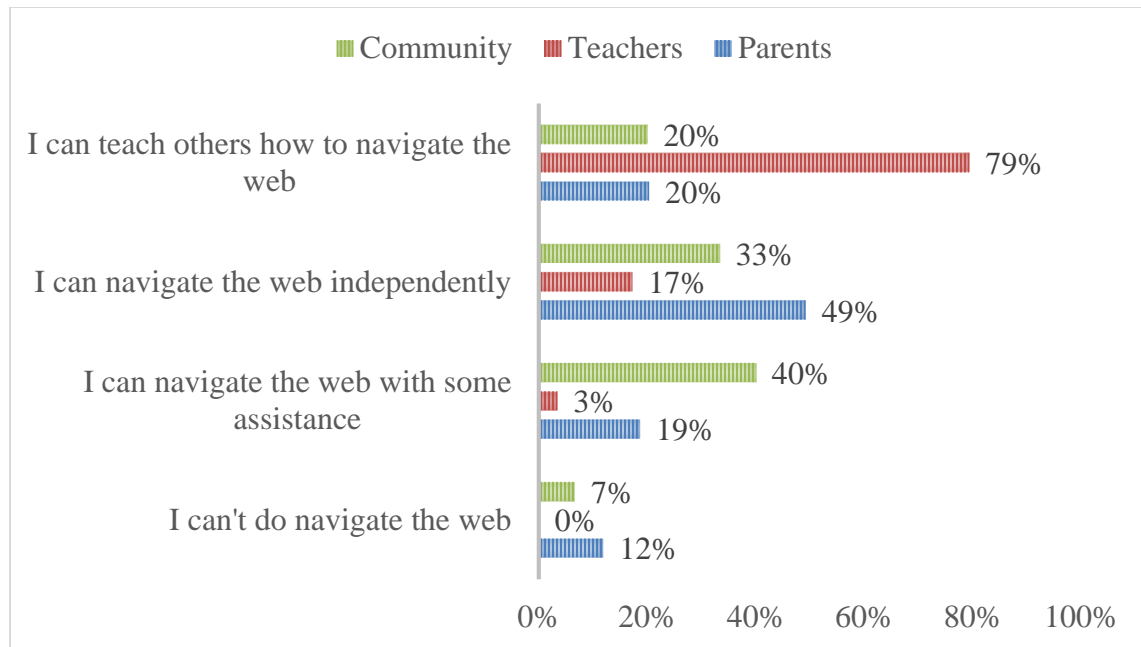
Figure 20. Levels of ability to navigate the web (community members n = 15, teachers n = 31, parents n = 63).

Search Engine. When asked if they were able to use a search engine, again the responses showed that the majority of the respondents felt comfortable doing this independently or that they could teach someone. This is important to understand how individuals are able to use a specific device to navigate the web while they search for information or support because of the role that the web plays in supporting continued learning at home through research and other educational support websites. As displayed in Figure 21, more than two-thirds of teachers felt like they could teach someone how to use a search engine.
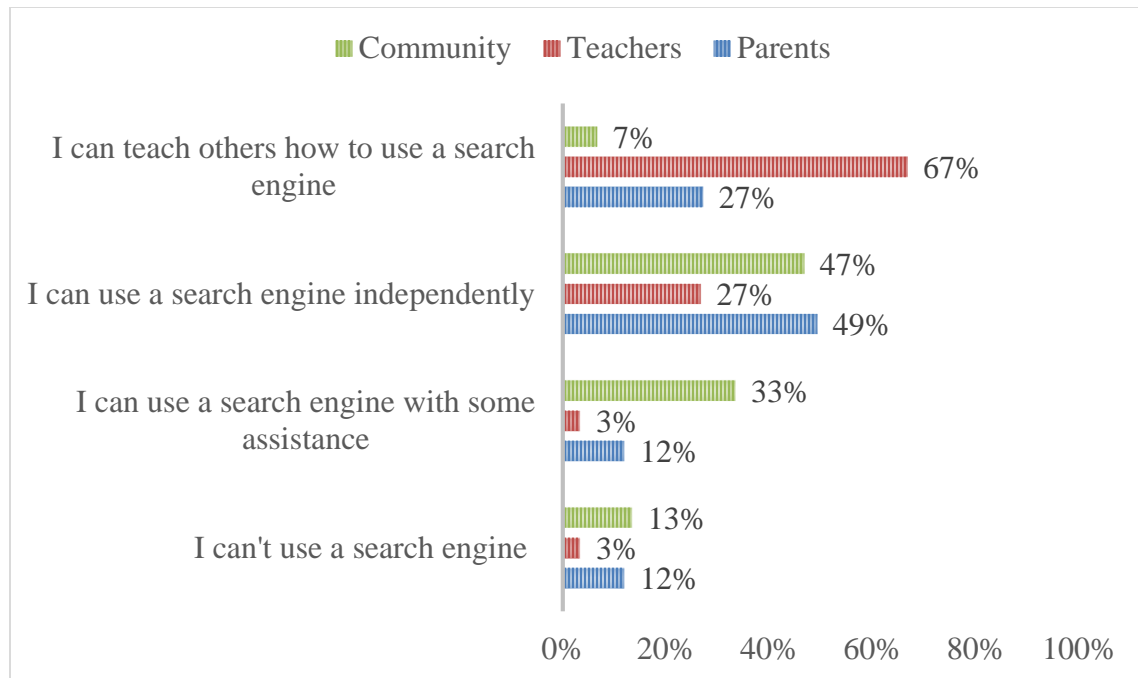
Figure 21. Levels of use of a search engine (community members n = 15, teachers n =
31, parents n = 63).

The web can also be used to support all school actors in their search and quest for

expanded knowledge of technology. There is growing information and research for

educators on how they can use the web to better their practice (Beauchamp & Parkinson,

2005; Edwards-Groves, 2012). In essence, there is no separation between a teacher in

one part of the country and a teacher at Emerson Elementary School. One school leader

described how to use the web to help support teachers' pedagogical practices:

> Part of the observation, in evaluating the teaching process we are offering
>
> teachers an opportunity to improve and go online to find things, like you know if
>
> it is the Danielson framework for education or if it's looking for Marzano's seven
>
> steps to higher teaching techniques. Whatever it may be, the internet provides us
>
> a service to help teachers provide them with information that may help them
>
> become more fluid in the way they teach. So I think that's a great big move, how

to understand it, where to go to and what is appropriate for teachers to have

information that is given to them so that they can learn more about becoming

proficient.

Desktop Publishing. However, when the respondents were asked about their

skills in using desktop publishing software, their responses were dramatically different.

As can be seen in Figure 22, the majority of parents said that they were not able use

desktop publishing software. In addition, the majority of community members said that

they needed help in using the software. This is important to understand as we discuss

what technology classes are needed for any school and for what the audience of the

classes will be, it is clear that there are certain courses that need to be expanded and used

for different audiences.
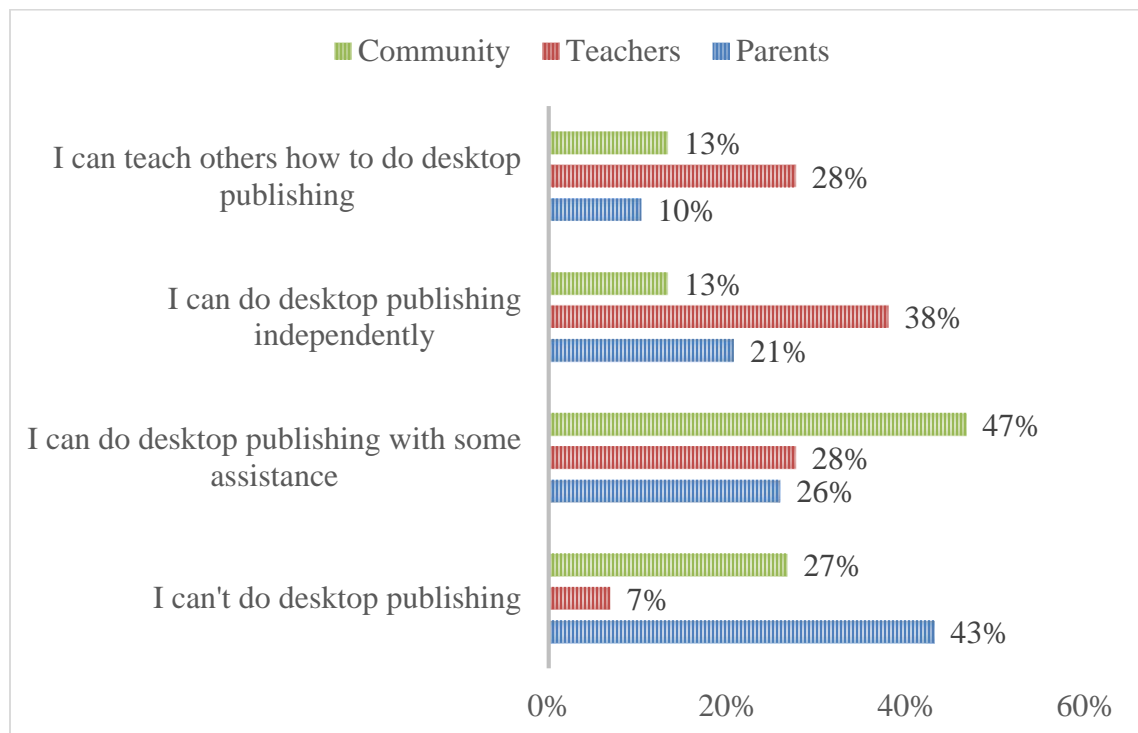
Figure 22. Levels of desktop publishing (community members n = 15, teachers n = 31,

parents n = 63).

Different software can be used for the development of different skills in students. As an example, one educator said:

I blend my two worlds because I am tech, I can bring that to my students in the technology lab. Like we did with PARCC, I was able to blend my lessons so that they were using tools like software like PowerPoint and others researching in web browsers so when they went into the testing environment they knew what a web browser was, how to slide, how to cut, how to paste, how to type, what a keyboard looks like, typing a word processing document, and that's to help answer many of their questions, and so that was something I was able to blend.

These are skills that can support students in their use of the computer to be able to perform well on standardized tests.

All of the respondents were asked to provide open responses about the types of classes that they would like to see offered at the school that they might attend. Parents responded that they would like to participate in general technology classes, specific classes on how to use MS Word/Excel, English classes, a course on protecting children from being targets while online, and the opportunity to take classes online and earn GED or college credit. The teachers responded that they would like to attend general technology classes, interactive whiteboard classes, a course on how to use technology to impact learning, and the opportunity to observe other teachers using technology effectively in their classroom. The community members said that they would like general technology classes and expressly put that it was important to offer child care during these opportunities so more parents and families would be able to attend. The school leaders all said that they wanted to continue to receive professional development on iPads:

Definitely iPad use, really deep iPad use, interaction with the promethean board

and Apple TV is really important right now, as well as trouble shooting, like how

to fix minor problems when they come up so we don't have to wait on our tech

crew to come and do it.

Summary - Understanding Technology in the Emerson Community

Walking through the red brick halls of the more than fifty-year old building,

Emerson appears to be the traditional elementary school, one complete with a large grass

entry and flag pole where the custodian raises and lowers the flag of the United States of

America daily. But as an observer spending time inside the classrooms and talking with

community members, I quickly got an understanding of the complexity of the school and

its community. The community has larger issues than what appear from the outside to be

a collision of two worlds. The neighborhood includes single family homes, multi-family

homes and a diverse set of circumstances in each of those homes. The parents who

participated in this study are mostly working part-time or full-time, but have limited

education past high school and college as a whole. However, I found that parents feel

they need to participate in and support their students' academic paths.

There is a clear support for the use of technology in the classroom from all the

school actors. By a strong majority, community members, teachers and family members

agreed that they support the use of technology in the classroom. This sends a strong

signal to the administration and to the policy makers of the district that there is support to

continue the path towards involving technology in the education of students and

providing all students with an equitable opportunity to access and use technology. In

particular, it is notable that regardless of education level, parents support the use of

technology in the classroom.

Additionally, there is strong agreement among all school actors in the Emerson

community that technology facilitates the use of a wide variety of instructional strategies

designed to maximize learning.

One of the major guiding questions for this research was to understand which type

of technology devices and what kind of access students from one large urban elementary

have. National and local studies have shown that there remains a digital divide especially

in communities with high poverty and high minority populations. However, in the

Emerson community there is a presence of devices in the households, in fact there were

on average, almost two (1.96) computers per household. In addition, there was far more

connectivity than I would have predicted based on national and local studies. Although

there was a relatively low response rate from parents because of mobility, I found that the

majority (76%) of the respondents had internet connectivity in the home. It may be

presumed that a community as diverse as Emerson would not have the device

accessibility at home nor the connectivity. This study demonstrates that it is important

for a new school leader to look beyond the perceptions and stereotypes that might be used

to describe a community.

The second guiding question for this research was to understand parents'

perceptions and knowledge of the impact of technology access on student success. On

the whole, the families in the Emerson community support the use of technology inside

the classroom, however they are largely split on their support of purchasing technology

over textbooks. When examining parental responses to the question of what the better

investment of $200 would be, parents no matter what their employment level thought

technology purchases were important, but not at greater rates than purchasing textbooks.

Parents also said that they understand that technology access will have an impact on

student success but there is still a divide among the respondents that believe that there

will be no or little impact. There continues to be a gap in the perception and

understanding of how technology can impact and support students' academic

performance beyond the classroom.

     While we know the support to move technology forward exists in this community,

the community is also expressing some clear needs. The third research question helped

me examine the kinds of support a school community needs to contribute to technology

knowledge and use at home to benefit student success. I determined that there is a strong

request for classes and engagement of families, community members, and teachers so that

they, too, can know and understand the devices and software that are being used to

support the educational environment. These classes could be offered in various

environments and the school is already moving forward to provide the required access to

such instruction.

     The respondents said that they are in need of general technology courses that can

range from understanding how to navigate the web and access email to understanding the

software that is in use at school and in the work place. All of the school actors expressed

a need to be proficient in the software so that they could help continued learning at home.

Additionally, they want support in knowing how to help their students at home and go

beyond simply ensuring that their students completed their homework. As one teacher

expressed, "there needs to be apps that parents can download and use that will allow them

to have their students do math or literacy work at home. Additionally, they want to be able to understand if those apps and exercises are helping their students to excel and improve their academic achievement."

As you walk through Emerson Elementary School, you get a sense of the age of the building and even the impact that having a diverse and ever-changing community has had on a simple piece of property. Thick wooden doors still show you the entry way to places of learning that with large windows to allow for natural light and that can actually be used after the blinds were replaced. When you walk into the two computer classrooms, you are presented with a visible manifestation of the 21st century meeting the 1960s. Apple and Dell computers sit on long rows of tables, rolling chairs face large monitors at stations where students receive instruction and then do their work. In the middle of both of the computer labs is an interactive table, designed for students to use like an interactive whiteboard, but one where they can stand or sit as multiple students simultaneously use it.

All of this technology is in the hands of this community. The connectivity gap exists but not at the same rate as in other parts of the state or country. The perception that this community does not have the same number of devices and degree of connectivity as other communities does not hold up. What is clear is that we have to use resources differently to engage and to teach all school actors how to use the technology in such a way that they can support continued learning at home. There has to be a connection with the families in what they know and what they do not know to fill the gaps so that they can improve the opportunities and the educational outcomes of the children in this community.

Chapter Five

Summary

Introduction

As technology continues to expand as an essential and supportive part of the educational environment, school leaders must understand the implications of this expansion into the classrooms. School leaders must also take into account how all of the school actors in the school community understand and use technology as technology plays a bigger role in our lives. Based on this study, I have determined that a holistic approach is needed when implementing technology rather than treating it as just another reform or program that is expected to impact student achievement. Technology can be, if implemented correctly, a game changer for the whole school community. But all of the school actors must be involved in professional development and growth. This will then result in impacts on student achievement.

What we must acknowledge and understand is that if you only invest in equipment, hardware, or software without taking into consideration the larger context, you will not get the return on investments as you would with a more inclusive investment. Such investments include making available professional development opportunities for all the school actors including families, community members, teachers, and school leaders. The approach of investing just in one area and not taking a holistic approach to include all school actors results in an anemic investment at best.

The school actors in this study included parents or families, community members who support the school, and the teachers inside the school. I was guided by three questions to examine the digital divide of the Emerson community from an asset view

including understanding what technology devices and connectivity students had at home.

In addition, I sought to understand parents' perceptions of how technology impacts

student success. Finally, I wanted to understand what do all of the school actors need to

make technology use at home successful to support student's academic success. In this

chapter, I discuss the implications of the impact of technology for school leaders as they

seek to move their schools and communities forward.

Implications for School Leaders – The Role of Schools in Providing Access to

Technology

What is clear from this study is that all school actors yearn for support in growing

their personal knowledge of technology. This can be done through technology courses

that are offered at different levels so that the teachers, families, school leaders, and

community support providers may attend. The goal for school leaders of such an

implementation should be to support student use of technology in a more dynamic way.

Families indicated that they support technology, that they understand its benefits to

student success but what is missing is their own technology knowledge foundation. The

families want to go beyond just providing the technology and allowing the students to

explore its use on their own to having the knowledge to support students in an in-depth

way.

The district should use resources that are already available at the school through

the technology resource team and have them develop a set of courses that are community

and family friendly. Using the community school concept that is already in place in the

school can provide direct support to all school actors to increase their knowledge of

technology. This should include pre and post evaluation of technology knowledge and

use to examine effectiveness and to ensure consistent improvement via the support

provided through this venture. Standards based assessments and students' academic

performance should not be the only data used to evaluate such a project. There should be

qualitative research done on how the technology courses are impacting the school

community.

What we also know from this study is that school actors' knowledge and use of

computer software is at vastly different levels depending on the software and their

personal comfort level. For example, the ability to be able to use a word processing

program differs widely compared to desktop publishing software. Although the

techniques and usage from one program to the other do not differ that much, there is a

lack of confidence among respondents on how to use the desktop software. This

translates into student support as they gain the ability to use multiple software option and

platforms, not only to be successful in class, but to also navigate the standards based

assessment that is done on a computer. Having not only the confidence but the capacity

to use the software will help the entire community grow and eliminate the need to use

instructional time to teach students how to navigate or even type.

However, there appears to be a critical gap between the technology needs of the

students and what the students are experiencing in their daily lives. It is important in any

case study to spend time in the environment that you are studying (Yin, 2009). As part of

the data collection process for this case study, I spent time visiting the school and I

attended school-related events. During the time I spent at the school observing and

hearing teachers and especially students speak, I understood better what their life is like

in this community. Students express to their teachers and other staff members on campus

anything and everything from the fact that they are often hungry or when there is a problem at home. They are not shy about expressing their discomfort, their needs, their wishes, and even their dreams. At times, you can see the teachers cringe as one student begs for attention as they are preparing to teach a math lesson; all of this just at a time when they are trying to prepare the students for the upcoming standards based assessment.

As I sat in a third grade class, the teacher had committees going, with students working at different stations focusing their work on math. The students were reminded repeatedly that the standards based assessment would be given in just a few days and that they needed to be prepared. Meanwhile, in the back of the room, I sat unnoticed, documenting the use of technology in the classroom and how the teacher was being creative in using her laptops, interactive white board, chalkboard, and desktop computers to support the students' math lesson that day. As the students rotated between the committees, two students were together, both were boys and both appeared to be African American. They talked about how stressed they were about the upcoming test and then their minds seem to wander to other things as they moved from committee to committee. One boy told the other, "Wouldn't it be so neat if we could go and eat right now? I'm starving." The other boy looked at him and said, "You're starving, you don't even know. I haven't eaten since lunch yesterday and I ate two breakfasts this morning and I'm still hungry." It was difficult for me to believe what I was hearing. They continued to maneuver through the various committees, as the rest of the class continued on with the various lessons. Those two boys continued to stay focused as best they could but almost constantly, one or the other, was checking the time in hopes that lunch would come

sooner rather than later. They did this all while grabbing their stomachs in hunger at the same time.

Just after the bell rang, I mentioned to the teacher the conversation I heard. The third grade class hurried to the door, ready to go to the cafeteria for what may have been their second and final meal for the day. The teacher told me, "Yeah that's a sad fact of most of the students here, they are able to get their nutrition and perhaps their only two meals of the day during this time. Don't even talk to me about what happens during the summer." Her eyes filled with tears as she followed the last child out of the classroom and eventually into the school cafeteria.

The exchange between these two students brings up the very issue of the point of an education and the role of each and every school in the country, and specifically Emerson Elementary School where this case study took place. As Thomas Jefferson said, the role of a school is to create an informed population so that our community and society will improve (Milson et al., 2010). However, as we continue to take the community school concept into our schools, we find that schools play a far deeper and more important role than just creating an informed population. The community school concept goes beyond the normal focus of improving the academic needs of students (Dryfoos, 2002). These programs focus on ensuring that students are well nourished and in good physical and mental health. This in turn allows them to be able to focus on their academics during the school day. This is accomplished by bringing in organizations that are already attempting to support the community (Dryfoos, 2002).

In addition, we must pay attention to adding too many complexities to the school environment. The students at Emerson need support in a variety of ways, but the issue of

tackling too many issues in a school community can be overbearing. We must be

cognizant that a school environment is a set of forces, or systems at two levels:

> a. The first comprises the relations between the characteristics of the learner and
>
> his or her surroundings in each of the principal environments in which he lives out
>
> his life (e.g. home, school, peer group, work place, neighborhood, community).
>
> b. The second encompasses the relations and interconnections that exist between
>
> these two environments. (Bronfenbrenner, 1976, p. 9)

As school leaders, we must learn to balance the needs of the child and focus the

work of an education ecology where the goal is education. This balance must come

between ensuring that a student can be present and able to learn given the resources and

support the school is able to provide.

There are many individuals in our schools and community that go from having no

internet connectivity or technological access to having instant access and communication

through a newly purchased cell phone or through computer access in the school. This is

something we must be conscious of as school leaders as we move forward with

technology and mobile connectivity. It is critical to be aware of the fact that individuals

in the community and in the schools are at different levels of understanding and use. We

must be aware of this as students go from having no connectivity or access to technology

to the educational environment where they are surrounded by technology, which is

connected. This has an impact on their academic success and their use of the technology

inside and outside of the classroom. Some politicians and policy makers are making the

same argument about a child's development and the role that being proficient in reading

has when discussing technology skills. It is the very issue of learning to read and reading

to learn that can be applied to technology skills, especially in this ever changing and technology focused society (Swedien, 2014).

This can be especially important when considering the one-to-one initiatives toward which many school districts are moving. They opt for the least expensive device that will provide, based on their analyses, the greatest benefit and a tablet is commonly the device of choice. Tablets are described as, "Small, light and simple, a tablet requires less technical skill and manual dexterity than, say, a laptop or a smartphone" (Jolly, 2015, para. 1). This may be the right tool to get to individuals like parents more focused on supporting their students at home. I asked one teacher if she gave parents support on what they can do to continue students' progress in reading:

> Yes, "a to z" and "razz kids" are the at home [apps], the students have log-ins and they can create profiles and they can go online, and it's tablet-based, and a lot of our students, surprisingly our students have tablets more than computers so, they can log into them. They want to know how to get the app and how to be able to it use online. For some reason it is easier for them to do if they think about it in app form instead of having to go to a site and navigate it. I find in our SAT [Student Assistance Team] meetings when we give information and resources out if it's an app that they can load and figure out instead of website.

It is clear from some recent research that students show greater promise of connecting with learning when it is on a smart phone or tablet. The use of such devices seems be a better route for students because, "Most children were able to use the device on their own without any trouble. Other children needed a little help, but only at the beginning. They quickly became adept users" (Chiong & Schuler, 2010, p. 3). The key

to having apps that hold students' interest is clear cut: "Interest in the apps can be

fleeting, but factors such as developmentally appropriate and fresh content, shortened

wait times, humorous activities, incentives, goals, and parental involvement can help to

sustain interest" (Chiong & Schuler, 2010, p. 3). These are all important points to think

about as we increase our knowledge and use of technology inside and outside of the

classroom.

Implications for School Leaders – Community Schools

As schools continue to be the hubs of our communities, it is important for any

school leader to understand the impact and importance of having a community school

model. What is new is how the community works to support the initiatives of the school

in a collective fashion and, ultimately, support the individual child (Furman, 2002). Not

all communities want to be treated in the same way or not even like their neighbors

(Dryfoos & Quinn, 2005; Furman, 2002; Hoover-Dempsey et al., 1992). Thus, a new

definition of community is proposed: "Postmodern community is community of

difference. It is based on the ethics of acceptance of otherness with respect, justice and

appreciation, and on peaceful cooperation within difference" (Furman, 2002, p. 61).

It is important that school leaders have the political will to move their school

reform efforts but in doing so they must create a strong coalition of community support

because coalitions are essential to move change reforms forward (Kotter, 1995). In a

school environment, it is important to remember all of the school actors including the

teachers, school leaders, families and community members when building your coalition

of support. School leaders must acknowledge the need to build support systems around

them. This includes individuals who are onboard with the change they are trying to

make: "Efforts that do not have a powerful enough coalition can make apparent progress for a while. But, sooner or later, the opposition gathers itself together and stops the change" (Kotter, 1995, p. 63). This tells us that we must consider those beyond the school staff.

School leaders, and under this model community leaders as well, must be fully aware of balancing efforts to move the school forward and implementing true school reform. This must be done through the practices of collective impact. Ultimately, in collective impact, strong leaders acknowledge that they are not able to do it alone. They need a collective force to move their important changes forward to have true reform take place for the benefit of all students involved in the school. This will naturally translate to a community impact because all school actors will receive support and technology skills. This deeper understanding of how all the actors in a school community can work together is nothing new, but it is how these actors participate and support technology initiatives through collective impact, that makes this study unique. Collective impact can be understood as, "the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem" (Kania & Kramer, 2011, p. 36). As school leaders, we must understand the importance of everyone taking part and supporting the school in moving forward because the community at large goes forward with it. Technology can have a major impact on this, especially when taking into account the needs that all of the school actors, families, teachers, and school leaders have when using technology. This can result in extended learning outside the school time and physical space. This will also then in turn result in a techno-literacy increase for parents, families at large, and community members in general.

Implications for School Leaders – School Reform

The standards-based assessment movement began to accelerate in earnest with the ushering in of the current process to reauthorize the Elementary and Secondary Education Act, commonly known as No Child Left Behind. Through this federal mandate of accountability, school leaders have been able to identify the achievement gaps that persist in their districts, schools, and even in the classrooms themselves (Milson et al., 2010). Now, as the much of the nation has moved to implementing the Common Core State Standards, assessment has evolved through the Partnership for Assessment of Readiness for College and Careers (PARCC). The PARCC will allow New Mexico to compare proficiency levels with students in other states, although the exact number of states in the partnership is constantly evolving as political pressure mounts over the implementation of the Common Core (Swedien, 2014). The number of participants continues to vary but the assessment, which students complete on a computer, is supposed to be able to provide college ready scenarios for students as young as third grade (New Mexico Public Education Department, 2012; Partnership for Assessment of Readiness for College and Careers, 2014; Swedien, 2014).

As the PARCC is implemented, it is important to understand the technology implications and the overall opportunity gap that comes with implementing an assessment of this magnitude and one that is viewed as high stakes (Swedien, 2014). Teachers at Emerson expressed a need to improve the technology skills of their students so that they would know how to navigate the computer screens while taking the PARCC test. Beyond simple keyboarding skills, the students have to be able to navigate menus that appear in various locations on the screens and in programs with which they may have

had no interaction (Martin, Smith, & Wray, 2015). The most important technology skills

that students need to know to be successful on the test have been identified: "Tasks that

students should know how to perform before taking the online assessments included the

following: 1. Click/tap, 2. Select object, text and area, 3. Drag/slide and drop selected

material, 4. Unselect, 5. Scroll, 6. Use calculator, protractor, ruler and video player, 7.

Plot points" (Martin et al., 2015, p. 4). These are all complicated tasks that students may

or may not know how to do, much less be able to do them and perform well on the

content of the test. We are moving quickly in this standards-based assessment

environment to demand more of students, yet we have not taken care of all the school

actors. Based on this study, there should be concern about identifying and addressing

technology skill gaps.

Most technology experts have warned districts to be careful not to move too

quickly to the transition to online assessments, but that was not the case in New Mexico

or other districts where the PARCC was implemented in the 2014-2015 school year.

Experts believe that online assessments must be well thought out, taking into

consideration the issues raised by these questions:

> How is data being collected, shared and analyzed? What tools are available for
> students to use for simulations and manipulatives to mode mathematical or
> scientific thinking? How can students build mathematical fluency through the use
> of learning games? How can students access real world data or work
> collaboratively to solve real world problems through the use of technology? How
> can students utilize technology to conduct research and design their own
> experiments? (Martin et al., 2015, p. 4)

School districts must be diligent about following certain steps when implementing these online assessments. It is important for school leaders to evaluate how they will implement these complex assessments in their own school community rather than taking a generic approach and treating all communities and children in the same way.

Beyond just the technology skill gap, it is important to understand the role that test accommodations play in populations such as those at Emerson where the majority of the students are Hispanic as well as a significant number that are English Language Learners. The use of accommodations varies: "In attempts to control for the influence of a developing proficiency in English impacting a test score, accommodations provide linguistically related supports such as the use of an interpreter or a bilingual word-forward dictionary and linguistically unrelated supports such as small group administration with extra time" (Schissel, 2014, p. 283). This must be acknowledged and processed as we continue to move forward in this standards-based assessment environment.

Trauma and Fatigue

Teachers at the school described the difficulty they have in supporting the students in this community for long periods of time. In some cases, they may be experiencing compassion fatigue, a phenomenon that may exist in any group that deals with individuals who are experiencing stressors in their life. We must understand the impact that this has on their role and ability to get their professional job done. Simply put it is the personal impact that many professionals who deal with students face: "We become exhausted by exposure to experience after experience of emotionally draining clients who look to us for help" (Ardino, 2011, p. 421). What is often seen in the

literature is that those who are more experienced develop coping mechanisms over time as to how to deal with the issues they face (Ardino, 2011). One teacher at Emerson described how her colleagues deal with the trauma to which they are exposed:

> Some deal with it better than others, and it's really hard not to have this emotional impact of 'these are my babies' and 'they are my babies' and when they are here they are happy, I'm speaking from when they come to me in my space, I see them in the hall and at recess and the interactions that we have, they are happy to be here. I think they feel very safe here, whenever things do happen they are not afraid to tell you. They will tell you I was late because mom or dad…and they will tell you. That in itself shows that there is trust and they are safe, but you can tell they are tired and the attendance rate and the tardy rate is high. We struggle there but it's getting better but I think that it's getting better, this being the second year we have had a lot of student stay at Emerson. So getting to know families, and I think the trust that the families have with us has definitely helped and building those relationships with parents and getting them here for different things. You know, our parent nights, we are still trying to grow those, but in general I know it weighs heavy on them and you can tell. But when they are here with you, they are here with you, they are happy to be here, this is kind of their safe space (dealing with trauma). Yes, we have had turnover, I mean it's hard. It's hard to be here and see it.

As many reform efforts are implemented in struggling schools, there must be acknowledgement by the school leadership and the district that issues of trauma exist. By acknowledging the trauma experienced by teachers and other personnel and actually

making a statement ensuring that this is a concern is the first step in tackling these

challenging circumstances. Some believe that Emerson has been given the luxury of

having additional professional development days and an extended day for all staff

members. Most schools not only in the district but across the country do not have

additional time to the extent that this school has. As part of the time for professional

development for the staff at Emerson, instead only focusing on technology, the teachers

might find the opportunities they need to talk about the students' traumas and how to

effectively address them. Teachers and staff members should be given the time to talk

about the issues that they are seeing and dealing with in the classroom. Additionally, the

district has a group of highly trained counselors and psychologists who help support

students. They can be resources for teachers as well. Systems should be set up so that,

similar to individuals who experience traumatic events in war, teachers could be given

the opportunity to debrief and express their feelings and concerns. From there, teachers

can follow individual paths to deal with the trauma they face. The district and the school

leadership should take very seriously calls from teachers for support in dealing with this

issue.

Discussion of childhood trauma is growing among educators and social research.

What Ostrander (2015) has found is that poverty impacts daily lives through living in

overcrowded conditions, excessive noise, separation of parents, family turmoil, and

exposure to violence where all of these can have an impact on the developing brain just

like drugs or alcohol do. Long term exposure to stress can have disastrous impacts on the

body, especially as children are developing. Children who are exposed to trauma are

more prone to depression, heart disease, and addiction in adulthood. This is important for

teachers and others at schools like Emerson to understand because we have clearer

consensus from the scientific community that "poverty perpetuates poverty, generation

after generation, by acting on the brain" (Ostrander, 2015, para. 6). This understanding is

prompting researchers to say that community approaches are needed to impact poverty

(Ostrander, 2015). Rather than blame parents for problems that children have, policy

makers should work to eliminate early incidents of trauma and the effect such trauma has

on children (Ardino, 2011).

All children at Emerson receive free breakfast and lunch, which means that

almost everyone in the school is at or below the poverty threshold set forth by the federal

government. The likelihood of childhood trauma in this community is high based on the

demographics that make up the school community. At this time, the incidents of

childhood trauma have not been quantified or studied. However, as one spends time in

the school community, in classrooms, and with students there is an almost open dialogue

about the things that happen or do not happen, which impact children negatively. This

can be seen by spending a few minutes in the front office where parents come in to pull

their child from class because they need to go say goodbye to a family member who is

being incarcerated or children who are brought in late because a family member was

injured the night before and the family did not get much, if any, sleep. When I asked one

school leader about how important technology is in supporting advancing student

achievement they responded by describing the need for additional community supports to

combat trauma:

> I think that that there are many schools in Albuquerque, in New Mexico, in the
>
> country that need that, and that should be a priority for them. Unfortunately, and

it's not equitable, it's not equitable, but in a school like Emerson, and this feels

very pessimistic to speak this way, we have a lot of strengths in our school, we

have a lot of good things in our community, but we are working on things that are

more essential to survival, literally essential to survival, like accessing food, and

clean water and clothing and medical care and those types of things and if we

have to prioritize we can't even meet those needs right now. We are not even

coming close to really supporting our schools in a community schools effort. We

are working towards it, we are having victories, we are making progress, if we

went into the homes of each of our kids, if teacher were to do home visits, I think

that absolutely, the last thing on their mind would be, wow this family needs

internet access. This family, ugh, I can't believe this family doesn't have a

computer and doesn't know how to use the internet or this family, how sad, that

wouldn't even be in their minds at all, ever.

This school leader's response highlights the needs of a school located in an urban

setting, where there is high mobility, poverty, and a large minority population, in this

case Hispanic. The true needs of a school community can be seen when talking to the

practitioners who are working directly with the students, the staff members who are

listening to the children in their classroom each and every day. The goals of the district

and even the school leaders seem lofty. However, in this school's environment, the basic

needs of students must be met while trying to take on additional reform efforts like

increasing the use of technology and home internet access. Participating in a research

study like this one, for example, could be perceived as one more burden in a school

community that is already challenged in so many ways.

Limitations

One of the major limitations in this study was the lack of responses from parents. I analyzed the literature on how to collect information from vulnerable and under-represented populations. Chang et. al (2004) suggested first notifying the targeted population about the study before disseminating the questionnaires using direct mail. I did just that by mailing 372 survey packets to unique addresses of students attending Emerson Elementary. I was surprised when 89 packets (23.9%) were returned as undeliverable because the home was vacant and the families did not provide a forwarding address. This means that nearly a quarter of the students who attend the school do not have valid addresses on file with the school district.

Mobility has been an issue that the school has worked to tackle for several years as the whole-school reform has been put into place. In the 2011-12 school year, the school's mobility jumped to 91%, which represented the highest rate of any school in the district and indicated that "there were almost as many mid-year enrollments and withdrawals as there were students" (Heath & Damle, 2012, p. 5). Current statistics on mobility are not publically available but the school leaders hope to see an improvement. Such mobility rates have a large impact not only on the clerical aspects of managing a school but also on the implementation of consistent reforms for all students.

Although the research is fairly robust on the issue of the impact of mobility on schools, it is hard to pinpoint a causal impact of student mobility because students transfer for so many different reasons including family disruptions, problems at school, and the search for better educational opportunities (Rumberger, 2015). Just like childhood trauma, mobility has an impact on a child's development, "specifically,

mobility (particularly repeated mobility) can disrupt children's routines, the consistency

of their care and health care, and their relationships, as well as learning routines,

relationships with teachers and peers, and the curriculum to which they are exposed"

(Rumberger, 2015, p. 7). It should also be noted that the impact of mobility on a student

will vary depending on the circumstances, including other risk factors like poverty and

cultural factors such as when students spend time inside and outside of the country

(Rumberger, 2015). What also must be understood and examined is the impact on the

non-mobile students who experience the constant change of classmates and the

reintegration in several forms of those students into the daily and weekly routine

(Rumberger, 2015).

As the number of responses slowly trickled in from the first round of mailings, I

grew concerned and visited the school to ask them if they have experienced the same

issues when trying to get parents and families to respond to school information. They

told me that the best option to get families to respond was to send backpack mail. That is

how they have sent their yearly Quality of Education surveys home, which is a mandate

of the State of New Mexico. Through the backpack mail of these surveys, they received

about one-third of the surveys back (Albuquerque Public Schools, 2015). Sometimes,

they added incentives to students and classes based on the number of surveys that were

returned, but the response rate remained the same. About one-half of the 63 responses

that I received from families came from those who returned the survey through backpack

mail. Although the mobility of the population impacted the response rate, I followed the

guidance from other research studies of vulnerable populations and from those who work

closest to the school and I was able to collect a sufficient number of questionnaires to get a sense of what families thought about technology.

A second limitation is that it would be difficult to replicate this study, even though the boundaries of the case are clear (Yin, 2009), and get the same results because of the unique characteristics and specific demographics of the participants. I conducted a bounded case study and as such it is not generalizable to other schools with similar demographics or even in other schools within the district, state or country (Yin, 2009). What is useful from this study is a greater understanding of how the respondents viewed technology through their own lens and perceptions. The findings can be used to develop hypotheses for larger studies. Those studies could be conducted on a larger scale to test for validity and generalizability for larger populations including the district, state or even schools in general (Yin, 2009). Finally, the things that I saw and recorded while spending time in the classrooms were clearly viewed through my own lens. It should be noted that I used field notes to record the things that I witnessed (Creswell, 2013). However, there is a bias that any researcher has in the choices made to record some details and not others. I have tried to take my bias into account in writing and documenting the interactions that I had in the school with all of the participants. I recognize that conducting a single case study with a single researcher calls into question the validity of such accounts (Creswell, 2013; Yin, 2009).

Future Research

The research on the digital divide is growing but there still needs to be additional large scale studies of what can be done to bridge the gap of technology availability and connectivity. From this study's findings, I recommend that policy makers must

understand their role and provide opportunities in multiple ways to support all of the school actors in their technology skill development. As this happens, researchers can do another case study and then a pilot study of different sites to measure the longitudinal impact on student success when families, school leaders, teachers, and community members all get support and professional development with their use of technology.

From there, a case study may be done with families who are using the skills that they have been taught to understand how that in turn impacts student achievement. I believe that a study of this nature might show the gaps that appear when parents are focused on supporting students at home. It would be important to understand the changes that need to be made in professional development and on teacher time so that teachers are given the resources that will have the most impact on learning at home. The studies should include a mixture of populations both including demographics of high, low and middle socio-economic and those with a cross section of racial and ethnic groups. This is important as more and more pressure is placed on families to support continued learning at home. As seen with this school community, time and other factors place a major constraint on parents being able to support learning at home.

Policy Implications

As school districts and leaders increasingly turn to technology to support student achievement, they must be aware of the impact that technology has on an entire community. It is critical that policy makers understand the importance of viewing schools as communities that include families, school leaders, teachers, and community support providers. Schools receive assistance from community support providers through formal

agreements but many may also have informal agreements and processes to allow their engagement with students and staff.

I found that there is a major gap between the classroom, school, and district level understandings of the needs of students. At the classroom level, the teachers, and even the students, were talking about meeting students' basic needs. At the school level, based on the quantitative and qualitative research compared to the proposals that have been made by the district (Green & Jacobson, 2014), the leaders understood better than the district what the school community needs. At the district level, the technology plan developed by the Chief Academic Officer and the Executive Director of Instruction looked at the needs of students but did not take into account the needs of all school actors and the lack of connectivity that is present in this community and even in the state.

What remains is a school system that could be described as loosely coupled. This term refers to a system where one actor or part of the system does not need to know what the other is doing in order to be able to move forward with their own work or to even be successful in the work (Pritchett, 2014; Weick, 1976). What has been learned from this study and from the plans that district executives have, even arguably with the best of intentions, are by their nature disconnected or loosely coupled with the schools and the students in which they are trying to impact. However, it is important to understand that some organizations and processes may be too tightly coupled or too loosely coupled; there is benefit in both but it should depend on the process or issue with which we are dealing (Burke, 2014).

I argue that policy makers must ensure that processes are tightly coupled when it comes to issues that may impact health and safety. This can be justified in terms of

having correct human resource processes to ensure that all employees have a background check before being hired by a school district or that employees know the rules and regulations of using district email. However, there should remain the loosely coupled areas that allow for creativity, for teachers to develop individualized lessons for students and classes, and for schools to be able to be agile when responding to their school community. What policy makers should take into account is that when high level administrators who are not working directly in schools develop plans and guides that supports schools those plans should allow for adjustments by school leaders to meet the specific needs of their community. There should be the right balance of systems of tight and loosely coupled systems, especially in school districts. We in school districts with large bureaucracies often think of things as "either or" and I argue that policy makers should push district and school leaders to strike the right balance.

Concluding Remarks

This study has demonstrated that perceptions of communities, no matter their demographic makeup, are not always true. The connectivity levels and device access that students from Emerson Elementary had far exceeded state and even national figures, especially when compared to similar demographics. In addition, the perceptions of parents cannot be predicted based on their demographic makeup. We must push ourselves harder as school leaders to connect with the community including families, community members, and teachers to understand their needs. By doing so, we will obligate the teachers and other staff who work directly with the students to develop a deeper understanding of the personal identity and needs of each student. By doing this, we will embark on transformational change and truly personalized learning.

We must also acknowledge that the system in which the public schools has been set up must have a balance between tightly coupled and loosely coupled processes, practices and policies (Burke, 2014; Pritchett, 2014). As we develop plans that we believe will impact the learning environment and thus impact academic success, we must balance how these plans will be implemented in unique and diverse circumstances. The school leaders themselves know the uniqueness of their school community and we must give them the tools to support that community. We must not tie their hands with an over-arching plan like a district wide one-to-one initiative that takes the approach to support students who are average, with average technology skills and connectivity. We must create a plan that has the nimbleness to adapt to all students no matter their skills or connectivity. This will then impact the long term path and success of the students as they move out of our schools and work in our economy.

The school should be the heartbeat and the center of any community. Schools and districts have come a long way in recent years in terms of providing more services to the community such as health services and even food. We should take on this attitude when dealing with creating a techno-literate society. By giving and supporting more individuals to become techno-literate, no matter where they are in the community, it will in turn benefit the success of students. This will then result in a more educated work force and will help to improve the economic status of not only this community but the community at large. Technology is one piece, but a piece that has the potential to have a transformational impact on generations to come and the generations it has passed by.

Finally, and perhaps more importantly, we must not forget that a school is not just an institution. It is made up of individuals who have chosen education because they want

to make a difference in the life of a child, a person, a community, a nation. Too often, we forget that the district or the institution or the system is made up of human beings. We must acknowledge the trauma and the fatigue that comes with working in certain communities and provide those individuals with additional support and acknowledgement for the issues they face on a daily basis. For many, it is too easy and too quick to decide to transfer and move on to another school or another community. For some, instead of acknowledging the trauma or the fatigue they face, they bury it. As school leaders, we must continue to be compassionate and conscientious of not only our feelings, but of our students', families', and community members' needs. We definitely must not forget the well-being of the staff, who show up each and every day to create and sustain the best learning environment they can, with or without technology, and deal with the individual students no matter what their personal or educational needs may be.

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Appendix A

Case Study Survey on Technology Use at Home of Families
Please complete all questions by marking the box next to your answer
Por favor complete todas las preguntas marcando la casilla al lado de su respuesta

1. How many children 18 or under are living in your household? ¿Cuántos niños de 18 anos bajo viven en su hogar?
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5 or more/o mas

2. What is the highest level of school you have completed? ¿Cuál es el nivel escolar más alto que ha completado?
   - ☐ Less than high school / menos de la escuela secundaria
   - ☐ Some high school / Algunos estudios secundarios
   - ☐ Completed high school / completado la escuela secundaria
   - ☐ Some college / Un poco de universidad
   - ☐ Completed college / universidad completa
   - ☐ Post-graduate courses or degree / cursos de postgrado o grado

3. Which of the following best describes your employment status? ¿Cuál de las siguientes opciones describe mejor su situación laboral?
   - ☐ Work full-time (more than 30 hours per week) / Trabajar a tiempo completo (más de 30 horas por semana)
   - ☐ Work part-time (30 hours or less per week) / Trabajar a tiempo parcial (30 horas o menos por semana)
   - ☐ Owner, self-employed or entrepreneur / propietario, por cuenta propia o empresario
   - ☐ Homemaker / ama de casa
   - ☐ Full-time student / estudiante de tiempo completo
   - ☐ Part-time student / estudiante a tiempo parcial
   - ☐ Retired / jubilado
   - ☐ Unemployed / Desempleado
   - ☐ Other / Otro
   - ☐ I would rather not say / prefiero no decir

4. What do you consider to be your primary racial or ethnic background? ¿Qué considera usted que sea su origen racial o étnico primaria?
   - ☐ White/Caucasian / Blanco / caucásico
   - ☐ Black/African American / Negro / afroamericano
   - ☐ Hispanic/Latino / Hispano / Latino
   - ☐ Asian/Asian-American / asiático / asiático-americana
   - ☐ Native American / nativos americanos
   - ☐ Other / Otro

5. How important is it for schools to make good use of technology in the education of students today? ¿Qué tan importante es para que las escuelas hagan un buen uso de la tecnología en la educación de los estudiantes de hoy?
   - ☐ Very Important / Muy Importante
   - ☐ Fairly Important / Bastante Importante
   - ☐ Somewhat Important / Algo Importante
   - ☐ Not Important / No Importante

6. Looking ahead 10 years or so, the role of technology in education of students will become: / Mirando hacia el futuro 10 años más o menos, el papel de la tecnología en la educación de los estudiantes se convertirá ha ser:
   - ☐ Much more important / Mucho más importante
   - ☐ Somewhat more important / Algo más importante
   - ☐ Same as now / Igual que ahora
   - ☐ Less important / Menos importante

7. Which would be a better investment of $200 per student for a school district today? ¿Cuál sería una mejor inversión de $ 200 por estudiante para un distrito de escuela hoy?
   - ☐ Giving each student an internet-connected device like a tablet computer / Dando a cada estudiante un dispositivo conectado a Internet como una computadora de Tablet PC
   - ☐ Purchasing new science textbooks / la compra de nuevos libros de texto de ciencias

8. In learning and doing well in school, having home access to high-speed internet gives a student: / En el aprendizaje y le va bien en la escuela, tener acceso en casa a Internet de alta velocidad le da a un estudiante
   - ☐ A big advantage / Una gran ventaja
   - ☐ A moderate advantage / Una ventaja moderada
   - ☐ A small advantage / Una pequeña ventaja
   - ☐ No advantage / No ventaja

9. Does your child access the internet from a computer at school? / ¿Su niño tiene acceso al Internet desde una computadora en la escuela?
   - ☐ Yes / si
   - ☐ No
   - ☐ Don't Know

10. Do you access the internet from work? / ¿Tiene acceso usted al Internet desde el trabajo?
    - ☐ Yes / si
    - ☐ No

11. Do you go to a library to access the internet? / ¿Va usted a la biblioteca para acceder al Internet?
    - ☐ Yes / si
    - ☐ No

12. Does your child go to a library to access the internet? ¿Su hijo va a una biblioteca para acceder al Internet?
    - ☐ Yes / si
    - ☐ No
    - ☐ Don't Know

13. Do you go to a community center to access the internet? ¿Usted va a un centro de la comunidad para acceder al Internet?
    - ☐ Yes / si
    - ☐ No

14. Does your child use a cellular phone or smartphone to access the internet? ¿Usa su hijo un teléfono celular o un teléfono inteligente para acceder al Internet?
    - ☐ Yes / si
    - ☐ No
    - ☐ Don't Know

15. Does your child use a game system or console such as the Wii, XBOX, or PlayStation to access the internet? ¿Usa su hijo un sistema de juego o la consola como la Wii, XBOX, PlayStation para acceder al Internet?
    - ☐ Yes / si
    - ☐ No
    - ☐ Don't Know

16. Do you use a cellular phone or smart phone? ¿Utiliza un teléfono celular o un teléfono inteligente?
    - ☐ Yes / si
    - ☐ No *(skip to question 19)/* (si la respuesta es "no" pase a la pregunta 19)

17. When you use your cell phone or smartphone do you…(select all that apply) / Cuando usa su teléfono celular o teléfono inteligente lo usa para ... (seleccione todas las que apliquen)
- ☐ Make phone calls? / Hacer llamadas telefónicas?
- ☐ Send/receive text messages? / Enviar / recibir mensajes de texto?
- ☐ Browse the Web? / Explorar la Web?
- ☐ E-mail? / El correo electronico?
- ☐ Use maps or use GPS navigation? / Utilizar mapas o la navegación GPS?
- ☐ Play games? / jugar juegos?
- ☐ Access social network sites (such as Facebook or Twitter)? / acceder a sitios de redes sociales (como Facebook o Twitter)?
- ☐ Download "apps" or applications? / Descargar "apps" o aplicaciones?
- ☐ Listen to music or other audio? / escuchar música o otro audio?
- ☐ Take photos/videos? / Tomar fotos / videos?
- ☐ None of the above / Ninguna de las anteriores

18. What do you use your smartphone to access the internet for (select all that apply)? ¿Usted utiliza su Smartphone para acceder a Internet para (seleccione todas las que apliquen)?
- ☐ Business/Entrepreneurship/Self-Employment Activities / de negocios / Emprendimiento / Autoempleo Actividades
- ☐ E-mail
- ☐ Employment search / la búsqueda de empleo
- ☐ Entertainment (video games, movies, TV shows, music) / entretenimiento (videojuegos, películas, programas de televisión, música)
- ☐ Family/Friends/Social networking (Facebook, Twitter, etc.) / Familia / Amigos / Las redes sociales (Facebook, Twitter, etc.)
- ☐ File-sharing website (pictures, videos, etc.) / el sitio web de intercambio de archivos (imágenes, vídeos, etc.)
- ☐ Information or research (health info, news, maps, movie times, recipes) / La información o investigar (información de salud, noticias, mapas, horarios de películas, recetas)
- ☐ Online commerce (banking, online shopping) / El comercio en línea (banca, compras en línea)
- ☐ School work (MY CHILDREN'S) / Trabajo de la escuela (MIS NIÑOS)
- ☐ School Work (MY OWN EDUCATION) / Trabajo de la escuela (MI PROPIA EDUCACIÓN)
- ☐ Work or Job-related uses / El trabajo o usos relacionados con el trabajo
- ☐ Other / Otro

19. How many desktop, laptop, netbook notebook, and tablet computers are there in use in your household? / ¿Cuántos escritorios, laptop, netbook notebook y computadoras tablet hay en uso en su hogar?

20. Does anyone in your household use the internet from home? / ¿Alguien en su hogar usa el Internet desde la casa?
    - ☐ Yes / Si
    - ☐ No *(if no skip to question 26) / (si no, pase a la pregunta 26)*

21. At home how do you access the internet? / En su casa, ¿cómo acceder a Internet?
    - ☐ Dial up service? / Marque el servicio?
    - ☐ DSL service? / El servicio DSL o?
    - ☐ Cable modem service? / El servicio de módem por cable?
    - ☐ Fiber-optic service? / Servicio de fibra óptica?
    - ☐ Mobile broadband plan (for a computer, cell phone, smartphone or tablet)? / plan de banda ancha móvil (para una computadora, teléfono móvil, Smartphone o tableta)?
    - ☐ Satellite service / Servicio de Satélite
    - ☐ Other service? / Otro servicio?
    - ☐ Don't know / No se

22. What do you use the internet for at home (select all that apply)? / ¿Para qué utiliza el Internet en el hogar (seleccione todas que apliquen)?
    - ☐ Business/Entrepreneurship/Self-Employment Activities / de negocios / Emprendimiento / Autoempleo Actividades
    - ☐ E-mail
    - ☐ Employment search / la búsqueda de empleo
    - ☐ Entertainment (video games, movies, TV shows, music) / entretenimiento (videojuegos, películas, programas de televisión, música)
    - ☐ Family/Friends/Social networking (Facebook, Twitter, etc.) / Familia / Amigos / Las redes sociales (Facebook, Twitter, etc.)
    - ☐ File-sharing website (pictures, videos, etc.) / el sitio web de intercambio de archivos (imágenes, vídeos, etc)
    - ☐ Information or research (health info, news, maps, movie times, recipes) / La información o investigar (información de salud, noticias, mapas, horarios de películas, recetas)
    - ☐ Online commerce (banking, online shopping) / El comercio en línea (banca, compras en línea)
    - ☐ School work (MY CHILDREN'S) / Trabajo de la escuela (MIS NIÑOS)
    - ☐ School Work (MY OWN EDUCATION) / Trabajo de la escuela (MI PROPIA EDUCACIÓN)
    - ☐ Work or Job-related uses / El trabajo o usos relacionados con el trabajo
    - ☐ Other / Otro

23. What costs are you most concerned about (select all that apply)? / ¿Cuáles son los costos que le preocupa mas (seleccione todas las que apliquen)?
    - ☐ Cost of the computer and/or other hardware (e.g. modem) / El costo de la computadora y / o hardware (por ejemplo, un módem)
    - ☐ Cost of installing internet service / El costo de la instalación de servicio de Internet
    - ☐ Cost of monthly internet service / El costo de servicio mensual de Internet
    - ☐ Some other costs / Algunas otros costos
    - ☐ Don't know / No se

24. What is the most important factor to you regarding your internet service? / ¿Cuál es el factor más importante para usted en relación con su servicio de Internet?
    - ☐ Connection speed / la velocidad de conexión
    - ☐ Reliability of internet service / confiabilidad de servicio de Internet
    - ☐ Affordability / Asequibilidad
    - ☐ Customer service / Servicio al Cliente
    - ☐ Mobility/Ability to use service outside the home / Movilidad / Capacidad para utilizar el servicio fuera del hogar
    - ☐ Name brand / Nombre de la marca
    - ☐ Other factor / Otro factor de
    - ☐ Don't know / No se

25. Which of the following methods do you use to ensure child safety when using the internet (select all that apply)? ¿Cuál de los siguientes métodos utiliza usted para garantizar la seguridad de los niños cuando se usa el Internet (seleccione todas las que apliquen)?
    - ☐ Blocking or filtering software ("Nanny" software)? / Bloqueo o software de filtrado (software "niñera")?
    - ☐ Monitoring browsing history and email? / Evaluar la Historia de navegación y correo electrónico?
    - ☐ Prohibiting children from using the internet entirely? / Prohibir que los niños utilicen el Internet por completo?
    - ☐ Prohibiting use of internet in private locations? / Prohibir el uso de Internet en lugares privados?
    - ☐ Only allowing children to use internet with direct adult supervision? / Sólo permitiendo que los niños utilicen Internet con la supervisión directa de un adulto?
    - ☐ Setting rules and guidelines for using without direct adult supervision? / Establecer reglas y directrices para el uso sin supervisión directa de un adulto?
    - ☐ Other method / Otro método
    - ☐ None / Ninguno

26. What is the MAIN reason that you don't have the internet at home? / ¿Cuál es la razón principal por la que usted no tiene Internet en casa?
    ☐ Don't need it, not interested / No lo necesito/ No me interesa
    ☐ Too expensive / Demasiado caro
    ☐ Can use it somewhere else / lo puede utilizar en otro lugar
    ☐ Not available in area / No disponible en el área
    ☐ No computer or computer inadequate / No tengo computadora o tengo computadora inadecuada
    ☐ Privacy or security concerns / preocupaciones con privacidad o seguridad
    ☐ Other reason / Otra razón
    ☐ Doesn't apply, I have internet / No se aplica, yo tengo internet

27. Would you be willing to pay $10 a month to have broadband or high speed internet access at home? / ¿Estaría dispuesto a pagar $ 10 al mes para tener banda ancha o Internet de alta velocidad de acceso en el hogar?
    ☐ Yes / si
    ☐ No

28. Would you be willing to pay $5 a month to have broadband or high speed internet access at home? / ¿Estaría dispuesto a pagar $ 5 por mes para tener banda ancha o Internet de alta velocidad de acceso en el hogar?
    ☐ Yes / si
    ☐ No

29. Which of the following would help you to gain technology knowledge and use to benefit student success? (select all that apply) / ¿Cuál de los siguientes le ayudaría a adquirir conocimientos de tecnología y utiliza en beneficio de éxito de los estudiantes? (seleccione todas las que apliquen)
    ☐ General technology classes / clases generales de tecnología
    ☐ Technology devices that are open for use / dispositivos Tecnología que están abiertos para su uso
    ☐ Classes to support using technology in the home for school work / Las clases para apoyar el uso de la tecnología en el hogar para el trabajo escolar
    ☐ Support and/or guidance in purchasing technology devices or connectivity / Apoyo y / o guía en la compra de dispositivos de tecnología o conectividad
    ☐ Other Ideas: / Otras Ideas:

30. If the school offered a technology class what would you like included so that you would attend? / Si la escuela ofreció una clase de tecnología ¿qué le gustaría incluido para que usted asistir?

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31. Do you believe that you have the current knowledge and use of technology to support continued learning at home? / ¿Cree usted que usted tiene el conocimiento actual y el uso de la tecnología para apoyar el aprendizaje continuo en el hogar?
   ☐ Yes / si
   ☐ No

Choose the best response to these statements / Elija la mejor respuesta a estas declaraciones

32. Use the functions of a word processor to format text, check spelling/grammar etc. / Utilice las funciones de un procesador de texto para dar formato al texto, revisar la ortografía / gramática, etc
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

33. Use advanced features of a spreadsheet (e.g. using formulas, sorting data, and creating charts/graphs) / Utilizar las funciones avanzadas de una hoja de cálculo (por ejemplo, el uso de fórmulas, la clasificación de datos y la creación de cuadros / gráficos
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

34. Send, receive, open and read email / Enviar, recibir, abrir y leer el correo electrónico
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

35. Navigate the web using a web browser (e.g., Internet Explorer, Firefox) / Navegue por la web utilizando un navegador web (por ejemplo, Internet Explorer, Firefox)
    - ☐ I can't do this / Yo no puedo hacer esto
    - ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
    - ☐ I can do this independently / Yo puedo hacer esto de forma independiente
    - ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

36. Use a search engine (e.g. Yahoo, Lycos, Google) to search for information on the web / Utilice un motor de búsqueda (por ejemplo, Yahoo!, Lycos, Google) para buscar información en la web
    - ☐ I can't do this / Yo no puedo hacer esto
    - ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
    - ☐ I can do this independently / Yo puedo hacer esto de forma independiente
    - ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

37. Use desktop publishing software (e.g., Publisher, PageMaker) to create a newsletter, pamphlet, or award certificate / Utilice el software de autoedición (por ejemplo, Publisher, PageMaker) para crear un boletín, folleto, o certificado de premio
    - ☐ I can't do this / Yo no puedo hacer esto
    - ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
    - ☐ I can do this independently / Yo puedo hacer esto de forma independiente
    - ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

38. I support the use of technology in the classroom / Apoyo el uso de la tecnología en el aula
    - ☐ Strongly Disagree / Totalmente en desacuerdo
    - ☐ Disagree / En desacuerdo
    - ☐ Agree / De acuerdo
    - ☐ Strongly Agree / Totalmente de acuerdo

39. Technology facilitates the use of a wide variety of instructional strategies designed to maximize learning / La tecnología facilita el uso de una amplia variedad de estrategias de enseñanza diseñadas para maximizar el aprendizaje
    - ☐ Strongly Disagree / Totalmente en desacuerdo
    - ☐ Disagree / En desacuerdo
    - ☐ Agree / De acuerdo
    - ☐ Strongly Agree / Totalmente de acuerdo

Appendix B

Case Study Survey on Technology Use at Home – Teachers/Community

Please complete all questions by marking the box next to your answer
Por favor complete todas las preguntas marcando la casilla al lado de su respuesta

1. How important is it for schools to make good use of technology in the education of students today? ¿Qué tan importante es para que las escuelas hagan un buen uso de la tecnología en la educación de los estudiantes de hoy?
   - ☐ Very Important / Muy Importante
   - ☐ Fairly Important / Bastante Importante
   - ☐ Somewhat Important / Algo Importante
   - ☐ Not Important / No Importante

2. Looking ahead 10 years or so, the role of technology in education of students will become: / Mirando hacia el futuro 10 años más o menos, el papel de la tecnología en la educación de los estudiantes se convertirá ha ser:
   - ☐ Much more important / Mucho más importante
   - ☐ Somewhat more important / Algo más importante
   - ☐ Same as now / Igual que ahora
   - ☐ Less important / Menos importante

3. Which would be a better investment of $200 per student for a school district today? ¿Cuál sería una mejor inversión de $ 200 por estudiante para un distrito de escuela hoy?
   - ☐ Giving each student an internet-connected device like a tablet computer / Dando a cada estudiante un dispositivo conectado a Internet como una computadora de Tablet PC
   - ☐ Purchasing new science textbooks / la compra de nuevos libros de texto de ciencias

4. In learning and doing well in school, having home access to high-speed internet gives a student: / En el aprendizaje y le va bien en la escuela, tener acceso en casa a Internet de alta velocidad le da a un estudiante
   - ☐ A big advantage / Una gran ventaja
   - ☐ A moderate advantage / Una ventaja moderada
   - ☐ A small advantage / Una pequeña ventaja
   - ☐ No advantage / No ventaja

5. Which of the following would help you to gain technology knowledge and use to benefit student success? (select all that apply) / ¿Cuál de los siguientes le ayudaría a adquirir conocimientos de tecnología y utiliza en beneficio de éxito de los estudiantes? (seleccione todas las que apliquen)
   - ☐ General technology classes / clases generales de tecnología
   - ☐ Technology devices that are open for use / dispositivos Tecnología que están abiertos para su uso
   - ☐ Classes to support using technology in the home for school work / Las clases para apoyar el uso de la tecnología en el hogar para el trabajo escolar
   - ☐ Support and/or guidance in purchasing technology devices or connectivity / Apoyo y / o guía en la compra de dispositivos de tecnología o conectividad
   - ☐ Other Ideas: / Otras Ideas:

6. If the school offered a technology class what would you like included so that you would attend? / Si la escuela ofreció una clase de tecnología ¿qué le gustaría incluido para que usted asistir?

7. Do you believe that you have the current knowledge and use of technology to support continued learning at home? / ¿Cree usted que usted tiene el conocimiento actual y el uso de la tecnología para apoyar el aprendizaje continuo en el hogar?
   - ☐ Yes / si
   - ☐ No

8. Use the functions of a word processor to format text, check spelling/grammar etc. / Utilice las funciones de un procesador de texto para dar formato al texto, revisar la ortografía / gramática, etc
   - ☐ I can't do this / Yo no puedo hacer esto
   - ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   - ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   - ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

9. Use advanced features of a spreadsheet (e.g. using formulas, sorting data, and creating charts/graphs) / Utilizar las funciones avanzadas de una hoja de cálculo (por ejemplo, el uso de fórmulas, la clasificación de datos y la creación de cuadros / gráficos
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

10. Send, receive, open and read email / Enviar, recibir, abrir y leer el correo electrónico
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

11. Navigate the web using a web browser (e.g., Internet Explorer, Firefox) / Navegue por la web utilizando un navegador web (por ejemplo, Internet Explorer, Firefox)
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto\

12. Use a search engine (e.g. Yahoo, Lycos, Google) to search for information on the web / Utilice un motor de búsqueda (por ejemplo, Yahoo, Lycos, Google) para buscar información en la web
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

13. Use desktop publishing software (e.g., Publisher, PageMaker) to create a newsletter, pamphlet, or award certificate / Utilice el software de autoedición (por ejemplo, Publisher, PageMaker) para crear un boletín, folleto, o certificado de premio
   ☐ I can't do this / Yo no puedo hacer esto
   ☐ I can do this with some assistance / Puedo hacer esto con un poco de ayuda
   ☐ I can do this independently / Yo puedo hacer esto de forma independiente
   ☐ I can teach others how to do this / Puedo enseñar a otros cómo hacer esto

14. I support the use of technology in the classroom / Apoyo el uso de la tecnología en el aula
  □ Strongly Disagree / Totalmente en desacuerdo
  □ Disagree / En desacuerdo
  □ Agree / De acuerdo
  □ Strongly Agree / Totalmente de acuerdo

15. Technology facilitates the use of a wide variety of instructional strategies designed to maximize learning / La tecnología facilita el uso de una amplia variedad de estrategias de enseñanza diseñadas para maximizar el aprendizaje
  □ Strongly Disagree / Totalmente en desacuerdo
  □ Disagree / En desacuerdo
  □ Agree / De acuerdo
  □ Strongly Agree / Totalmente de acuerdo

Appendix C

Semi-Structured Interview on Technology Use at Home with Principal/School Leaders

1. From your viewpoint why is it important for schools to make good use of technology in the education of students today?

2. From your viewpoint why is it important for students to have technology at home in order to have academic success?

3. Looking ahead 10 years or so, describe the role of technology in the education of students.

4. If the school district were to invest $200 per student, what would be the best use of that money? Describe what your recommendation would include.

5. In learning and doing well in school, do you believe having home access to high-speed internet gives a student an advantage? Why or why not?

6. What would help you to gain technology knowledge and use to benefit student success?

7. If the school offered a technology class what would you like included so that you would attend?

8. Do you believe that you have the current knowledge and use of technology to support continued learning at home?

9. What kind of additional professional development as a principal or school leader do you need to support continued learning at home?

10. Describe how proficient you are using a word processor program.

11. Describe how proficient you are using a spreadsheet program like Excel.

12. Describe how proficient you are with using email.

13. Describe how proficient you are with using the web.

14. What do parents, teachers, and community members need to support technology use at home for students success?

15. Do you believe it is important that the school leader, teacher, community members and family have support to support student use of technology and access at home to help with continued learning? Why or Why not?

Appendix D

Semi-Structured Interview on Technology Use at Home with Teachers

1. From your viewpoint why is it important for schools to make good use of technology in the education of students today?

2. From your viewpoint why is it important for students to have technology at home in order to have academic success?

3. Looking ahead 10 years or so, describe the role of technology in the education of students.

4. If the school district were to invest $200 per student, what would be the best use of that money? Describe what your recommendation would include.

5. In learning and doing well in school, do you believe having home access to high-speed internet gives a student an advantage? Why or why not?

6. Tell me about the professional development you have received on technology use in your classroom?

7. Did any of the professional development include support on helping students use of technology at home for continued learning?

8. What would help you to gain technology knowledge and use to benefit student success at school or at home?

9. Do you believe that you have the current knowledge and use of technology to support continued learning at home? What would help?

10. If the school offered a technology class, after hours for the entire community, what would you like included so that you would attend?

11. Describe how proficient you are using a word processor program.

12. Describe how proficient you are using a spreadsheet program like Excel.

13. Describe how proficient you are with using email.

14. Describe how proficient you are with using the web.

15. What do parents, teachers, and community members need to support technology use at home for students success?

16. Do you believe it is important that the school leader, teacher, community members and family have support to support student use of technology and access at home to help with continued learning? Why or Why not?

Appendix E

Semi-Structured Interview on Technology Use at Home with Parents

1. From your viewpoint why is it important for schools to make good use of technology in the education of students today? / Desde su punto de vista ¿por qué es importante que las escuelas hacen un buen uso de la tecnología en la educación de los estudiantes de hoy en día?

2. From your viewpoint why is it important for students to have technology at home in order to have academic success? / Desde su punto de vista ¿por qué es importante que los estudiantes tienen la tecnología en el hogar con el fin de tener éxito académico?

3. Looking ahead 10 years or so, describe the role of technology in the education of students. / De cara al futuro 10 años o así, describir el papel de la tecnología en la educación de los estudiantes.

4. If the school district were to invest $200 per student, what would be the best use of that money? Describe what your recommendation would include. / Si el distrito escolar tuviera que invertir $ 200 por estudiante, lo que sería el mejor uso de ese dinero? Describa lo que su recomendación incluiría.

5. In learning and doing well in school, do you believe having home access to high-speed internet gives a student an advantage? Why or why not? / aprender y hacer bien en la escuela, ¿cree usted que tiene acceso en casa a Internet de alta velocidad le da al estudiante una ventaja? ¿Por qué o por qué no?

6. Tell me about your involvement in your child's education (ex. Helping with homework, field trips, serving on the PTA)? / Hábleme de su participación en la educación de su hijo (ex. Ayudar con las tareas escolares, viajes de estudio, que sirve en la PTA)?

7. Describe the school culture? Is it welcoming? Are parents involved in supporting students? / Describa la cultura escolar? Es acogedor? Son los padres que participan en el apoyo a los estudiantes?

8. What can the school to do be more welcoming to all parents and families? / ¿Qué puede la escuela para hacer ser más acogedor para todos los padres y las familias?

9. What would be your reaction if the school implemented technology devices for each and every student? / ¿Cuál sería su reacción si la escuela implementó dispositivos de tecnología para cada uno de los estudiantes?

10. What would help you to gain technology knowledge and use to benefit student success at home? / ¿Qué le ayudaría a adquirir conocimientos de tecnología y utiliza en beneficio de éxito de los estudiantes en el hogar?

11. If the school offered a technology class, after hours for the entire community, what would you like included so that you would attend? / Si la escuela ofreció una clase de tecnología, después de horas para toda la comunidad, ¿qué le gustaría incluir de manera que usted desea asistir?

12. Describe how proficient you are using a word processor program. / Describa cómo competente está utilizando un procesador de textos.

13. Describe how proficient you are using a spreadsheet program like Excel. / Describa cómo competente está utilizando un programa de hoja de cálculo como Excel.

14. Describe how proficient you are with using email. / Describa cómo competentes usted está con el uso de correo electrónico.

15. Describe how proficient you are with using the web. / Describa cómo competentes usted está con el uso de la web.

16. What do parents, teachers, and community members need to support technology use at home for students success? / ¿Qué padres, maestros y miembros de la comunidad deben apoyar el uso de tecnología en el hogar para los estudiantes de éxito?

17. Do you believe it is important that the school leader, teacher, community members and family have support to support student use of technology and access at home to help with continued learning? Why or Why not? / ¿Crees que es importante que los líderes de la escuela, profesor, miembros de la comunidad y la familia tienen soporte para apoyar el uso de estudiantes de tecnología y el acceso en casa para ayudar con el aprendizaje continuo? ¿Por qué o por qué no?

Appendix F

Post-Card to Volunteer for Semi-Structured Interview

I volunteer to participate in a semi-structured interview and the researcher can contact me at the information below to schedule that meeting.

Name:

Phone Number:

Deseo para participar en una entrevista semi-estructurada y el investigador puede contactarme por el numero a continuación para programar la reunión.

Nombre:

Numero del telefono:

Mr. Joseph Escobedo
12019 Gallant Fox Rd SE
Albuquerque, NM 87123

Mr. Joseph Escobedo
12019 Gallant Fox RD SE
Albuquerque, NM 87123

Appendix G

Dataset	Technology Knowledge and Student Success
Overview	A study of parents/families, teachers and community members of Emerson Elementary on the use of internet and connectivity, parents' perceptions on the importance of internet connectivity on student success, and
Source	Responses to surveys from Parents of students at Emerson Elementary in Albuquerque Public Schools
Sample Size	Parents n = 63, Teachers n = 31, Community n = 15

	Structure of the Dataset			
Col. #	Which Questionnaire Variable was available from? P = Parent Survey TC = Teacher/Community Survey	Variable Name	Variable Description	Variable Metric/Labels *Note: Categorical variables need to have labels for the categories*
1	P, TC	**ID**	Unique ID Number on the Questionnaire	
2	P	**CHILDHOUSE**	How many children 18 or under are living in your household?	1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6

3	P	**GRADE**	What is the highest level of school you have completed?	1 = Less than high school 2 = Some high school 3 = Completed high school 4 = Some college 5 = Completed college 6 – Post-graduate courses or degree
4	P	**EMPLOY**	Which of the following best describes your employment status?	1 = Work full-time 2 = Work part-time 3 = Owner, self-employed, or entrepreneur 4 = Homemaker 5 = Full-time student 6 = Part-time student 7 = Retired 8 = Unemployed 9 = Other 10 = I would rather not say
5	P	**RACE**	What do you consider to be your primary racial or ethnic background?	1 = White 2 = Black 3 = Hispanic 4 = Asian 5 = Native American 6 = Other

6	P TC	**TECHSCHOOLS**	How important is it for schools to make good use of technology in the education of students today?	3 = Very Important 2 = Fairly Important 1 = Somewhat Important 0 = Not Important
7	P TC	**10YRTECH**	Looking ahead 10 years or so, the role of technology in education of students will become:	3 = Much More Important 2 = Somewhat More Important 1 = Same as now 0 = Less Important
8	P TC	**INVEST200**	Which would be a better investment of $200 per student for a school district today?	1 = Giving each student an internet-connected device like a tablet computer 0 = Purchasing new science textbooks
9	P TC	**ADVANTAGE**	In learning and doing well in school, having home access to high-speed internet gives a student	3 = A Big Advantage 2 = A Moderate Advantage 1 = A Small Advantage 0 = No Advantage
10	P	**SCHOOLIT**	Does your child access the internet from a computer at school?	1 = Yes 0 = No

11	P	**ITWORK**	Do you access the internet from work?	1 = Yes 0 = No
12	P	**LIBRARY**	Do you go to a library to access the internet?	1 = Yes 0 = No
13	P	**CHLIBRARY**	Does your child go to a library to access the internet?	1 = Yes 0 = No
14	P	**COMMCTR**	Do you go to a community center to access the internet?	1 = Yes 0 = No
15	P	**CHCELLIT**	Does your child use a cellular phone or smartphone to access the internet	1 = Yes 0 = No
16	P	**CHGAMEIT**	Does your child use a game system or console such as the Wii, XBOX, or Playstation to access the internet?	1 = Yes 0 = No
17	P	**CELL**	Do you use a cellular phone or smart phone?	1 = Yes 0 = No
18	P	**USECELL**	When you use your cell phone or smartphone do you…(select all that apply)	1 = Browse the Web? 0 = All other responses
19	P	**CELLIT**	What do you use your smartphone to access the internet for (select all that apply)?	1 = School work (MY CHILDREN'S) 0 = All other responses
20	P	**COMPUTERS**	How many desktop, laptop, netbook notebook, and	1 = 1 2 = 2 3 = 3 4 = 4

				tablet computers are there in use in your household?	5 = 5+
21	P	**INTERNET**	Does anyone in your household use the internet from home?	1 = Yes 0 = No
22	P	**ACCESSIT**	At home how do you access the internet?	1 = Dial up service 2 = DSL service 3 = Cable modem service 4 = Fiber-optic service 5 = Mobile Broadband plan 6 = Satellite Service 7 = Other 0 = Don't know
23	P	**USEITHOME**	What do you use the internet for at home (select all that apply?)	1 = School work (MY CHILDREN'S) 0 = All other responses
24	P	**COSTS**	What costs are you most concerned about?	4 = Cost of the computer 3 = Cost of installing internet service 2 = Cost of monthly internet service 1 = Some other costs 0 = Don't know

| 25 | P | **ITFACTOR** | What is the most important factor to you regarding your internet service? | 1 = Connection speed 2 = Reliability of internet service 3 = Affordability 4 = Customer Service 5 = mobility 6 = Name Brand 7 = Other 0 = Don't know |
| 26 | P | **CHILDSAFE** | Which of the following methods do you use to ensure child safety when using the internet (select all that apply)? | 1 = Blocking or filtering software, Monitoring browsing history and email, Only allowing children to use internet with direct adult supervision, setting rules and guidelines for using without direct adult supervision 0 = Prohibiting children from using the internet entirely, Prohibiting use of internet in private locations, other method, none |

27	P	**NOINTER**	What is the MAIN reason that you don't have the internet at home?	1 = Don't need it 2 = Too expensive 3 = Can use it somewhere else 4 = Not available in area 5 = No computer or computer inadequate 6 = Privacy or security concerns 7 = Other
28	P	**10INTER**	Would you be willing to pay $10 a month to have broadband or high speed internet access at home?	1 = Yes 2 = No
29	P	**5INTER**	Would you be willing to pay $5 a month to have broadband or high speed internet access at home?	1 = Yes 2 = No
30	P TC	**RESPONSEINTER**	Whose responsibility is it to ensure internet connectivity in the home to support student success?	1 = The School 2 = Parents or Families 3 = Community Groups 4 = All of the Above
31	P TC	**TECHKNOW**	Which of the following would help you to gain technology knowledge and use to benefit	1 = General technology classes 2 = Technology devices that

			student success? (select all that apply)	are open for use 3 = Classes to support using technology in the home for school work 4 = Support and/or guidance in purchasing technology devices or connectivity 5 = Other ideas
32	P TC	**TECHCLASS**	If the school offered a technology class what would you like included so that you would attend?	OPEN ANSWER
33	P TC	**CURTECHKNOW**	Do you believe that you have the current knowledge and use of technology to support continued learning at home?	1 = Yes 0 = No
34	P TC	**WORDPROC**	Use the functions of a word processor to format text, check spelling/grammar etc.	0= I can't do this 1 = I can do this with some assistance. 2 = I can do this independently 3 = I can teach others how to do this

35	P TC	**SPREADSHEET**	Use advanced features of a spreadsheet (e.g. using formulas, sorting data, and creating charts/graphs)	0= I can't do this 1 = I can do this with some assistance. 2 = I can do this independently 3 = I can teach others how to do this
36	P TC	**EMAIL**	Send, receive, open and read email	0= I can't do this 1 = I can do this with some assistance. 2 = I can do this independently 3 = I can teach others how to do this
37	P TC	**NAVWEB**	Navigate the web using a web browser (e.g., Internet Explorer, Firefox)	0= I can't do this 1 = I can do this with some assistance. 2 = I can do this independently 3 = I can teach others how to do this
38	P TC	**SEARCH**	Use a search engine (e.g. Yahoo, Lycos, Google) to search for information on the web	0= I can't do this 1 = I can do this with some assistance. 2 = I can do this independently 3 = I can teach others how to do this

| 39 | P
TC | **SUPPORTTECH** | I support the use of technology in the classroom | 0 = Strongly Disagree or Disagree
1 = Agree or Strongly Agree |
| 40 | P
TC | **TECHFACIL** | Technology facilitates the use of a wide variety of instructional strategies designed to maximize learning | 0 = Strongly Disagree or Disagree
1 = Agree or Strongly Agree |

Appendix H

February 9, 2015

Rigo Chavez, Director of Communications
Albuquerque Public Schools
P.O. Box 25704
Albuquerque, NM 87125

Mr. Chavez:

I am writing you today to request directory information through the New Mexico
Inspection of Public Records Act (NMSA 1978, Chapter 14, Article 2) and The Family
Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99). As
you know FERPA states that Schools may disclose, without consent, "directory"
information such as a student's name, address, telephone number, date and place of birth,
honors and awards, and dates of attendance.

I am requesting a list of all students who attend Emerson Elementary school including the
student's name, grade, teacher they are assigned to and home address.

I look forward to your response and request the information in an excel file.

Thank you,

Joseph Escobedo
(address)

(phone number)

(email address)

Appendix I

WINSTON BROOKS
SUPERINTENDENT

SHELLY GREEN
CHIEF ACADEMIC OFFICER

ROSE-ANN MCKERNAN
EXECUTIVE DIRECTOR
INSTRUCTIONAL ACCOUNTABILITY

THOMAS GENNÉ
DIRECTOR
RESEARCH & ACCOUNTABILITY

February 24, 2015

Joseph Escobedo
Albuquerque Public Schools
6400 Uptown Blvd, NE
Albuquerque, NM 87110

Dear Joseph:

Your proposal titled Supporting a School Community in Technology Knowledge and Use to Benefit Student Success has been reviewed and granted full approval by the Albuquerque Public Schools' Research Review Board.

In any proposed APS locations for the study, please show this letter and **obtain the consent of the principal and teachers involved** before proceeding. Any participation by staff members or students is on a voluntary basis. You must guarantee confidentiality of participants.

When your research is complete, please send a copy to this office for interested district personnel to review. We wish you well in your investigation.

Sincerely,

Thomas Genné
Chair of the APS Research Review Board