Examining Stakeholder Perceptions of Accessibility and Utilization of
Computer and Internet Technology in the Selinsgrove Area School District

by

Lorinda M. Krause

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Certifies that this is the approved version of the following dissertation proposal:

Examining Stakeholder Perceptions of Accessibility and Utilization of Computer and Internet Technology in the Selinsgrove Area School District

Committee:

____________________________________
Dr. Joyce Pittman, Chairperson

____________________________________
Dr. Elizabeth Haslam, Member

____________________________________
Dr. Cynthia Beyerlein, Member
Abstract

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Lorinda M. Krause
Drexel University, May 6, 2014
Chairperson: Dr. Joyce Pittman

This study utilized a mixed methods approach to examine the issue of how parents, students, and teachers (stakeholders) perceive accessibility and the utilization of computer and Internet technology within the Selinsgrove, Pennsylvania Area School District. Quantitative data was collected through the use of questionnaires distributed to the stakeholders within the school district. The Qualitative method utilized in the study was grounded theory, as the questionnaires were the basis for interviews to develop a theory on the perceptions of the stakeholders and to hypothesize on what has influenced these perceptions. The primary question focused on identifying the perceptions of the stakeholders about accessibility and utilization of computer and Internet technology in the school district. To provide adequate background on previous research and studies, three streams of research were identified to address the concepts of a digital divide and digital equity to provide a background in how computer and Internet technologies have been utilized in schools to address how computer and Internet access is utilized on a day to day basis in homes and communities, and how the use of these technologies may be influenced by factors that may define the existence of a digital divide. This mixed methods study utilized questionnaires to collect quantitative data and interviews as a means of collecting qualitative
data. Through an examination of the data, it was found that all three groups believed computer technology and the Internet have been a benefit to a student’s education, but they differed on exactly how these technologies are utilized. The data indicated there were no components of digital equity within the school district based on those who responded to the questionnaires and participated in the interviews. The data also indicated that teachers have been unfamiliar with the extent to which students can access technology in the home.

Keywords: Digital Divide, Digital Equity, Computer Technology, Internet, Technology Education
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Chapter 1: Introduction

Computers and the Internet have become an integral part of day to day life in the twenty-first century as evidenced by the proliferation of cell phones, personal computers, hand-held web-based notebooks, and online access to everything from getting directions to taking college courses. However, ownership of and access to these technologies has not been equitable. Initially, the disparity between the *haves* who had access to these technologies and the *have-nots* who have lacked the access has become known as the digital divide (Becker, 2006; Middleton & Chambers, 2009). According to Gorski (2008), in defining the digital divide, the focus has been on who has access to the technology. Furthermore, the digital divide has addressed how this access differs based on race, socioeconomic status, gender, and other social and cultural identifiers. Access has been narrowly defined as physical access, not equitable access to computer technology and the Internet. As a result, over time, the digital divide has been redefined and reexamined to investigate the equitable distribution of computer and Internet technologies in homes, schools, and communities rather than focusing solely on the haves and have-nots. Middleton and Chambers (2009) pointed out that it took 18 years for half of all Americans to have personal computers, but only half that amount of time for half of all Americans to be utilizing high-speed Internet in their homes. While 50% of all Americans may have high-speed Internet in their homes, the question of who accesses the Internet and why it is accessed has provided a different perspective on the digital divide and digital equity. A recently released report by the Federal Communications Commission indicated that about 19 million Americans are unable to access the Internet, and the majority of those without Internet service live in rural areas (Gannett, 2012).
Introduction to the Problem

While home computer usage and Internet connectivity in the home has continued to increase, not all families have had access to these types of programs in their home due to a lack of Internet connectivity. Some families have simply chosen not to employ the use of computer technology and regardless of the reason, the difference between those who use and do not use computer technology has helped to define both the digital divide and digital equity. According to information released by the U.S. Census Bureau in February 2010, 68.7% of homes in 2009 had Internet accessibility. This was a significant increase from 2000 when only 41.5% of homes reported Internet accessibility (U.S. Census Bureau, 2010). While this indicated a marked increase in Internet accessibility, not every home has had this access. Those who do or do not have Internet usage at home may be influenced by a variety of factors such as race, socio-economic status, or sex.

Just as home usage of computers and the Internet has increased, the usage of these same technologies also has increased in schools. While schools may be utilizing computers and the Internet more, it has not necessarily meant that they have been providing equal access to all students or that they have utilized these technologies effectively. Inequities have existed in schools, and adding computers to a school has not made the inequities disappear (Gorski, 2008). Many schools have sent newsletters home via email or encouraged parents and students to access the district’s web page for more information and also as a means to check students’ grades through an online grading program. While all of these applications of technology have saved districts the cost of printing these materials and have provided information in a timely fashion, they also have created equity issues for those who do not have computer and Internet access in the home. Consequently, this has resulted in a widening of the digital inequity within the district
(Pittman, 2003). School districts must be aware of the digital inequities within their school and their community. Some of the inequities have existed due to individuals’ perceptions of computers and the Internet, which define not only if they use computers and the Internet, but also how they choose to use them.

**Problem Statement**

This study addressed the need to identify the perceptions of parent, student, and teacher stakeholders about digital equity issues regarding accessibility and utilization of computer and Internet technology in the Selinsgrove, Pennsylvania Area School District. The district is located in rural, central Pennsylvania, and while there have been a limited number of racial minorities, nearly 40% of the student body has been eligible for free and reduced lunches. There are a large number of farms within the district boundaries, and although it is considered to be a rural district, it also has been home to Susquehanna University, a four-year private institution. As a result, there have been many differences in terms of socio-economic standing, educational background, and occupations. This disparity has made it difficult for the district to know how individuals use or perceive the use of computers and the Internet. Furthermore, the importance of location within the district has not been examined to identify where pockets of inequity may exist. While the Borough of Selinsgrove may be very well connected to computer technology and the Internet due to the location of the University, more rural areas in the district may have less accessibility simply due to the location of their home and the lack of high speed or reliable connectivity to the Internet. Although this is one district, the idea that not all residents have equal access to these technologies simply due to their home’s location within the district should not be overlooked or forgotten.
Students may or may not have similar access and availability to computers and the Internet, but they may not choose to use this access in the same manner. Students from economically disadvantaged homes have used the Internet for remediation and skills development, while students not from economically disadvantaged homes have used their access for research (Reinhart, et. al., 2011). Therefore, although there may be similar accessibility, the perception for how the access may best be used has not been taken into consideration when simply defining the existence of digital equity.

Not all parents, students, and teachers see computers and Internet access and use them in the same way. Unless a school district has become aware of individuals’ perceptions regarding computer accessibility and Internet technologies, it has been difficult to determine whether programs have been successful or how they might be altered to better meet the needs of the district and to resolve issues that may exist in reality or perceptually regarding digital equity. If students have perceived inequity in the way computer technology and Internet access has been utilized, it does not matter how many computers the district supplies or makes available. If low socio-economic students are put on computers for remedial work and students from a higher socio-economic family are using the computers at school for research, the only fact that may have changed is the availability of the technology, not the inequity of the use of it. This also has been true for parent perceptions of computers and Internet accessibility about how they perceive the district. If a parent’s access to the Internet has been through a cell phone that is on a pay as you go plan, it is significantly different than access through a desktop computer with high speed Internet access. Additionally, for those parents whose only access has been through a computer at the local library or whose religion forbids the use of computers, there has been an even greater disparity between their ability to obtain information and the ability of the high speed Internet
user to obtain the same information. As a result, if a school has expected parents in each of these circumstances to regularly check grades, email teachers, and visit the district website, the unrealistic expectations of the district will most likely add to a parent’s perception of inequities regarding the ease with which they may obtain information about their child.

**Purpose and Significance of the Problem**

The purpose of this mixed methods study was to examine the issue of how parents, students, and teachers perceive accessibility and the utilization of computer and Internet technology within the Selinsgrove Area School District. The concept of a digital divide has become dated, and the term *digital equity* has come to be utilized to describe inequalities of access from family to family, school to school, state to state, and nation to nation. The importance of each of these concepts was to define and determine how accessible computer and Internet technologies are to people in a particular time and place (Knobel, Warschauer, & Stone, 2004; Revenaugh, 2000).

The school district has been looking at ways to save on budgetary expenses such as sending report cards via email, utilizing the district web page to post newsletters, and having an automated calling system. Upgrading computer and Internet technologies would result in a significant savings in paper, printing, and copying costs, as there would no longer be a need to produce a paper copy of such items for parents. Some students have increased their accessibility to computer technology and Internet access while others have remained stagnant or non-existent. If the district does not take steps to identify existing inequities and provide a means to overcome these inequities, the gaps in access and equitable computer and Internet technologies use will continue to increase. Unless teachers are made aware of differences in the utilization of technological and Internet resources, they may unknowingly continue to widen the gap of digital
inequity by maintaining the practice of having lower income students utilize these resources in a different manner than are utilized by students from a higher socio-economic level.

The district also has been embarking on a multi-year project to utilize a comprehensive approach in improving literacy at all grade levels. As part of a grant, the district has been required to utilize a type of walkthrough evaluation called H.E.A.T. (Higher-Order thinking, Engaged Learning, Authentic Connections, Technology Use) that was developed by Dr. Chris Moersch of the LoTi Institute located in Carlsbad, California. Part of the evaluation has involved the district assessing how teachers use technology in their classrooms. But also significant for the district has been to know how students and parents perceive the use of technology by the classroom teachers. By exploring the perceptions of parents, students, and teachers about accessibility and utilization of computer and Internet technologies within the district, this study may help with implementing the grant program effectively as well as begin to define what inequities have existed throughout the district. This study’s investigation of these perceptions attempted to answer questions about a possible wide variation from one group to another in how they perceive the use of computer and Internet technologies, and for consistencies within any one group. In this study, the use of the word group may refer to parents, students, teachers, or the word could also define a faction based on race, economic standing, or educational background. Only through identifying and exploring the perceptions of individuals within the district was it possible to have a better understanding of accessibility and utilization of computer and Internet technology in the district at the time of this study.

The identification of these perceptions and ideas of use regarding computer and Internet accessibility may enable the district to employ this knowledge not only to address inequities in access that may exist, but also to devise curricular instruction to address the existing inequities
and support the comprehensive literacy initiative currently being undertaken by the district. Additionally, if people believe there should be an increased use of computers and Internet technologies that would include blended programs, online classes, or online support for traditional classes, the district may begin to plan for the future needs and expectations of its residents. Without this knowledge, the district may unknowingly be increasing the existing digital inequities and disenfranchising more of the students and parents.

Results from this study have the potential to provide useful information to research that may inform the reconceptualization and redesign of school technology programs for those aspiring to improve educational equity and better utilization of technology for students, parents, and community residents. The results of this study also may provide new trends in education for designing ongoing professional development of teachers in the utilization of emerging technologies (Pittman, 2012).

**Research Questions**

The central question answered in this study was: What are the relationships between the perceptions of parent, student, and teacher stakeholders about accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District, and how are these perceptions influenced or related to digital equity? Variables that may influence these perceptions include age, sex, race, ethnicity, socio-economic background, religion, and location within the district. While this study focused on one specific school district, the results may impact other areas and/or other school districts. By examining one school district in rural Pennsylvania and identifying various factors that may impact an individual’s perceptions of computer technology and Internet use as well as whether these are utilized equitably within the district, other districts or areas may also be encouraged to attempt to identify factors that may
influence the perceptions of their own stakeholders. Many previous studies focused more on the haves and the have nots regarding who did and did not have access to computer technologies and the Internet, but have not examined the issue of how these technologies have been utilized by different individuals. This study was a first step in investigating digital equity issues within a specific school district. In addition, three sub-questions have been identified to address the purpose of the study and to fully answer the central question. Due to perceptions being something that individuals feel or experience, the data collected was primarily measured through the use of qualitative data presented through a case study approach. While there was a quantitative collection of some demographic data, the primary means of data collection was qualitative.

As an extension of the central question, there were three sub-questions examined. They were:

1. How do parents, students and teachers describe how technology is being used in the school district? While teachers and other school personnel may believe that computers and the Internet are being used effectively, students and parents may have a completely different view.

2. What components of digital equity are found to exist within the district and community? This question was important as it was necessary in order to define what parameters define digital equity within the school district.

   The hypothesis (Ha) was that there are factors such as differences in age, sex, race, ethnicity, socio-economic background, religion, or location within the district that may be used to define the existence of digital inequities within the district.
The null hypothesis (Ho) was that there are no factors existing in the district that can be identified to define the existence of digital inequities within the district.

3. What is the relationship between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology outside of school? This question needed to be answered and researched because if teachers are not familiar with the type of access students have in the school as compared to outside school, they will not be able to effectively utilize computers and Internet technologies productively for the students.

It should also be noted that there were actually two questions that needed to be asked prior to determining any relationship. These questions were: (1) What is the teachers’ knowledge about student access to technology at school, and (2) What is the teachers’ knowledge about a student’s access to technology outside of school? Only after answering these questions can the question regarding the relationship of the two be addressed. Ha, there is a significant relationship between teachers’ knowledge about student access to technology at school and outside of school, or Ho, there is no significant relationship between teachers’ knowledge about student access to technology at school and outside of school.

The central question regarding the perceptions of parents, students, and teachers and the first sub-question identified above addressing how parents, students, and teachers describe technology use in the district are qualitative, as both involve opinions of individuals. The second sub-question regarding the defining of digital equity was quantitative, but required qualitative information from parents and students to identify what inequities may be in existence that cannot be readily addressed through a basic questionnaire. The third sub-question was also quantitative, but required qualitative collection of information to identify teacher knowledge of student access
to technology in school and outside of school, and this was best collected through interviews that allowed for specific examples or clarification to be found that are not possible through a questionnaire with limited choices. In the case of the second sub-question, the dependent variable was the components of the digital equity within the district, and the independent variable was the respondent’s demographic information such as age, race, socio-economic status, sex, or where they live within the district. Any one of these independent variables may influence an individual’s determination of whether there are or are not digital inequities within the school district. In the second sub-question, the dependent variable was the type of technological and Internet access available to students at school and outside of the school and the independent variable was the teacher’s knowledge of this information.

Investigating the central question and also addressing the three sub-questions, provided a more complete picture regarding perceptions of accessibility and utilization of computer and Internet technology within the school district. With this information, it may be possible for the district to develop a viable solution on how digital equity issues may be addressed as well as allowing the district to act in a proactive manner to address negative perceptions of technology use that may be identified. The perceptions of students, parents, and teachers also may help to identify possible opportunities for increased access and utilization of computer and Internet technology.

Conceptual Framework

The conceptual framework, shown graphically in Figure 1, was influenced by the researcher’s following assumptions: (1) access to computer technology and the Internet is not equitable for all individuals within the school district, (2) students may be more knowledgeable about computer technology and the Internet than the teachers in the classroom, and (3) computer
technology and the Internet are accessed on a daily basis, but the access may be influenced by outside factors or may not be accessed effectively. These assumptions helped to shape the purpose of the study.
Researcher Approach, Assumptions, and Theoretical Frameworks

**Mixed Methods Approach**

- Quantitative
- Qualitative - Grounded Theory
- Loti Digital Age Survey
- Case Study

**Theoretical Frameworks**

- ISTE Technology Standards for students and teachers
- LoTi H.E.A.T. Framework
- Digital Divide Theory

**Assumptions**

- Access to computer technology and the Internet is not equal
- Teachers are not aware of how students actually use computers and the Internet
- Computers and the Internet are used on a daily basis

Research Stream 1 – Digital Equity in schools and community


Research Stream 2 – Impact of computer and Internet access in schools.


Research Stream 3 – The use of computers and Internet technology in homes and communities


*Figure 1. Conceptual framework.*
This study employed three theoretical frameworks, LoTi H.E.A.T., digital divide theory, and the International Society for Technology in Education (ISTE) technology standards. These theoretical frameworks provided a method to identify the perceptions of students, parents, and teachers regarding computer and Internet access within the district. The frameworks also helped define the inequities existing within the district.

To provide clarity of different aspects of the study, three streams of research were identified and utilized to examine other studies that have previously addressed factors that have influenced computer and Internet accessibility in homes, schools, and communities in different areas.

The first stream identified the concepts of a digital divide and digital equity. These concepts could not have been addressed without examining who has had and has not had access to computers and the Internet in schools, and how this access may be utilized differently not only from school to school, but also from student to student within the same school. By examining the use and accessibility of computers and the Internet in schools, the second research stream became important, as it was necessary to identify how the technologies have been utilized effectively in the past and how they may be utilized in the future so that equitable access can be provided. The way schools have employed computers and the Internet has been influenced by the support for these technologies within the community. This directly tied into the third research stream, which examined how individuals have utilized these technologies in their home. Since utilization of these technologies has been influenced by personal choice or specific demographic factors such as age, sex, or race, the third stream tied directly back to the first stream of research. This allowed all three streams to be interconnected in a way that was
difficult to completely separate one from the other, as each has an impact and influence on the other two streams.

**Definition of Terms**

The following terms were used throughout this study:

- **Computer technologies.** The definition of computer technology is the design and construction of computers to better help people at work, school, home, or leisure. Examples of computer technologies in this study have included all forms regardless of whether they provide access to the Internet or not (Your Dictionary.com, n.d.). Examples of computer technologies include but are not limited to: desktop computers, laptop computers, notebooks, and cell phones.

- **Connectivity.** This is a means of explaining the connection to the Internet in reference to the quality of the connection and the reliability of the connection (Page & Hill, 2008).

- **Digital divide.** This is used to explain the difference in computer and Internet use from one group of people to another. This can be due to economics, race, educational background, and age, as well as other factors (Knobel, 2004).

- **Digital equity.** Digital equity is defined as equal access and opportunity to digital tools, resources, and services to increase digital knowledge, awareness, and skills. When considering the role of technology in development of the twenty-first century learner, digital equity is more than a comparable delivery of goods and services, but fair distribution based on student needs (Davis, Fuller, Jackson, Pittman, Sweet, 2007).

- **Information and communication technologies (ICTs).** This refers to the combination of all technical means that are used to handle information. This includes computers, Internet, telephone lines, and any and all hardware and software needed to allow the use of these technologies (Dholakia, 2006).
**Internet.** This is a computer network that links computers worldwide (Merriam-Webster, 2003).

**Parent.** Parent is defined as any adult who serves as the responsible adult caring for a student who attends the school district in the study.

**Second level digital divide (SLDD).** SLDD replaced the basic idea of who does and does not have technology with the idea that a divide can also be created due to technology being utilized in different ways (Reinhart, Thomas & Toriskie, 2011). Additionally, there are other factors that have created a divide such as “machine vintage; connectivity; online skills; autonomy and freedom of access; and computer-use support” (Hawkins & Oblinger, 2006, p. 12).

**Assumptions, Delimitations, and Limitations**

One assumption initially made was that the school district superintendent supported the study and would be supportive when it was presented to the school board for approval of the study within the district. A second assumption made was that parents, students, and teachers would be willing to complete questionnaires, although there was no personal benefit for any of them. Additionally, since questionnaires were able to be completed both through Internet access and a pencil and paper questionnaire, the assumption was that individuals who chose not to access the Internet would be willing to complete a paper and pencil questionnaire. While the demographics of the district included families whose religions shun the use of technology, if they were not randomly selected to participate in the study or chose not to complete the paper and pencil questionnaire, the results would have been skewed, as a lack of representation of these groups would have changed any determinations made regarding the existence of a digital divide or digital equity in the district.
One of the limitations of the study was that it encompassed only one rural school district in central Pennsylvania, thus the sample size was limited. Additionally, two of the factors often identified as being significant in determining a digital divide or digital inequities have been race and ethnicity. The school district has had a very small percentage of minorities or individuals of different ethnicities. As a result, two of the primary identifiers of the existence of digital inequities were minimal within the district, which resulted in another limitation of the study.

The study utilized a cluster sampling method. Selection of participants was based on the township or borough where participants lived within the district. As a result of a limited number of students living in two of the boroughs, each borough was combined with the township that surrounded the borough in order to identify possible participants. A final limitation was that those who were not very knowledgeable about computers or the Internet may not have had any idea of how effectively computers and the Internet had been accessed or utilized by students or teachers in the school district. Lastly, as a result of the study being limited to only one school district, it resulted in a study that was most pertinent only to school districts with similar technological opportunities and demographics. The demographics of the district were such that the application of the study to others are limited to conservative, rural districts that include religions that shun the use of technology.

Summary

The purpose of this study was to examine the issue of how parents, students, and teachers perceive accessibility and the utilization of computer and Internet technology within the Selinsgrove, Pennsylvania Area School District. While technology has been widely available in the United States, the digital divide and issues with digital equity have also been present. By examining how parents, students, and teachers currently access and utilize computers and
Internet technology, a determination was made on how the district may best meet the needs of the community it serves. Before presenting pertinent data collected within the school district, a review of prior research addressing the components of the study was conducted. The review was broken down into three general themes: digital equity dimensions in school districts and communities, the impact of school and teacher access and utilization of computer technology and the Internet in schools, and the effective uses of computer and Internet technology in homes, schools and community daily life. The three themes were addressed through a review of prior research as well as in the presentation of data collected within the Selinsgrove Area School District in the spring, summer, and fall of 2013. General demographic information about the district has been included as well as specific information regarding sample size, steps in data collection, and data analysis methods employed. Key terms used throughout were defined and included for clarity. Limitations of the study were noted to identify that it should not be applied to all school districts, but may be the basis for comparison with school districts with a different demographic base.
Chapter 2: Literature Review

Introduction

A thematic review of the literature was conducted and presented, with each of the three main streams addressed individually. The first stream of research dealt with the concepts of a digital divide and digital equity. This stream was significant to the study as it provided the background and evolution of these concepts. A review of prior research indicated that early articles and studies focused on the existence of a digital divide that examined aspects of physical access to computers and the Internet. However, the focus on a digital divide changed over time to become one not as focused on physical accessibility, but a question of digital equity and determining whether people have had equitable access to computers and the Internet (Modarres, 2011; Becker, 2006; Gorski, 2009; Hawkins & Oblinger, 2006; Middleton & Chambers, 2010; Warschauer, Knobel & Stone, 2010). Simply because someone has had the physical means to access computers, it has not necessarily correlated with the idea that they have had the same ability to access the technologies for the same amount of time or for the same reasons, which became an issue of digital equity. More recently Reinhart, Thomas, and Toriskie (2011) referred to a second-level digital divide (SLDD) as a way for referring to the difference in how technology has been utilized and identifying physical/digital human and social factors that impact how and when individuals use technology. Whether the reference used has been digital divide, digital equity, or second-level digital divide, it has been important to determine what types of gaps exist and how they have been viewed or studied previously, since those studies and results may have an impact on this study.

The second stream of research focused on the impact of computer and Internet access in schools. Although schools may have computers, it has not meant that the computers or the
Internet have been used effectively. It has been quite possible that a school may have the
technology available, but it has not be used in a way to enhance or extend a child’s education or
as a means to involve parents more in their child’s education. Literature on schools and
computer use and Internet accessibility was significant to this study as it provided a vehicle to
determine how schools in other areas have used these technologies effectively or ineffectively.
Additionally, this stream tied directly to the previous stream regarding a digital divide and digital
equity because as Reinhart, Thomas, and Toriskie (2011) pointed out, teachers have needed to
prepare their students for the twenty-first century, and that means they need to have computer
skills in order to be able to fully participate in society. As a result, gaps and inequities must be
addressed in schools so that all students have the opportunity to be prepared to be contributing
and productive members of society.

The third and final stream examined how computers and the Internet have been used at
school, at home, and in the community. The literature in this area provided insight into the
prevalence of computers in homes and communities and how the technology has been used
effectively. It also identified uses that may not be considered by educators to be an effective use
of these technological resources. While not all individuals have used computers and the Internet
at home the same way, a review of prior research on this practice was significant as it indicated
different uses of computers and Internet technologies and views of different factors that may
have influenced use or nonuse of available technologies. For instance, Agarwal, Animesh, and
Prasad (2009) found that in one study that since one woman’s friends did not use computers, she
did not make computers a part of her everyday life. Additionally, Sandvig, Gilbert, and
Karahalios (2010) determined that people living in rural areas have used social media differently
than those living in urban areas.
Through the examination of literature pertinent to the three streams in this study, a historical perspective as well as more current thought provided background on existing divides for comparison to what has existed within the Selinsgrove Area School District. Also, as the three streams tied together due to the inability to separate out the differences in use and availability of computer technologies and the Internet at school or outside of the school in the home and community, the literature provided a nexus to this study.

**Digital Divide and Digital Equity**

The pervasiveness of technology in today’s global society has made it easy for people to forget that not everyone has the same accessibility to computer technology and the Internet. It may be that a family’s economic status precludes them from having computers or the family may have computers, but for one reason or another have no access to the Internet. If schools are going to rely on technology as a means of enhancing students’ education and disseminating information to parents, they must be aware of and plan for what has become known as the digital divide. Schools also have needed to be cautious about ensuring that all students have equal access to these technologies at school, and to be aware of how access at home may not be the same for all students. The question of equal access to technology has become known as digital equity. While much of the literature reviewed in this section pertained to the impact of a digital divide and digital equity in schools, these issues have had a greater impact than schools and education.

The digital divide and the idea of who does and does not have physical access to computers has been studied since the early 1990s (Gorski, 2009). Factors such as age, gender, level of education, socio-economic status, and geographic location have all been identified at one point or another as one of the defining elements of the divide (Modarres, 2011; Lewis, 2007;
Becker, 2006; Gorski, 2009; Middleton & Chambers, 2010). Over time, the idea of physical access and a digital divide began to be replaced with the idea of digital equity. While the focus on a digital divide has been physical accessibility, digital equity has been focused on if the access has been equal—not only in terms of physicality and also how that access is used—but how rapid the access has been, and how reliable the access has been to an individual. As Modarres (2011) pointed out, smartphones connect with the Internet and a landline, thus direct connection has become no longer necessary for Internet connectivity; however, the issue of cost for the phones has become the next hurdle. The author later qualified this by explaining that while a phone may be used for communication and access to digital information, it has not been the same as having a networked computer that facilitates creating and managing a community or business website, as cell phones do not allow for complete engagement with the digital world. Regardless of whether it has been a question of a digital divide or digital equity, factors such as economics, education, and location have been identified to explain the differences in accessibility. As a result of similar factors being addressed to explain the divide or equity, it has been beneficial to examine some of these more closely.

One of the plausible explanations of a lack of computer or Internet access has been that poorer parents may simply not be able to afford these materials or the cost of access to the Internet (Anonymous, 2003; Hull, 2001; Friedman, 2006; Gorard, Williams, & Selwyn, 2001; Loveless, 2003). In his article on K-12 teachers’ use of websites, Friedman (2006) referenced the National Center for Education to support his statement, “As household income increases, use of the Internet does as well, as 82% of adults with an annual family income over $75,000 used the Internet in 2001, compared to 24 percent of adults with an annual family income below $20,000” (p. 806). Furthermore, a Pew Internet Project tracking survey completed in 2011
reported on by Zickuhr and Smith (2012) also indicated that Internet access has been impacted by the economics of a family, as is shown in Table 1.

Table 1

*Demographics of Internet Users in 2000 and 2001*

<table>
<thead>
<tr>
<th>Percentage of Each Group of American Adults Who Use the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All adults (age 18+)</strong></td>
</tr>
<tr>
<td>Men</td>
</tr>
<tr>
<td>Women</td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
</tr>
<tr>
<td>White, Non-Hispanic</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
</tr>
<tr>
<td>Hispanic^</td>
</tr>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>18-29</td>
</tr>
<tr>
<td>30-49</td>
</tr>
<tr>
<td>50-64</td>
</tr>
<tr>
<td>65+</td>
</tr>
<tr>
<td><strong>Household income</strong></td>
</tr>
<tr>
<td>Less than $30,000/yr.</td>
</tr>
<tr>
<td>$30,000-$49,999</td>
</tr>
<tr>
<td>$50,000-$74,999</td>
</tr>
<tr>
<td>$75,000+</td>
</tr>
<tr>
<td><strong>Educational attainment</strong></td>
</tr>
<tr>
<td>No high school diploma</td>
</tr>
<tr>
<td>High school grad</td>
</tr>
<tr>
<td>Some College</td>
</tr>
<tr>
<td>College +</td>
</tr>
</tbody>
</table>


The surveys conducted in June, 2000 and August, 2011 indicated that while there has been an increase in Internet usage for each family income range, inequities in Internet usage had still existed. The percentage of adults who used the Internet—whose income was less than $30,000 per year—increased from 28% in 2000 to 62% in 2011. Families in the $30,000-$49,999 range increased usage from 50% to 83%, while those in the $50,000-$74,999 range increased usage from 67% to 90%. Families with incomes above $75,000 increased usage from
79% to 97%. The families in the lowest income bracket more than doubled their usage of the Internet. Each of the other income brackets made gains as well, but as the income bracket increased, the percentage gain of Internet usage decreased, so that those in the $75,000 or more range increased usage by less than 20%. Despite a more than 50% increase in usage by those whose income was less than $30,000 per year, there was still a usage gap of 35% between the lowest and highest income brackets. However, if access to computers has been equal, Hargittai and Hinnant (2008) found that children from a higher Socio-economic status (SES) background have continued to have greater educational gains than a child from a lower SES background. As a result of this inability to afford the technology or the access to technology, there has been a new education gap being created (Anonymous, 2003; Gorard, Williams & Selwyn, 2001). This education gap can start in the early grades and continue through high school graduation.

Espinosa, Laffey, and Whittaker (2006), examined technology in the home and achievement of young children and discovered that the digital divide has persisted even when income and parental education are considered as minorities, as Latino Americans were the least likely to own a computer. The authors also made the point that families with higher incomes and higher parental education levels not only have had access to computers and the Internet, but their children also have had more access to books and watch less television than children in families with a lower income and less parental education. While the access to computer and Internet technology has been important, it should be noted that there may also be other factors that impact a child’s success in education, such as the child’s access and time spent with television and books. Those who have had access to the Internet in the home also have had a wide range of resources and information available to them at almost any time of day, and the information has not been limited to one area—but has been global in nature.
In addition to economics playing a role if a family does or does not have computer and Internet access, education also has been a factor in whether these items have been accessible within a home. The more education a person has, the better chance a computer with Internet access has been available in the home (Hull, 2001). This has been supported by the findings of the Zickuhr and Smith’s (2012) report from the Pew Institute. From 2000 to 2011, Internet usage increased for individuals with no high school diploma from 16% to 43%, high school graduates’ use increased from 33% to 71%, those with some college increased from 62% to 88%, and those with college degrees and beyond increased usage from 76% to 94%. While in each case there was an overall increase of Internet usage from a low of 18% for college graduates to a high of 37% for high school graduates, this only addressed Internet usage, not how the Internet was being accessed. This opened up a totally different question of digital equity regarding the means of connectivity to the Internet.

In a study done in the United Kingdom, race was also a determining factor in family having access to Internet in the home as “a child in a low income white family is three times more likely to have Internet access as a child in a comparable black family and four times as likely as a child in a comparable Hispanic family” (Hull, 2001, p. 383). The survey reported on by Zickuhr and Smith (2012) showed a difference—though not as marked—in use of the Internet by minorities in the United States. In June 2000, 49% of White, Non-Hispanics; 35% of Black, Non-Hispanics; and 40% of Hispanics used the Internet. In the August 2011 survey, it was found that 40% of White, Non-Hispanics; 71% of Black, Non-Hispanics; and 68% of Hispanics used the Internet. It has been important to note that in the 2000 survey, only English speaking Hispanics were included, and in 2011, both English and Spanish speaking Hispanics participated in the survey. In reviewing these figures, it was seen that while Internet usage has increased in
each of the three racial categories, there has continued to be a difference in Internet utilization by race. Not only have economic, education, and race differences affected utilization of the Internet, but the means of accessing it also has been impacted. Not surprisingly, the same factors have affected the likelihood of broadband Internet access with those of higher economic status and more educated being more likely to have a faster broadband speed (Salpeter, 2006).

According to Zickuhr and Smith (2012):

> Previously, in May of 2011, we found that young adults, minorities, those with no college experience, and those with lower household income levels who owned smartphones were more likely to say that their phone was their main source of Internet access. Many of ‘cell mostly’ Internet users have other ways to connect to the Internet—most have a desktop or laptop computer at home, for instance. But about one third of these adults do not have a traditional high-speed broadband connection at home. For them, their smartphone is a way for them to access the online world. (p. 19)

Another element that may determine Internet accessibility in the home has been if a family lives in an urban or a rural area (Gorard, Williams, & Selwyn, 2001; Sandvig, Gilbert, & Karahalios, 2010). According to Page and Hill (2008), “While information has the potential to transcend the bounds of time, place, and space, in rural areas disparity exists between the diffusion of information and communication technologies” (p. 60). While the authors’ focus was on rural Alaska, they also identified differences in accessibility and connectivity in rural areas and noted cultural differences in rural areas as compared to urban ones and explained, “The diffusion of technology into rural areas is complex. Themes of change, identify, empowerment, and transformation emerge from it’” (p. 60). Page and Hill also gave examples of rural communities being hesitant to embrace new technologies in part due to a fear that they will lose the ability to
function in the world without technologies that may not be reliable in remote areas due to limited connectivity.

While these only have been a few of the factors identified in determining who may or may not have Internet access in the home, economics and race certainly have not been the only considerations that enter in to the decision on whether a family will have computer and Internet access in their home, or how these technologies will be used by the family. While the Internet may be pervasive in society, its use may be limited due to knowledge of how to utilize the technology simply because of a lack of experience or the person may be a technophobe (Farmer, 2001), or there may be cultural considerations to be taken into account when considering the use of the Internet. Gong, Li, and Stump (2007) conducted a study that examined different cultures and different cultural factors that may influence the use of the Internet. Their discovery included the idea that in cultures where it has been accepted that power and institutions are distributed unequally, people tend to accept that new ideas and innovations are available only to the elite and not the ordinary people. Thus, they would be less likely to utilize a new innovation such as the Internet. However, cultures that do not view power and institutions in the same way or those that look for long term benefits have been more inclined to access the Internet more rapidly. As a result, this may have an impact on how rapidly individuals of different cultures may embrace the use of the Internet. These factors cannot and should not be overlooked as limitations to the availability of Internet access. Limited access would make it very difficult for a school district to utilize technological resources that rely on Internet accessibility as a primary means of communication with families. If there has been no Internet access at home, there are those who would simply expect that someone could access the Internet at a local library. Libraries may be effective ways to bridge the digital divide if people—particularly youth—are willing to utilize
the services available in them (D’Elia, Abbas, Bishop, Jacobs, & Rodger, 2007). Aqili and Moghaddam (2003) believed that libraries help to bridge the digital divide and the authors also presented the idea that they are “one of the major social tools which can solve the information divide rooted in digital divide” (p. 231). While libraries may be a solution for many individuals without access in their home, there would likely be restrictions placed on the ability to access the Internet in a library or other public place due to open hours or the availability of the library’s computer and Internet at the time the individual needs the access.

Beyond the discussion of demographic factors that may influence access to and use of computer technologies and the Internet, the question about how this access has been used by students and teachers must also be addressed. Students with lower socio-economic status have tended to utilize computers more often for skill and drill activities or those that require lower-order thinking skills, while students with a higher socio-economic status have tended to utilize computers for more advanced activities that require higher-order thinking skills such as technology in science courses (Becker, 2006; Gorski, 2009; Reinhart, Thomas, & Toriskie, 2011; Warschauer, Knobel, & Stone, 2010). Becker (2006) pointed out that Whites have been more likely than African Americans and Latinos to report having the necessary skills to use computers and the Internet.

The question of the digital divide regarding access to technology and the Internet also must be addressed in terms of the existence of the divide and the reasons for the divides; whether it is economically, racially, or culturally based. Having this information would allow a school district to examine how to improve communication with all families, not just those with Internet access.
Computer and Internet Technology Use by Schools

There have always been connections between home and school ranging from a parent helping with homework to the teacher reporting on grades. While these behaviors have been going on for quite some time, the way this information has been communicated from home to school and school to home has been in a state of flux due to moving into a digital world. Angus, Sutherland-Smith, and Snyder (2003) reported:

Although the ‘digital divide’ usually refers to the gap between information-rich and information-poor, in our research it is equally apt to describe the disjunction between information technology use at home and school. A start to bridging this digital divide must be an examination of the ways in which pedagogical connections can be made between school and home information and communication technology practices. (p. 18)

The need to bridge this digital divide through pedagogical connections has sounded ominous, but without the home to school connection, a student will not be able to fully benefit from available technologies and supports.

While computer technology and Internet access have provided new means for presenting information to students from showing teacher-created PowerPoint slides to allowing students to take a virtual field trip via the Internet, if some students only have access to the technology at school, they will not have the same supports or information as students who have access at home. As evidenced in the digital divide and digital equity, not all students have the same access or utilize their home access in the same way. As Angus, Sutherland-Smith, and Snyder (2003) found, there has not been a formal connection made between school and home regarding technology, and the school has not been attempting to integrate technology skills learned at home with those that are being taught at school. ISTE has developed a set of standards for students
that help prepare them for the digital age by developing digital age skills. There are six basic standards that range from creativity and innovation to how to be a good digital citizen. By being familiar with these standards and sharing them with families, teachers have enhanced the quality of their students’ education. Without knowledge of the standards and sharing them with parents, the educator simply focuses on what they know or know how to do and may not extend beyond their own knowledge to find out what the students need to be ready for in the digital world in which they live. According to Pittman (2003), to utilize technology effectively as a teaching tool, “teachers must begin to assess their knowledge, skills, and abilities in reference to the new guidelines for teaching with technology” (p. 261). By familiarizing themselves with technology standards, teachers should have a better idea of how and when to use technology appropriately and in a way to benefit all of their students.

According to Becker (2006), computer use has varied widely from school to school, and teacher factors may be a better predictor of how frequently computers have been used by individual students than the number of computers in a classroom. However, it also should be noted that schools that have computers in classrooms rather than in computer laboratories have made greater academic gains. The more access students have had to computers, the more difficult it has been for them to rely on traditional education. As Mangu-Ward (2010) pointed out, the cost of textbooks has continued to increase while the cost of computers has decreased. It has been the author’s expectation that in the not too distant future, the price of a decent laptop will be about the same as the cost for one biology textbook. Also, due to the proliferation of Internet access and use, “books full of non-hyperlinked text already must seem like a cruel joke to the congenitally connected” (p. 45).
Warschauer, Knobel, and Stone (2010) suggested a need for a “three-pronged approach” to meet the challenges of digital equity in school. They are: (1) creating a means for low- and high-socioeconomic schools to have a stable staff of teachers and administrators, (2) teachers need to worry less about mastering a software program and focus more on using technology for research and inquiry, and (3) finding a way to address unequal access to home computers by doing things such as allowing laptops to be checked out. While this approach may improve technology use and reduce digital inequities, teachers also must be given the opportunity to receive necessary training and have adequate technology, hardware, and software training as well as the infrastructure necessary to effectively use technology in the classroom (Schnellert & Keengwe, 2012; Reinhart, Thomas, & Toriskie, 2011; Warschauer, Knobel, & Stone, 2010). Without such supports in place, teachers will not be able to move forward to effectively utilize the technology available to them. Unfortunately, even though in 2003 99% of schools had computer and Internet access, only 68% of students reported actually using the Internet at school (Salpeter, 2006). This may have been due to teacher choice, an inadequate number of computers, difficulty scheduling a computer lab, or numerous other factors that have been touched on previously. However, the author also posited that with the emphasis on data-driven decision making, technology benefits have been most beneficial for administrative uses. This same thought was echoed by Warschauer, Knobel, and Stone (2010), who found that due to high stakes testing, teachers have felt a lot of pressure to ensure curriculum standards are covered, thus they have been torn between preparing students for the tests and utilizing innovative approaches that would utilize more technological resources. With these as priorities for school leaders and teachers, the need for utilization of computer technology and the Internet to increase educational opportunities for the students has taken a back seat to the administrative needs of the
adults in the school and high stakes testing results rather than the educational enhancements of the students. The authors also observed that while teachers may use computer technology or the Internet, there has been a tendency for the completion of the technology task to be an end in itself without including the technology aspect as a learning goal. Instead, the student has been showing mastery of hardware or software rather than a specific learning outcome. For example, Warschauer, Knobel, and Stone (2010) found in one science class that an assignment included requirements for the use of numerous fonts, sounds, and slide transitions in a PowerPoint presentation to show that the student had mastered how to utilize the program with limited emphasis on what was learned about the topic. Students also reported that they received higher grades for papers that had been done utilizing word processing instead of handwriting the assignment.

Webber (2003) argued that the use of Information and Communication Technology (ICT) has does more than simply allow for communication, it also has forced people to reconsider the ideas of time and space. A student no longer needs to sit in a chair to receive an education: they may be educated at home and at their convenience, as the Internet has allowed communication to occur within a school district, a state, or even across the globe. ICT may be used to improve the speed and dissemination of communication. A survey conducted by the ISTE in 2008 indicated that 60% of the people who responded believed that technology improved communication between teachers, parents, and students. However, not all respondents favored this improved communication as one teacher observed that it was more difficult to leave work at work while others believed that the primary use of technology was basic technology, which included items such as school and teacher webpages, classroom voicemail, and auto-dialers. Although teachers may use email to communicate with parents, they must remember that not all families have
access to the technology, thus there will always be a place for paper communication with parents (Ramirez, 2001).

Another avenue to rapidly communicate with parents has been through the use of voice mail communication. However, while parents of older students may have viewed this form of communication positively, teachers and parents of younger students have thought that more traditional forms of communication have enabled a better understanding of what is actually going on at school (Lee & Cameron, 1997). While teachers may have access to ICT and use it in their private lives, this does not necessarily carry over to use in the classroom or as a means of communication between school and home. Often, teachers may feel that using technology as an instructional method or to communicate with parents—whether it is sending emails, updating websites, or recording grades in an online program—requires more extra time than traditional forms of instruction and communication (Friedman, 2006, Warschauer, Knobel, & Stone, 2010). Additionally, technology has not been necessarily used to improve teaching or communication: It also has been used to support existing practices rather than to change things in education (Loveless, 2003; Karasavvidis, 2009).

For those who have truly desired to change education through technological means, opportunities such as cyber-schools, hybrid programs, or e-learning have provided such avenues. Graham (2004) explained that e-learning has utilized e-mail and the Internet to serve the education needs of the student, and either the teacher or student may generate it. The author did not present the concept of e-learning as a means to save money or to address all issues in education, but rather as an opportunity to look at a different means to obtain education. As Graham explained, while the initial thought may be that e-learning saves money because it eliminates the need for transportation of students, reduces the number of teachers, and does not
require a school building, there are many hidden costs to e-learning such as the need to pay for Internet access and people to troubleshoot problems. While the author presented e-learning as a possibility, he also recognized that all aspects of this need must be taken into account to determine all costs—the obvious as well as hidden ones. Even without e-learning as explained by Graham, there have been other options for students to receive learning online. Mangu-Ward (2010) cited a study by the Kaiser Family Foundation that kids spend an average of seven hours a day in front of a screen. The author’s take on this was that one should not try to get the child off the computer: one should instead add more education to their computer time.

While cyber schools have appeared throughout the United States, Mangu-Ward cited the Florida Virtual School (FLVS) as being one of the biggest successes to date. Part of the reason for this has been that FLVS students may take classes through the school while also being enrolled in a full-time program at a physical school. Additionally, FLVS only has received funding from the local school when the student has successfully completed course. By operating in this manner, one of the fears about online education has been that students will not have socialization; however, as the author stated, “Cultural resistance is strong as well. Parents and politicians fret about the consequences of creating a nation of lonely nerds with Google tans” (p. 48). But the fact remains that kids have already been doing a lot of their socializing online.

There clearly are inequities in how technology and the Internet have been accessed and utilized in schools and by school personnel. These differences have included everything from access to computers and the Internet to how educators utilize these technologies for different students. Just as these inequities have been present in schools, they also have been present in home and community use.
According to Lewis (2007), just having a computer at home has not necessarily correlated in a child doing better academically. The majority of students (56%) have used computers at home to play games, 47% have used them to do school work, and 45% have used computers to connect to the Internet. This pattern has been seen in a study of differences between home and school in low socio-economic households conducted by Angus, Sutherland-Smith, and Snyder (2003). The authors found that in one home, the computer was used primarily for downloading songs, email, and chat room activities. There was no emphasis in using the computer for academic purposes. Regarding Internet use, Boonaert and Vettenburg (2011) articulated the idea that formal learning has been done at school, while informal learning has been done through day to day living and, in the case of computer and Internet learning, young people have learned from their peers and then have applied the skills to formal content for school.

While it has been discussed repeatedly in prior research that higher socio-economic families have utilized computers and the Internet for more academic purposes, Espinosa, Laffey, Whittaker, and Sheng (2006) also indicated that that having greater Internet access has benefitted child development in another way. Adults in higher socio-economic families may use their Internet access to research information about child development and different health issues that will indirectly benefit the children in the family.

Another important factor in differences with how computers and the Internet are accessed has been based in part on education. According to studies cited by Hargittai and Hinnant (2008), those with higher education are more likely to utilize the Internet for e-mail, banking online, news, searching for information pertaining to finance, politics, travel, product information, or the
government and are less likely to use it to download music or for instant messaging. Most studies have dealt with education and computer and Internet access.

Agarwal, Animesh, and Prasad (2009) pointed out that people have also used the Internet to maintain social ties with their friends and to access information about the local community, such as finding bus schedules or information about social services. Social networks were so important to one woman that she did not use computers because none of her friends used computers. The importance of social networks has been important in both rural and urban areas, but people who live in these areas utilize social media differently. In a study conducted by Sadvig, Gilbert, and Karahalios (2010) to examine social media use for rural areas, the authors found that rural people identified fewer friends, and these friends have lived much closer to them than friends in urban areas. In rural areas, women have accounted for a higher portion of users than those found in urban areas. Rural users have set their privacy rate higher than urban users, and they have been generally more distrustful of the idea of meeting people over the Internet. While this may not seem overly important, examining social networks has allowed a view into how members of a community utilize this aspect of computer and Internet technology. In some ways, the Internet has actually been used to drive and change communities. Through the use of blogging, micro-blogging, and social networking, community and personal relationships have been given a new definition (Haythornthwaite & Kendall, 2010; Sandvig, Gilbert, & Karahalios, 2010). Not only has the Internet allowed new types of community connections to be established, Haythornthwaite and Kendall (2010) also discovered that the Internet has become important in getting information out to people in times of crisis. The authors cited instances such as the foot-and-mouth disease crisis in the United Kingdom, Hurricane Katrina in New Orleans in 2005, and the wildfires in Southern California in 2007.
The Pew Internet and American Life Project began in 2000 and has conducted a wide range of studies regarding American families and their day to day life as well as a variety of examinations of the impact of the Internet including the how, when, where, and for what purpose Americans access it. A study conducted by Jones and Fox (2009) indicated the following trends: (a) larger percentages of older generations have been going online than in the past with the biggest increase in the 70 – 75 age range, (b) 74% of Internet users 64 and older have sent and received email, (c) teens and those ages 18-32 have used the Internet more than any other group for entertainment and communicating with friends and family as well as to create and read other’s blogs, and (d) people in the 33 – 44 year range have utilized the Internet most often for purchasing products and for online banking. Also, some activities that had once been dominated by one generation over another have begun to level out across generations.

Summary

Computer and Internet usage have been widespread and keep increasing. These technologies have been changing the way Americans live, and if educators and individuals do not embrace them, they will be left behind in a twentieth century world rather than moving forward effectively into the twenty-first century. While each of the three streams that were identified: digital divide and digital equity, computer and internet technology use by schools, and computer and Internet utilization in homes and communities have been individually significant, it also has been difficult to address the idea of computer and Internet technologies in education without examining their use and role at home. It has been nearly impossible to have these discussions without addressing the issues brought about as a result of accessibility to these technologies. Simply having a computer or Internet access has not meant that all students have equal access to the technology or that it has been used equally well.
Each of the three streams of research have continuously overlapped. They have provided a background to better understand some of the expectations and differences that may help to shape individual perceptions about computers and Internet accessibility. Prior studies on this subject have helped to define what some of the factors may be within the school district to identify not only whether there has been existing digital inequities, but also how to begin to address them.
Chapter 3: Research Methodology

Introduction

Computer technology and the Internet have been used in schools, homes, and communities on a regular basis. While some individuals have felt very comfortable accessing and using computers and the Internet, others have either disliked the technologies or they have not had ready access to them. As has been the case with many conditions, an individual’s perception has influenced whether they do or do not choose to take action. In this study, the perceptions of students, parents, and teachers were examined in order to determine whether computers and the Internet have been utilized effectively within the Selinsgrove Area School District.

This chapter has identified the area in which the study was conducted, the accessibility to the site, and a description of the population involved in the study. Furthermore, the approach and research methods utilized, the data collection and the ethical considerations, have been presented with an explanation of why these particular approaches and considerations were identified. The questions answered in the study were the central question and three sub-questions. The central question was: What are the relationships between the perceptions of parent, student and teacher stakeholders about accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District, and how are these perceptions influenced or related to digital equity? The three sub-questions were:

1. How do parents, students and teachers describe how technology is being used in the school district?

2. What components of digital equity are found to exist within the district and community?
3. What is the relationship between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology outside of school? However, before answering question 3, it was necessary to first ask two separate questions:

a. What is the teacher’s knowledge about student access to technology at school?

b. What is the teacher’s knowledge about student access to technology outside of school?

Both the central question and the first sub-question noted were qualitative in design and as such required no hypothesis. The remaining two sub-questions were examined to address the following hypotheses:

Question 2.

Ha, there are factors such as differences in age, sex, race, ethnicity, socio-economic background, religion or location within the district that can be used to define the existence of digital inequities within the district.

Ho, there are no factors that currently exist in the district that can be identified to define the existence of digital inequities within the district.

Question 3.

Ha, there is a significant relationship between teachers’ knowledge about student access to technology at school and outside of school.

Ho, there is no significant relationship between teachers’ knowledge about student access to technology at school and outside of school.
Role of the Researcher

This researcher has been employed in the school district where the study was undertaken and was a participant observer. This researcher contacted potential participants, obtained permission for participation, and conducted interviews with the volunteers. As the High School Principal in the district, it was very important for this researcher to clearly state that participation was voluntary and that there would be no negative ramifications if a teacher, parent, or student chose not to participate in the study. Although the district superintendent approved the study, this was not interpreted by any of the potential participants as a requirement to participate in it. It was also taken into consideration that this researcher’s role as a participant observer may have posed a potential threat of what Johnson & Christensen (2008) referred to as researcher bias. “Obtaining results consistent with what the researcher wants to find” (p. 275). To avoid this from happening, it was important for this researcher to maintain detailed notes of all observations and interviews. Additionally, it also was necessary during the interviews to fully explain that the responses to the questions were about technology and Internet use and had no direct bearing on any specific individual within the district. This assurance hopefully helped participants to answer truthfully and not with what they believed the researcher wanted to or expected to hear.

Site and Population

Site description. The Selinsgrove Area School District is located in Snyder County, Pennsylvania and approximately sixty miles north of Harrisburg, Pennsylvania. It has been considered to be a rural district. The general location of the district and breakdown of it into townships and boroughs is shown in Figure 2. The physical make-up of the district has included
six townships; Chapman, Union, Monroe, Penn, Washington and Jackson and three boroughs; Selinsgrove, Freeburg, and Shamokin Dam as well as several small villages.

Figure 2. Location of and divisions within the Selinsgrove Area School District.

The Selinsgrove Area School District’s website (2012) included a brief description of the school district and the following has been included as part of the information about the area. The population in the region since early colonial times has remained a people who have been predominately of Pennsylvania Dutch (German) extraction. Industrial and commercial expansion has brought an increasing percentage of people who are of different cultural backgrounds, thus creating a change to the cultural patterns of the community. The social structure of the community has been largely lower middle class with a sprinkling of upper middle class. The lower middle class has been made up of blue collar workers, which has been the majority of the population. The business and professional people have fit into the upper middle class category and have been a relatively small group. In the rural section of the area, there has been a group of economically and culturally deprived people. The strong Pennsylvania Dutch heritage has continued to be a part of the local community tradition, but has slowly been losing its preeminence, as people from other areas of the state have moved to the expanding residential community (Selinsgrove Area School District, 2011).
The Selinsgrove Area School District has been set apart from the rest of Snyder County as a result of Susquehanna University being located within it. The University has provided several cooperative programs with the school district. An article in the local paper, *The Daily Item*, reported on June 30, 2011 that 47% of Snyder County’s population was unable to access high speed Internet service. This percentage gave Snyder County the worst rating for high speed connectivity in Pennsylvania (Pursell, 2011).

**Site access.** The superintendent of the school district approved access to the site. As a result of this researcher’s employment and residence in the district, there was an ease of access to facilities, which provided the opportunity for interviews to be scheduled at times that were convenient to those involved. In addition, this researcher’s children have attended school in the district: two of which who graduated. This also gave this researcher a parental view of district occurrences. The superintendent was supportive of the study being undertaken in the district and expressed hope that the results of the study would help guide in making future decisions pertaining to technology and Internet use. Additionally, the school board had begun to raise questions as to what kind of Internet connectivity existed within the district and how the connectivity or lack thereof may be affecting potential changes regarding technology and the use of the Internet as a means of communication.

As part of the approval granted by the superintendent, all questionnaires needed to meet district guidelines and superintendent approval. The superintendent requested that the final results of the study be presented to the board in the form of a public presentation and a copy of the study be placed on file in the district office.

**Population description.** The target populations involved in the study were students and parents who lived and worked in the Selinsgrove Area School District. The population also
included teachers employed by the district, including ones that lived outside the confines of the school district. Based on the 2009 American Community Survey, there were 21,530 people residing in the district; 96% of the population was White, 1.5% was Black, and the remaining 2.5% were of mixed or other races. Other notable information regarding the population was that only 20.1% of the adults over age 25 living in the district in 2009 had a Bachelor’s degree or a higher degree. The median household income for 2009 was $45,598, and 26.1% of households earned $75,000 or more per year, while 19.5% of the households fell into the $50,000 - $74,499 range for household income (Proximity One, 2012). This established that the community has had limited racial diversity, most adults did not complete a Bachelor’s or advanced degree, and more than half of the households had an income of less than $50,000 for the year.

By examining information from the Federal Education Budget Project, there were 2,742 students in the school district in 2009. The demographics for the student body reflected that the overall district consisted of a students that were over 90% white, with 32.1% being eligible for free or reduced lunches. Table 2 shows some of the 2009 student demographic information for the school district and how it compared to the state of Pennsylvania (New America Foundation, 2012).
Table 2

*Student Demographics of Selinsgrove Area School District*

<table>
<thead>
<tr>
<th>Category</th>
<th>Selinsgrove Area School District</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free &amp; Reduced Lunch</td>
<td>32.1%</td>
<td>33.3%</td>
</tr>
<tr>
<td>ELL</td>
<td>2.0%</td>
<td>2.6%</td>
</tr>
<tr>
<td>White</td>
<td>90.8</td>
<td>73.0</td>
</tr>
<tr>
<td>African American</td>
<td>2.6</td>
<td>15.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Asian</td>
<td>1.1</td>
<td>2.9</td>
</tr>
<tr>
<td>American Indian</td>
<td>.5</td>
<td>.2</td>
</tr>
<tr>
<td>Minority</td>
<td>8.6</td>
<td>26.2</td>
</tr>
</tbody>
</table>

While the students eligible for free and reduced lunch has been below the state average, according to the same website, it has been significantly more than the 20.9% of students eligible for free and reduced lunch in Lewisburg, a neighboring district also located along the Susquehanna River and the home of Bucknell University.

The Selinsgrove School District has consisted of four different buildings with each one housing different grade levels. Table 3 presents the population of each building in October 2012.

Table 3

*Selinsgrove Area School District Building Population, October 2012*

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>GRADES</th>
<th>ADMIN.</th>
<th>TEACHING STAFF</th>
<th>STUDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selinsgrove Area Elementary</td>
<td>K-2</td>
<td>1</td>
<td>39</td>
<td>660</td>
</tr>
<tr>
<td>Selinsgrove Area Intermediate School</td>
<td>3-5</td>
<td>1</td>
<td>38</td>
<td>645</td>
</tr>
<tr>
<td>Selinsgrove Area Middle School</td>
<td>6-8</td>
<td>1</td>
<td>40</td>
<td>602</td>
</tr>
<tr>
<td>Selinsgrove Area High School</td>
<td>9-12</td>
<td>2</td>
<td>59</td>
<td>849</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5</td>
<td>176</td>
<td>2756</td>
<td></td>
</tr>
</tbody>
</table>

Thirty teachers of Grades 6 – 12 were asked to complete a questionnaire regarding computer technology and Internet use. These 30 teachers were equivalent to 33% of the teaching
staff in Grades 6 – 12. There were 210 total students from Grades 6 - 12 identified and asked to complete a questionnaire about their perceptions regarding computer technology and Internet access and usage. Students in younger grades were not included, as many of them may have had difficulty understanding the questionnaire or exactly what the questions were that were being asked. While this also could have been the case for students in the middle and high school, the expectation was that the students in these grades would more readily understand the questionnaires.

There were approximately 2,000 families in the district at the time of the study. This number was difficult to pin down exactly as there were many single parent homes or divorced parents who shared custody of children so that one child may actually be part of two families. There were 210 parents of students in Grades 6 – 12 asked to complete a questionnaire about their perceptions regarding computer technology and Internet access. All respondents were asked to answer basic demographic questions pertaining to age, gender, and ethnicity as these responses were significant to identify whether these factors have had an impact on the individual’s perceptions of computers and Internet use and accessibility. There were individuals within the district who may have either been at a disadvantage to respond or who chose not to respond. This may have been due either to their religious background, which prohibited participating in these types of activities, or a language barrier that would preclude them from understanding the questions that were asked.

While the questionnaires were distributed to a large number of individuals, interviews were conducted only with a small number of persons. It was not necessary for any participant to have completed the questionnaire in order to participate in an interview. A systematic sampling procedure was utilized to identify potential participants for participation in interviews. A
systematic sampling of students in Grades 6 – 12 was done twice. The first time was to identify students to participate in interviews, and the second sampling was to determine the parents of students to be interviewed. There also was a systematic sampling done of teachers to identify teachers to participate in the interview process.

**Research Design and Rationale**

This study utilized a mixed methods explanatory design approach to identify the relationships between the perceptions of parent, student, and teacher stakeholders about accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District, and how these perceptions have been influenced or related to digital equity. According to Creswell (2008) a mixed methods approach has provided numbers that are analyzed to assess frequency or magnitude of trends. The qualitative data has provided different perspectives as well as more of a complete picture of the topic. With this in mind, the explanatory design approach was chosen to allow quantitative data to be collected. Data about a family’s access to computer technology and the Internet in their home or not and what form that access may be such as a desktop computer, a laptop computer, a digital notebook, or a cell phone was taken and recorded. Then the qualitative data regarding individual perceptions about the use of these items was collected.

The central question of the study, what are the relationships between the perceptions of parent, student and teacher stakeholders about accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District, and how are these perceptions influenced or related to digital equity was qualitative in nature. However, the first part of the study was quantitative and utilized questionnaires to collect information about computer and Internet access and utilization. Since the questionnaires were completed prior to the interviews,
and the questionnaire results were utilized to develop the questions asked in the interviews, the study was a sequential study.

The qualitative aspects were given priority in the study as the central question focused on perceptions of individuals, which have been best described and discussed through a qualitative approach. Based on Johnson and Christensen’s (2008) mixed methods design matrix, shown in Figure 3, this study was a sequential study with the qualitative paradigm having dominant status.

<table>
<thead>
<tr>
<th>Paradigm Emphasis Decision</th>
<th>Equal Status</th>
<th>Dominant Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concurrent</td>
<td>QUAL + QUAN</td>
<td>QUAL + quan</td>
</tr>
<tr>
<td>Sequential</td>
<td>QUAL → QUAN</td>
<td>QUAN → qual</td>
</tr>
</tbody>
</table>

*Figure 3. Mixed methods design matrix (Johnson & Christensen, 2008).*

The quantitative data was collected through the use of questionnaires that were made available to eligible participants. The questionnaires were similar in nature, but had slight variations based on the intended respondents so that teachers, parents, and students had slightly different questionnaires designed for the particular group. Some individuals may have been able to answer two different questionnaires as they fell into two different categories of respondents: (a) being a teacher within the district, and (b) having a child who attends one of the schools within the district. As the questionnaires included demographic data, important quantitative information was obtained that allowed identification of factors such as age, gender, or socio-economic status that may have impacted not only the perceptions of the individuals, but also may have influenced the use of computers and the Internet. These factors may have played an
important part in the interviews to identify the perceptions of specific individuals regarding computers and the Internet and their use and accessibility within the school district.

**Research Methods**

Creswell (2008) described the method utilized to collect quantitative data as “an explanatory correlational research design” (p. 358), as the purpose of this research was to learn the extent to which changes in one variable reflect in changes in another variable. The hypothesis that demographic factors have no influence over defining digital equity or knowledge about technology use in the school and community was addressed through a correlational design.

The qualitative part of the study employed a constructivist grounded theory approach. As Creswell (2008) explained, the theory has been “more interested in the views, values, beliefs, feelings, assumptions, and ideologies of individuals than in gathering facts and describing acts” (p. 439). According to Stern (2007), “One essential quality of grounded theory has been that it makes sense; put simply, the reader must have an immediate recognition that this theory, derived from a given social situation, is about real people or objects to which they can relate” (p. 114). As this study dealt with perceptions of stakeholders within the district, it was helpful for a theory to be developed that made sense to the people who live, work, and attend school in the district. The situation was easily identified as computer and Internet use, and knowing that the real people were from within the community lent itself well to the creation of a grounded theory. Additionally, Creswell’s interpretation of a constructivist grounded theory approach allowed this researcher to explain participants’ feelings and beliefs about technology and Internet usage and access in the school district. This information was presented in a case study format.
Stages of Data Collection

Before any data was collected and utilized in the final study, a pilot study was conducted over a two week period. The pilot study was designed to test the questionnaires and the means of analysis of questionnaire results. The sample size was small. The study was conducted in April 2013 and involved five teachers, five parents, and five students who were randomly selected. There was no identifying information on the questionnaires, and none of the questionnaires were used in the final study. The results of the pilot study indicated that some of the questions were a bit unclear and needed to be reworded. Additionally, as the pilot study included the opportunity for the questionnaire to be completed online, it was found that one of the questions on the student questionnaire allowed for only one choice to be selected when it should have been set up so that multiple choices could be made. This was corrected for the final study.

The quantitative data was collected from late May to July 2013, and was analyzed in September 2013. The questionnaire results became the basis of interviews that were conducted in November 2013 through February 2014. The interviews were conducted with individuals to further explore and identify various individual’s perceptions about technology and Internet access and usage within the school district. The timeframe for various stages of distribution, preparation, collection, and analysis of data is illustrated in Table 4.
Table 4

Research Stages

<table>
<thead>
<tr>
<th>Month</th>
<th>Prepare</th>
<th>Distribute to</th>
<th>Collect</th>
<th>Analyze</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2013</td>
<td>Pilot Study</td>
<td>Randomly selected</td>
<td>Results of the Pilot Study.</td>
<td>Responses to assure questions are clear and ask the appropriate questions.</td>
</tr>
<tr>
<td>April 2013</td>
<td>Conduct Pilot Study</td>
<td>potential respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2013</td>
<td>General information</td>
<td>Selected students,</td>
<td>Only those Questionnaires completed by July 10 were included in the final study.</td>
<td></td>
</tr>
<tr>
<td>May 2013</td>
<td>about the study</td>
<td>parents, and teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2013</td>
<td>Questionnaires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2013</td>
<td>mailed and collected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July and August</td>
<td>Develop Interview</td>
<td></td>
<td>Compiled and analyzed questionnaire results</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>questions and consent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November, 2013</td>
<td></td>
<td></td>
<td>Information via interviews</td>
<td>Analyze data from interviews.</td>
</tr>
<tr>
<td>February 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 2014</td>
<td>Results of study</td>
<td>Superintendent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description of Methods Used

Table 5 provides a snapshot of the research methods and data analysis employed as well as the type of and which of the central and sub-questions that were addressed by each type of research method. The type of theory employed in each area was also identified to facilitate the understanding of the information within the table and provided a ready reference to the various parts of the study. For ease of understanding, the various procedures utilized are also discussed based on whether it is a quantitative or qualitative method.
### Data Identification and Analysis

<table>
<thead>
<tr>
<th>Central Question (CQ):</th>
<th>Sub-Questions (SQ1, SQ2, SQ3):</th>
</tr>
</thead>
</table>
| What are the relationships between the perceptions of parent, student and teacher stakeholders about accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District and how are these perceptions influenced or related to digital equity? | 1. How do parents, students and teachers describe how technology is being used in the school district?  
2. What components of digital equity are found to exist within the district and community?  
3. What is the relationship between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology outside of school? |

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Technique</td>
<td>Survey Monkey, paper and pencil questionnaires for those who choose to utilize that format</td>
</tr>
<tr>
<td>Data Presented as</td>
<td>Summary table to show results of questionnaire</td>
</tr>
<tr>
<td>Data Representing</td>
<td>Computer and Internet use in school and at home as well as demographic data</td>
</tr>
<tr>
<td>ANOVA tests performed to identify</td>
<td>Statistical significance of differences between groups in relation to access and use of technology and the Internet.</td>
</tr>
<tr>
<td>Provides a closer look at</td>
<td>The ownership and use of technological gadgets and the Internet for personal and educational uses</td>
</tr>
<tr>
<td>Research Questions addressed</td>
<td>SQ1, SQ2</td>
</tr>
<tr>
<td>Type: Qualitative or Quantitative, approach employed</td>
<td>Quantitative, explanatory correlational approach</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Technique</td>
<td>Constant comparative to identify themes</td>
</tr>
<tr>
<td>Data Presented as</td>
<td>Themes</td>
</tr>
<tr>
<td>Data Representing</td>
<td>Reactions and responses to the results of the questionnaires.</td>
</tr>
<tr>
<td>Data Analyzed through the use of coding interview responses.</td>
<td>Recurring themes related to views of technology and Internet use and access.</td>
</tr>
</tbody>
</table>
| Provides a closer look at | 1. How different groups (parents, students, teachers) perceive the results of the questionnaires.  
2. Specific examples to support the perceptions of the interviewed individuals. |
Quantitative Methods

Teacher Questionnaires

Instrument description. This researcher created a questionnaire that included questions about teacher knowledge regarding student use and accessibility to computers and Internet technologies as well as questions based on the LoTi H.E.A.T. Digital Age Survey for Teachers. It was provided to randomly selected teachers in the middle or high school. These buildings have housed Grades 6 – 12. The LoTi H.E.A.T. Digital Age Survey was aligned with ISTE’s NETS-T and NETS-A and has been extensively researched and used for nearly twenty years.

Participant selection. The study utilized a cluster sampling of 30 teachers. Teachers of students in Grades 6 – 12 were listed alphabetically. Beginning with the first teacher, every fifth one was selected to participate. The school district’s email system allowed for the distribution of information regarding an invitation to participate and how to log on to the questionnaire on the Internet. The questionnaire was available through Survey Monkey, as all district employees have access to the Internet. Participants were also sent a paper copy of the questionnaire in the event they preferred to complete it in that manner rather than through Survey Monkey.

Identification and invitation. There were no specific identifiers for the questionnaire. The questionnaire was accessed via the Internet, and the responses were maintained by the
company who owns the website. To maintain anonymity of the respondents, all teachers who were selected also received a paper copy of the questionnaire and a pre-addressed stamped envelope for the questionnaire to be returned directly to the researcher through the district’s mail system. The only information received by this researcher was the responses with no specific identifiers.

**Data collection.** The questionnaires were distributed in May 2013 and requested that they be returned by June 10, 2013. In mid-June, a reminder was sent out to all teachers who received the questionnaires and asked that they complete and return the questionnaires as soon as possible if they had not already done so. Data collection for the questionnaires ended July 10, 2013. Teachers were provided specific information regarding the collection of the data, how the data would be utilized, and the purpose of the data collection. A copy of this questionnaire is included in Appendix A.

**Data Analysis.** The data was analyzed in the summer of 2013 and was utilized to generate interview questions based on observations of the results. The results of the questionnaires have been presented in Chapter 4.

**Student Questionnaires**

**Instrument description.** This researcher created a questionnaire based primarily on the Pew Internet and American Life Survey, and made it available to randomly selected students in Grades 6 – 12. Questions from the Pew Internet and American Life Surveys were used because they were worded for use in a similar age range. It was made available in both paper format and on the Internet through Survey Monkey. Each participant was able to choose one method or the other to complete the questionnaire. This questionnaire is included in Appendix B.
**Participant selection.** Six townships (Chapman, Union, Monroe, Penn, Washington and Union) and three boroughs (Freeburg, Selinsgrove and Shamokin Dam) have made up the Selinsgrove Area School District. Due to the small size and limited number of students living in two of the boroughs (Freeburg and Shamokin Dam), students residing in these boroughs were included in the township that surrounds the borough (Union and Monroe, respectively). To create a cluster sampling, all students in Grades 6 – 12 were listed alphabetically then sorted by the township or borough in which they lived. After separating the lists by township and/or borough, every seventh student was selected to participate until thirty students from each group was selected. This provided a group of 210 students to receive questionnaires.

**Identification and invitation.** The selected 210 students were mailed an explanation of the study, the purpose of it, a paper copy of the questionnaire, and information on how to access the survey online if they chose to do so. A pre-addressed stamped envelope was included so that the paper version of the questionnaire could be returned anonymously to the researcher. Students were asked to complete the questionnaire only once utilizing either of the available formats: online or pencil and paper. There was no possibility of coding or tracking which of the students did or did not complete the questionnaire, as all questionnaires were returned or completed online anonymously. The only information collected about individuals was basic demographic information such as age, gender, and ethnicity. Since the questionnaires were mailed to possible participants and were completed either online or by using the pre-addressed envelope, there was no way to specifically identify anyone responding or not responding to the questionnaire.

**Data Collection.** This information was distributed in May 2013 and requested that it be returned or completed online by June 10. In mid-June, a reminder was sent out to all students
who received the questionnaires and they were asked to complete and return the questionnaires as soon as possible if they had not already done so. Data collection for the questionnaires was ended July 10, 2013. The paper copies of the questionnaire were paid for by the researcher and were mailed directly to the student’s home. The mailing included a description of the study, the Survey Monkey URL, and a pre-addressed stamped envelope so that students could choose to complete the survey online or by using paper and pencil and returning the questionnaire by mail. The only limitation to participation in completing the questionnaire was that the student had to complete the questionnaire in the allotted time for data collection. If a student chose to complete the questionnaire through the use of a pencil and paper questionnaire, the pre-addressed envelope allowed it to be mailed back to this researcher. There were no identifiers on the questionnaires or the envelopes, and as such there was no tracking of who did or did not complete it.

Data Analysis. The data was analyzed in the summer of 2013 and was utilized to generate interview questions based on observations of the data. The results of the questionnaires have been presented in Chapter 4.

Parent Questionnaires

Instrument description. The researcher created a questionnaire based primarily on the Pew Internet and American Life Survey and made it available to the parents of randomly selected students in Grades 6 – 12. Questions from the Pew Internet and American Life Surveys were used as they were worded in the Pew studies to a similar age range. The questionnaire was made available in both paper format and through Survey Monkey if the participant was able to and chose to complete it via the Internet. The questionnaire is included in Appendix C.

Participant selection. There were 1,451 students in Grades 6 – 12 in the school district in the spring of 2013. Six townships (Chapman, Union, Monroe, Penn, Washington and Union)
and three boroughs (Freeburg, Selinsgrove and Shamokin Dam) have made up the Selinsgrove Area School District. Due to the small size and limited number of students living in two of the boroughs (Freeburg and Shamokin Dam), families residing in these boroughs were included in the township that surrounds the borough (Union and Monroe respectively). To create a cluster sampling, all students in Grades 6 – 12 in the school district were listed alphabetically and then sorted by the township or borough in which they lived. After separating the lists by township and/or borough, every eleventh student’s parent was selected to participate until 30 parents from each group were selected. In some instances, due to the number of students in the townships, the same parent was selected multiple times. When this happened, the next parent on the list was selected to receive a questionnaire. This provided a group of 210 parents to have the opportunity to participate in completing the questionnaire.

Identification and invitation. Every identified parent was provided information regarding the questionnaire. Parents also were provided with information about the study, the purpose of the study, and information on how to access the questionnaire online if they chose to do so. Each identified parent was asked to complete the questionnaire only one time utilizing one of the available formats: online or pencil and paper. There was no coding of parents and no tracking to determine who completed the questionnaire. The only information collected about individuals was basic demographic information such as age, gender, and ethnicity. If someone chose to not answer the questionnaire, there was no convenient way to specifically identify who did or did not respond to it.

Data collection. This information was distributed in May 2013 and requested that it be returned by June 10, 2013. In mid-June, a reminder was sent out to all parents who had received the questionnaires, and they were asked to complete and return the questionnaires as soon as
possible if they had not already done so. Data collection for the questionnaires ended July 10, 2013. The school district has had a subscription with Survey Monkey and allowed the district license to be used to develop the questionnaire and to make it available to parents. The paper copies of the questionnaire were paid for by the researcher and were sent to the parents at their home address. The only limitation to participation in the questionnaire was that the parent needed to complete the questionnaire in the allotted time for data collection. If a parent chose not to complete the questionnaire through the use of a pencil and paper questionnaire, a pre-addressed stamped envelope was included in the mailing to allow a simple means of returning the questionnaire to the researcher. There were no identifiers on the questionnaires or the envelopes.

Data analysis. The data was analyzed in the summer of 2013 and was utilized to generate interview questions based on observations of the data. The results of the questionnaires has been presented in Chapter 4.

Qualitative Methods

Interviews

Instrument description. Interview questions were developed based on the results of the questionnaires completed in June and July. Interview questions were developed so that each group had similar questions with word changes as needed dependent upon the group with which the interviewee was associated. For instance, a student was asked how they used computers for school, a parent was asked how they believed their student used computers for school, and teachers were asked how they required students to use computers. Student interview questions are included in Appendix D, parent interview questions are found in Appendix E and teacher interview questions are found in Appendix F. Transcripts of the student interviews are included
in Appendix G, transcripts of parent interviews are in Appendix H and teacher interview transcripts are found in Appendix I.

**Participant selection.** The first interview participants were selected utilizing homogeneous sampling. Creswell (2008) explained that a researcher utilizes homogeneous sampling to sample individuals based on their membership in a particular subgroup that has certain defining characteristics. In this case, the three groups included were students, teachers, and parents. Four individuals from each group were interviewed.

**Identification and invitation.** The initial participants were selected randomly to partake in the interviews. This selection was done by returning to the list of all students in Grades 6 – 12. To identify potential students for interviews, the list was counted off by 31 and 71. The 31st and 71st student’s names were identified. Two lists were created: one listed every 31st student and the second listed every 71st student. The list of every 31st student’s name was utilized to identify potential student interviewees, while the list of every 71st student’s name was utilized to identify potential parent interviewees. The last question in the first and subsequent interviews was to ask the participant if there was someone whom they would suggest as a possible participant due to that individual’s utilization or lack of utilization of computers and Internet technologies. Creswell (2008) identified this method of asking one participant to identify others to be a member of the sample group as a snowball sampling. If a participant was unable to suggest an additional participant, another person from the previously generated lists was contacted as a potential interviewee. To identify potential teachers to be interviewed, all who were teaching Grades 6 – 12 were listed alphabetically. Every 11th name was selected to create a list of contacts for interviews. All potential participants received information about the study
with an invitation to participate in the interviews. Any student under age 18 was required to have a parent consent in order to participate in the interviews.

**Data collection.** Interviews were conducted November 2013 through February 2014. All were recorded and transcribed. The participants in the interviews were coded so that no name was directly associated with any individual. The complete transcription of the interviews are included in the Appendices. Student interview transcriptions are in Appendix G, parent interviews are found in Appendix H, and teacher interviews are in Appendix I.

**Data analysis.** The data was analyzed in February 2014 by using coding. Through the use of a constructivist grounded theory approach, perceptions of parents, students, and teachers were identified by looking for and coding information in three common themes: access to technology and the Internet, use of technology and the Internet, and effectiveness of use of technology and the Internet. The resulting information was presented in a table format. The results of the questionnaires and interviews were compared to identify common themes and ideas that were present in both the quantitative and qualitative aspects of the study.

**Ethical Considerations**

According to the Belmont Report, there have been several ethical considerations that need to be addressed when undertaking any study involving human beings. These have included the principles of respect for persons, beneficence, and justice (Belmont, 1979). Participants in the questionnaire part of the study received information regarding the research and instructions on how to complete the questionnaire if they chose to participate. There were no identifiers on the paper questionnaire, and questionnaires completed via the Internet did not ask for names or other specific identifying information. As a result, the participants’ confidentiality was maintained. Institutional Review Board (IRB) approval was requested and obtained. If an
individual participated in any phase of the study, there was no danger of physical or emotional harm. Participation was voluntary, and participants could have withdrawn at any time with no negative ramifications. Possible interview participants received a packet of information explaining the purpose of the study, how the interviews would be conducted, and the appropriate consent forms to be completed for participation. This study did not involve any danger of being harmed as a result of participation. All parents, students, and teachers associated with Grades 6 – 12 had an equal opportunity of being included in the study.

The role of this researcher throughout the study was to provide information to parents, students, and teachers, to collect and analyze the data, and to present the information to the superintendent and the school board when the study was completed. As an administrator in the district, this researcher provided all the necessary assurances that there would be no negative ramifications for not participating in the study and that there were no benefits provided to those who participated versus those who did not participate. To avoid a conflict of interest, all paper questionnaires were distributed through the U.S. mail and returned through pre-addressed stamped envelopes provided by this researcher. Interviews were conducted at the convenience of the participants, not at a time scheduled by the researcher so that there would be no feeling that someone must attend at a specific time or there would be a penalty. While the expectation was that most questionnaires would be completed online, this was not the case. The majority of the respondents chose to complete the paper and pencil version of the questionnaire. The results were entered into Survey Monkey by this researcher for ease of analysis. All paper copies of the questionnaire were retained and have been made available for review.
Chapter 4: Findings and Results

Introduction

The quantitative and qualitative data were collected, organized, and then analyzed in response to the problem, purpose, and questions posited in Chapter 1 and Chapter 3 of this paper. Two fundamental goals guided the mixed methods design of this study: collection of the data, and the subsequent data analysis. First, the primary goal was to identify the perceptions of parent, student, and teacher stakeholders about digital equity issues regarding accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District. The secondary goal was to determine if current perceptions and utilization were consistent with the basic goals or principles of twenty-first century technology integration standards in education that have been necessary to close the digital divide and increase the digital equity in education environments for schools within the district.

While computers and Internet technology seem to have been pervasive in society, the question and the perception of accessibility and usage was addressed. The theory behind this study was that it is necessary for a school district to know how the students, teachers, and parents perceive accessibility and utilization of computer and Internet technologies so that pertinent decisions can be made regarding the use of these technologies in the district. Without this information, a school district could be making decisions in an effort to bridge gaps in accessibility when in fact there are none, or the district may continue to move forward with curriculums and programs that rely on these technologies when there is a huge gap of accessibility in the district. In either case, the district may be wasting time, energy, and money needlessly.
This was a mixed methods study utilizing both quantitative and qualitative data to answer one primary and three sub research questions. This chapter begins with presenting the findings of the questionnaires and interviews and has been divided into two broad sections. The first section presents quantitative data and a statistical summary of the responses to the questionnaires. Within this section are three subsections that facilitate understanding of the results from each of the three involved stakeholders: students, parents, and teachers. Each subsection has included frequency distribution tables for responses to the items on the questionnaires. The second section presents the qualitative data obtained primarily through interviews conducted with representatives of the three stakeholder groups. By utilizing triangulation of the quantitative and qualitative data, the perceptions of the stakeholder groups have been represented to support possible changes in practice within the school district.

The objectives of this study were accomplished. The findings and results in this chapter demonstrated the potential for merging theory and practice to find solutions to educational problems related to the digital divide in the Selinsgrove Area School District. Chapter 5 will present the interpretations, recommendations, and final conclusions of this study.

**Demographics and Response Rate**

The population consisted of parents, students, and teachers in the Selinsgrove Area School District. Table 6 shows the number of potential participants as well as the response rate of the students, parents, and teachers who were contacted to complete a questionnaire or to participate in an interview.
Table 6

Potential Participants and Response Rate

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Parent</th>
<th>Teacher</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaires</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sent</td>
<td>210</td>
<td>210</td>
<td>30</td>
<td>450</td>
</tr>
<tr>
<td>Returned</td>
<td>84</td>
<td>103</td>
<td>27</td>
<td>214</td>
</tr>
<tr>
<td>Response Rate</td>
<td>40%</td>
<td>49%</td>
<td>90%</td>
<td>47.56%</td>
</tr>
<tr>
<td>Interviews</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contacted</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Interviewed</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Response Rate</td>
<td>50%</td>
<td>100%</td>
<td>100%</td>
<td>75%</td>
</tr>
</tbody>
</table>

The overall response rate was highest among the teaching staff. Students had the lowest response rate of the three groups. While all of the adults contacted were willing to be interviewed, four students were not willing to be interviewed. Additionally, some of the student names that were identified as potential interview participants moved out of the school district after the lists were originally generated, which removed those students and parents as potential interviewees. Those who were not able to participate as a result of having moved from the district were not included in the number of contacts made for interviews.

Quantitative Findings

The data for the study was obtained through quantitative and qualitative designs using questionnaires and interviews. The quantitative data was obtained through the use of questionnaires. To insure privacy and anonymity of respondents, the questionnaires were sent to selected individuals who were given the opportunity to respond online through the use of Survey Monkey or by completing a paper questionnaire and returning it to this researcher through the use of a pre-addressed stamped envelope. Through this means, this researcher did not know which participants did or did not choose to complete the questionnaire.
Interviews were the basis for the collection of qualitative data. The interviews were conducted with the researcher at a time and place conducive to the interviewee. Before interviewing any students under the age of 18, this researcher spoke with the parent of the student to explain the research, how the interviews would be conducted, and to receive parental consent before scheduling the interview. While this researcher utilized the individual’s names during the course of the interview, no names were included in the study, and the transcription of the interview identified interviewees only by a letter. The interviews were semi structured, as there was a set list of questions that were asked of participants but, dependent on the responses received, additional questions were asked for clarity or for additional explanation. If interviewees seemed to be struggling with an answer or examples, additional questions were asked. As not all interviewees were asked the same set of questions, with no deviation, the interviews were considered to be to be semi structured.

Procedures

Through a random selection process, questionnaires were mailed to 210 selected students, 210 parents, and 30 teachers in the school district in late May 2013. The selected participants were asked to complete the questionnaire online or the paper format by June 10, 2013. Participants were reminded again in mid-June to complete the questionnaire as soon as possible and collection of results was ended July 10, 2013. The results of the questionnaires were utilized to develop interview questions for interviews that began in November, 2013. The interviews allowed interviewees the opportunity to answer specific questions about access, utilization, and effectiveness of technology and Internet usage in the school district.

There were 210 questionnaires distributed to students in Grades 6 – 12. Eighty-four students responded, which established a 40% response rate. Of those 84 respondents, 43
(51.81%) were female and 40 (48.1%) were male. The age of the respondents varied from 11 to 18 with age 11 having the least representation with only 3.8%. The grade level of respondents varied from Grade 6 – 12. Grade 6 and Grade 12 each had 16 (19.28%) respondents as compared to only 5 (6.02%) in Grade 8. There was some racial diversity in the respondents, as 96.39% were White (non-Hispanic) and 3.61% were Hispanic. There were no Black, non-Hispanic respondents to the questionnaire. The township or boroughs of residence were relatively equally split with the exception of Shamokin Dam borough which accounted for only 1.19% of the students. While income levels varied from a low of 16.25%, which indicated a family income of less than $30,000 per year, 32.5% indicated family incomes of $50,000 - $74,999, and 31.25% indicated a family income of more than $75,000 per year. The majority of respondents (63.75%) reported family incomes in excess of $50,000 per year (See Table 7).
Table 7

Characteristics of the Student Questionnaire Sample

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>51.81%</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>48.19%</td>
<td>40</td>
</tr>
<tr>
<td>Age</td>
<td>11</td>
<td>3.80%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>15.19%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>17.72%</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>8.86%</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>20.25%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>8.86%</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>11.39%</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>13.92%</td>
<td>11</td>
</tr>
<tr>
<td>Grade</td>
<td>6</td>
<td>19.28%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>14.46%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>6.02%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>18.07%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>14.46%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>8.43%</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>19.28%</td>
<td>16</td>
</tr>
<tr>
<td>Race</td>
<td>White-Non-Hispanic</td>
<td>96.39%</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Black-Non-Hispanic</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>3.61%</td>
<td>3</td>
</tr>
<tr>
<td>Township or Borough of Residence</td>
<td>Chapman Township</td>
<td>13.10%</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Jackson Township</td>
<td>14.29%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Monroe Township</td>
<td>17.86%</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Penn Township</td>
<td>10.71%</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Selinsgrove Borough</td>
<td>16.67%</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Shamokin Dam borough</td>
<td>1.19%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Union Township</td>
<td>14.29%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Washington Township</td>
<td>11.90%</td>
<td>10</td>
</tr>
<tr>
<td>Family Income</td>
<td>Less than $30,000</td>
<td>16.25%</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>$30,000 - $49,999</td>
<td>20.00%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>$50,000 - $74,999</td>
<td>32.50%</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>$75,000 +</td>
<td>31.25%</td>
<td>25</td>
</tr>
</tbody>
</table>

N= 84

There were 210 questionnaires distributed to parents of students in Grades 6 – 12, with 103 responding, which established a 49% response rate. Of the 103 respondents, 84 (82.35%) were females and 18 (17.65%) were males. The ages of the respondents varied from given
ranges of 18 – 29 to 50 – 64 with the majority (54.37%) of the respondents falling in the 40 – 49 age range. All but 1 (.97%) of those who responded had at least graduated from high school (34.95%), with 23.30% having some college, and 40.78% having a college degree or beyond. There was little differentiation of race in the responses as 99% of those who responded were White, Non-Hispanic. The township or borough of residence was rather equally split with the exception of Shamokin Dam Borough, which had no respondents and Washington Township, which accounted for 11.65% of the respondents. The yearly family income level indicated by most respondents (37.62%) was in the $75,000 and above range. The majority (62.38%) indicated a yearly family income in excess of $50,000 per year (See Table 8).
Table 8

*Characteristics of the Parent Questionnaire*

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>82.35%</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>17.65%</td>
<td>18</td>
</tr>
<tr>
<td>Age</td>
<td>18-29</td>
<td>97%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>30-39</td>
<td>21.36%</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>40-49</td>
<td>54.37%</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>50-64</td>
<td>23.30%</td>
<td>24</td>
</tr>
<tr>
<td>Level of Education</td>
<td>No High School Diploma</td>
<td>97%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>High School Graduate</td>
<td>34.95%</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Some College</td>
<td>23.30%</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>College Graduate or beyond</td>
<td>40.78%</td>
<td>42</td>
</tr>
<tr>
<td>Race</td>
<td>White-Non-Hispanic</td>
<td>99.02%</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>Black – Non-Hispanic</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>.98%</td>
<td>1</td>
</tr>
<tr>
<td>Township or Borough of Residence</td>
<td>Chapman Township</td>
<td>15.53%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Jackson Township</td>
<td>11.65%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Monroe Township</td>
<td>16.50%</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Penn Township</td>
<td>15.53%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Selinsgrove Borough</td>
<td>12.62%</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Shamokin Dam borough</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Union Township</td>
<td>16.50%</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Washington Township</td>
<td>11.65%</td>
<td>12</td>
</tr>
<tr>
<td>Family Income</td>
<td>Less than $30,000</td>
<td>11.88%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>$30,000 - $49,999</td>
<td>26.73%</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>$50,000 - $74,999</td>
<td>23.76%</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>$75,000 +</td>
<td>37.62%</td>
<td>38</td>
</tr>
</tbody>
</table>

| N                            | 103                          |

Questionnaires were sent to 30 teachers and 27 were returned, providing a response rate of 90%. The teachers who responded to the questionnaire were almost evenly split between females (46.2%) and males (53.8%) with ages varying from a range of 18 – 29 (11.5%) to an age range of 50 – 64 (26.9%). While the majority of the respondents were age 40 or above (53.8%), seven (26.9%) have taught for between 6 and 10 years. There was an even break between those who have taught for less than 15 years and those who have taught for 16 or more years with 13 (50%) respondents on each side of the 15-year mark (See Table 9).
Table 9

*Characteristics of the Teacher Questionnaire*

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>46.2%</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>53.8%</td>
<td>14</td>
</tr>
<tr>
<td>Age</td>
<td>18-29</td>
<td>11.54%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>30-39</td>
<td>34.62%</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>40-49</td>
<td>26.92%</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>50-64</td>
<td>26.92%</td>
<td>7</td>
</tr>
<tr>
<td>Number of Years Taught</td>
<td>1-2</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3-5</td>
<td>7.69%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>26.92%</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>15.38%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>15.38%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>7.69%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>26-30</td>
<td>19.23%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>30+</td>
<td>7.69%</td>
<td>2</td>
</tr>
</tbody>
</table>

N = 27

**Summary of Internet and Technology Use Questionnaire Responses**

The summary of questionnaire responses was divided into three subsections. The first subsection addressed the questions and responses that dealt with student and family ownership of technological gadgets and home Internet accessibility and what teachers have believed about the ownership and accessibility for students. The second subsection addressed perceptions that students, parents, and teachers had about how these gadgets have been utilized by students and their family. To provide clarity in the two sections, the findings of the questionnaires were displayed in three different response groups: students, parents, and teachers. In some instances, separate tables were utilized for each group and in others, one table was used with each group clearly identified. While many of the questions in the questionnaires were identical or similar, there were also questions that differed based on the group for which the questionnaire was designed. The third subsection presented themes and commonalities identified in the interviews that were conducted with students, parents, and teachers.
Summary of Responses of Ownership of Technological Gadgets and Home Internet Access

The student questionnaire included two questions regarding technological gadgets: one question asked what the family owned, and a second asked what the student personally owned. The teacher questionnaire asked teachers to estimate the percentage of student ownership of technology related items. In the case of Internet access, both students and parents were asked to identify what type of Internet access they have at home, and teachers were asked to estimate the percentage of homes with Internet access.

Table 10 indicates that of all the items owned by families, cell phones were first with 77 (95.06%) reporting that at least someone in the family owned a cell phone. The second most owned item was a tie between laptop computers and game consoles with 67 (82.72%) students reporting family ownership. The only items that had less than 50% of the student’s family ownership were tablet computers (41.98%) and e-book readers (33%).

Table 10

<table>
<thead>
<tr>
<th>Item</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell Phone</td>
<td>95.06%</td>
<td>77</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>67.90%</td>
<td>55</td>
</tr>
<tr>
<td>Laptop Computer</td>
<td>82.72%</td>
<td>67</td>
</tr>
<tr>
<td>MP3 Player</td>
<td>75.31%</td>
<td>61</td>
</tr>
<tr>
<td>Game Console</td>
<td>82.72%</td>
<td>67</td>
</tr>
<tr>
<td>E-Book Reader</td>
<td>40.74%</td>
<td>33</td>
</tr>
<tr>
<td>Tablet Computer</td>
<td>41.98%</td>
<td>34</td>
</tr>
</tbody>
</table>

Note. Students were to select all gadgets owned by members of the family.

Table 11 shows which of the selected technological gadgets parents indicated were owned by their family. The parents who responded to the question all (100%) indicated that someone in the family owns a cell phone. The number two spot for ownership was laptop
computers (80.39%) with over 50% of families owning all other items except e-Book readers (35.29%) and tablet computers (32.35%).

Table 11

*Technological Gadgets Owned by Families as Reported by Parents*

<table>
<thead>
<tr>
<th>Item</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell Phone</td>
<td>100.00%</td>
<td>102</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>70.59%</td>
<td>72</td>
</tr>
<tr>
<td>Laptop Computer</td>
<td>80.39%</td>
<td>82</td>
</tr>
<tr>
<td>MP3 Player</td>
<td>50.98%</td>
<td>52</td>
</tr>
<tr>
<td>Game Console</td>
<td>67.65%</td>
<td>69</td>
</tr>
<tr>
<td>E-Book Reader</td>
<td>35.29%</td>
<td>36</td>
</tr>
<tr>
<td>Tablet Computer</td>
<td>32.35%</td>
<td>33</td>
</tr>
</tbody>
</table>

*N = 102

*Note*. Parents were to select all gadgets owned by their family.

Table 12 provides information about the gadgets personally owned by student. The most popular item was a cell phone, with 67 (85.90%) of respondents indicating that they own a cell phone. Laptop computers, MP3 players, and game consoles were less popular, but over 50% of students indicated that they personally owned one of these items. The least popular items were desktop computers (15.38%), e-book readers (19.23%), and tablet computers (16.67%).

Table 12

*Technological Gadgets Owned by Students as Reported by Students*

<table>
<thead>
<tr>
<th>Item</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell Phone</td>
<td>85.90%</td>
<td>67</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>15.38%</td>
<td>12</td>
</tr>
<tr>
<td>Laptop Computer</td>
<td>57.69%</td>
<td>45</td>
</tr>
<tr>
<td>MP3 Player</td>
<td>67.95%</td>
<td>53</td>
</tr>
<tr>
<td>Game Console</td>
<td>65.38%</td>
<td>51</td>
</tr>
<tr>
<td>E-Book Reader</td>
<td>19.23%</td>
<td>15</td>
</tr>
<tr>
<td>Tablet Computer</td>
<td>16.67%</td>
<td>13</td>
</tr>
</tbody>
</table>

*N = 78

*Note*. Students were to select all gadgets that they personally own.
While teachers have not been every student’s home and certainly do not know what items students’ own, Table 13 provides a look at teacher perceptions of the percentage of students who they believe own technological gadgets. Nearly half (12) of the teachers who responded believed that 91–100% of students have access to some form of digital technologies. Seven teachers believed that 81 – 90% of the students have access to digital technologies, which was very close to the six teachers who believed that 71 – 80% of students have access to these technologies. That outlier in the responses was the single teacher who believed that only 61-70% of students had access. There were no teachers who believed that less than 60% of the students had access to these technologies.

Table 13

*Perception of Student Access to Digital Technologies*

<table>
<thead>
<tr>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>0</td>
</tr>
<tr>
<td>11-20%</td>
<td>0</td>
</tr>
<tr>
<td>21-30%</td>
<td>0</td>
</tr>
<tr>
<td>31-40%</td>
<td>0</td>
</tr>
<tr>
<td>41-50%</td>
<td>0</td>
</tr>
<tr>
<td>51-60%</td>
<td>0</td>
</tr>
<tr>
<td>61-70%</td>
<td>3.85%</td>
</tr>
<tr>
<td>71-80%</td>
<td>23.08%</td>
</tr>
<tr>
<td>81-90%</td>
<td>26.92%</td>
</tr>
<tr>
<td>91-100%</td>
<td>46.15%</td>
</tr>
</tbody>
</table>

N = 26

Teachers were asked to estimate the percentage of students who have Internet access in their home. There were no respondents who believed that less than 50% of the students have Internet access at home, but only one respondent (3.85%) believed that 91 – 100% of the students have Internet access at home. There were 10 (38.46%) respondents who believed that 81 – 90% have Internet access at home. Seven (26.92%) respondents indicated belief that 71 –
80% have access, and six (23.08%) believed that 61 – 70% have access. There were two (7.69%) respondents who put accessibility levels in the 51 – 60% range (See Table 14).

Table 14

*Teachers’ Perceptions of Student Access to the Internet*

<table>
<thead>
<tr>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>0</td>
</tr>
<tr>
<td>11-20%</td>
<td>0</td>
</tr>
<tr>
<td>21-30%</td>
<td>0</td>
</tr>
<tr>
<td>31-40%</td>
<td>0</td>
</tr>
<tr>
<td>41-50%</td>
<td>0</td>
</tr>
<tr>
<td>51-60%</td>
<td>7.69%</td>
</tr>
<tr>
<td>61-70%</td>
<td>23.08%</td>
</tr>
<tr>
<td>71-80%</td>
<td>26.92%</td>
</tr>
<tr>
<td>81-90%</td>
<td>38.46%</td>
</tr>
<tr>
<td>91-100%</td>
<td>3.85%</td>
</tr>
</tbody>
</table>

N = 26

**Summary of Responses Regarding Perceptions of Technology Usage and the Internet**

The student and parent questionnaires included questions to identify what type of cell phone they had, if they owned a cell phone, how often they used a computer or a cell phone to perform certain functions, and whether they used a computer or cell phone more often to perform these functions. They also were asked some basic questions about how they believed students utilize computer technology and the Internet. Teachers were asked questions that pertained to computer technology and Internet usage in the school setting.

As Table 15 indicates, while only 13 of the 83 respondents indicated they do not own a cell phone, the majority of students own one; however, the types of cell phones varied widely. Of the respondents who do own a cell phone, 27 (32.53%) indicated they had a basic cell phone, which would preclude them from doing much other than making a phone call, taking pictures, and sending text messages. Thirty-eight respondents (or nearly 46%) indicated that they own a
type of phone (iPhone – 28.92%, Android 15.66%, Windows – 1.20%) that provided Internet access.

Table 15

*Student Ownership of Cell Phones*

<table>
<thead>
<tr>
<th>Type</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not own a cell phone</td>
<td>15.66%</td>
<td>13</td>
</tr>
<tr>
<td>Basic cell phone</td>
<td>32.53%</td>
<td>27</td>
</tr>
<tr>
<td>iPhone</td>
<td>28.92%</td>
<td>24</td>
</tr>
<tr>
<td>Blackberry</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Android</td>
<td>15.66%</td>
<td>13</td>
</tr>
<tr>
<td>Windows Phone</td>
<td>1.20%</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>6.02%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>N =</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

Table 16 shows that all 102 parents who responded to the question about cell phone ownership indicated that they own a cell phone. The majority of them own a phone that would provide some type of Internet access with 29 (28.43%) owning an iPhone, and 26 (25.49%) owning an Android phone. Blackberry phones, with two (1.96%) respondents and Windows phones, also with two respondents (1.96%) were less popular, but also have provided Internet access.

Table 16

*Parent Ownership of Cell Phones*

<table>
<thead>
<tr>
<th>Type</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not own a cell phone</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Basic cell phone</td>
<td>39.22%</td>
<td>40</td>
</tr>
<tr>
<td>iPhone</td>
<td>28.43%</td>
<td>29</td>
</tr>
<tr>
<td>Blackberry</td>
<td>1.96%</td>
<td>2</td>
</tr>
<tr>
<td>Android</td>
<td>25.49%</td>
<td>26</td>
</tr>
<tr>
<td>Windows Phone</td>
<td>1.96%</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>2.94%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>N =</strong></td>
<td><strong>102</strong></td>
</tr>
</tbody>
</table>
There were a variety of functions that students may use a computer to perform. The functions used on a computer daily by a majority of the students were to use a search engine (67.09%) and to play music (62.03%). The functions that students most often indicate they never do online were banking (93.83%) and to buy a product online (40.51%). Nearly half of the students indicated that they have used a computer daily for social networking (46.05%) and to play a game (43.21%). It is important to note that the largest standard deviation in all the results was social networking (1.513), with playing music (1.366), and playing a game (1.314), indicating that while each of these functions are done daily on a computer by over 40% of the respondents, there was widespread variation as to how often the remainder of the respondents perform these activities on a computer. The lowest standard deviations were found in doing banking online (0.783), which 76 of the 81 respondents indicated they never do, buy a product online (0.8621) that no respondents do daily, and use a computer for a search engine (0.997), which 52 of the 79 respondents indicate that they do daily. These are interesting to note as it indicated that respondents have some answers that are clustered rather close together at both ends of the spectrum from never using a computer for the function—in the case of banking online to using a computer daily for a search engine (See Table 17).
Table 17

*Student Usage of Computers to Perform Selected Functions*

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Social Networking</td>
<td>18.42%</td>
<td>2.63%</td>
<td>9.21%</td>
<td>23.68%</td>
<td>46.05%</td>
<td>76</td>
<td>3.763</td>
<td>1.513</td>
</tr>
<tr>
<td>Buy a Product</td>
<td>40.51%</td>
<td>32.91%</td>
<td>24.05%</td>
<td>2.53%</td>
<td>0%</td>
<td>79</td>
<td>1.8861</td>
<td>0.8621</td>
</tr>
<tr>
<td>Do Banking Online</td>
<td>93.83%</td>
<td>0%</td>
<td>0%</td>
<td>4.94%</td>
<td>1.23%</td>
<td>81</td>
<td>1.1975</td>
<td>0.7813</td>
</tr>
<tr>
<td>Use a Search Engine</td>
<td>5.06%</td>
<td>0%</td>
<td>6.33%</td>
<td>21.52%</td>
<td>67.09%</td>
<td>53</td>
<td>4.456</td>
<td>0.997</td>
</tr>
<tr>
<td>Send/Receive Email</td>
<td>21.79%</td>
<td>7.69%</td>
<td>21.79%</td>
<td>25.64%</td>
<td>23.08%</td>
<td>78</td>
<td>3.205</td>
<td>1.454</td>
</tr>
<tr>
<td>Play Music</td>
<td>12.66%</td>
<td>0%</td>
<td>10.13%</td>
<td>15.19%</td>
<td>62.03%</td>
<td>79</td>
<td>4.139</td>
<td>1.366</td>
</tr>
<tr>
<td>Play a Game</td>
<td>11.11%</td>
<td>2.47%</td>
<td>19.75%</td>
<td>23.46%</td>
<td>43.21%</td>
<td>81</td>
<td>3.852</td>
<td>1.314</td>
</tr>
</tbody>
</table>

*Note.* n is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

Similar to the student responses in Table 17, Table 18 shows that many parents (66.34%) indicated that they access a computer daily to use a search engine, but the most popular daily use of a computer for them was to send and receive email (75.49%). The only other function that nearly half the parents indicated that they used daily was for social networking (48.04%). These were the only two areas that had a higher than 40% response. In fact, the next closest response rate was 38.24% of parents who indicated that they do online banking once a week. The parent responses were more widely distributed as seen in the standard deviations, since of the seven functions that could be selected, five had more than a 1.5 standard deviation.
Table 18

Parent Usage of Computers to Perform Selected Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Social Networking</td>
<td>23.53%</td>
<td>1.96%</td>
<td>8.82%</td>
<td>17.65%</td>
<td>48.04%</td>
<td>102</td>
<td>3.647</td>
<td>1.633</td>
</tr>
<tr>
<td>Buy a Product</td>
<td>6.93%</td>
<td>24.75%</td>
<td>53.47%</td>
<td>14.85%</td>
<td>0%</td>
<td>101</td>
<td>2.7624</td>
<td>.7893</td>
</tr>
<tr>
<td>Do Banking Online</td>
<td>28.43%</td>
<td>1.96%</td>
<td>8.82%</td>
<td>38.24%</td>
<td>22.55%</td>
<td>102</td>
<td>3.245</td>
<td>1.551</td>
</tr>
<tr>
<td>Use a Search Engine</td>
<td>3.96%</td>
<td>0.99%</td>
<td>7.92%</td>
<td>20.79%</td>
<td>66.34%</td>
<td>101</td>
<td>4.445</td>
<td>.9744</td>
</tr>
<tr>
<td>Send/Receive Email</td>
<td>4.90%</td>
<td>0%</td>
<td>5.88%</td>
<td>13.73%</td>
<td>75.49%</td>
<td>102</td>
<td>4.549</td>
<td>1.558</td>
</tr>
<tr>
<td>Play Music</td>
<td>25.24%</td>
<td>11.65%</td>
<td>11.65%</td>
<td>25.24%</td>
<td>26.21%</td>
<td>103</td>
<td>3.155</td>
<td>1.558</td>
</tr>
<tr>
<td>Play a Game</td>
<td>26.73%</td>
<td>7.92%</td>
<td>16.83%</td>
<td>22.77%</td>
<td>25.74%</td>
<td>101</td>
<td>3.129</td>
<td>1.553</td>
</tr>
</tbody>
</table>

Note. n is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

Table 19 shows the frequency in which students indicated they use their cell phone to perform various selected functions. However, as was indicated in Table 15, 27 students have a basic cell phone, which would make it impossible to perform several of the identified functions. The most agreed upon function was that 95.45% of the students said they never use their phone to do online banking. This was followed closely by 92.31% of the respondents who indicated that they use their phone to send and receive text messages on a daily basis. Table 19 also indicates a wide range of responses regarding how often cell phones are utilized to perform various functions. It was the respondents at both ends of the spectrum—either never using the phone to perform the function or using a cell phone daily to perform the functions—that created the largest disparity. This was quite evident in looking at the responses to using a phone to
access a social networking site. There were 28 respondents (42.42%) who indicated they never use a cell phone for this purpose, and 31 respondents (46.97%) who indicated using a phone daily for this purpose. There were only 7 respondents (10.61%) who indicated they performed this function on their cell phone with any other frequency of use. While this was the most extreme difference, similar patterns were noted in the functions of playing a game or accessing the Internet.
Table 19

Student Usage of Cell Phones to Perform Selected Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send/Receive Email</td>
<td>57.58%</td>
<td>6.06%</td>
<td>9.09%</td>
<td>12.12%</td>
<td>15.15%</td>
<td>66</td>
<td>2.212</td>
<td>1.584</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send/Receive Texts</td>
<td>0%</td>
<td>3.08%</td>
<td>0%</td>
<td>4.62%</td>
<td>92.31%</td>
<td>65</td>
<td>4.8615</td>
<td>.5556</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take a Picture</td>
<td>3.03%</td>
<td>6.06%</td>
<td>19.70%</td>
<td>33.33%</td>
<td>37.88%</td>
<td>66</td>
<td>3.970</td>
<td>1.052</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>13</td>
<td>22</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play Music</td>
<td>30.30%</td>
<td>0%</td>
<td>1.52%</td>
<td>10.61%</td>
<td>57.58%</td>
<td>38</td>
<td>3.652</td>
<td>1.802</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Download an App.</td>
<td>37.88%</td>
<td>3.03%</td>
<td>19.70%</td>
<td>24.24%</td>
<td>15.15%</td>
<td>38</td>
<td>2.758</td>
<td>1.540</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>2</td>
<td>13</td>
<td>16</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record a Video</td>
<td>27.27%</td>
<td>18.18%</td>
<td>33.33%</td>
<td>13.64%</td>
<td>7.58%</td>
<td>5</td>
<td>2.561</td>
<td>1.242</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>12</td>
<td>22</td>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play a Game</td>
<td>33.33%</td>
<td>0%</td>
<td>4.55%</td>
<td>19.70%</td>
<td>42.42%</td>
<td>28</td>
<td>3.379</td>
<td>1.770</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>0</td>
<td>3</td>
<td>13</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access the Internet</td>
<td>30.30%</td>
<td>1.42%</td>
<td>7.58%</td>
<td>6.06%</td>
<td>54.55%</td>
<td>36</td>
<td>3.530</td>
<td>1.799</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch a Video</td>
<td>36.36%</td>
<td>6.06%</td>
<td>12.12%</td>
<td>16.67%</td>
<td>28.79%</td>
<td>19</td>
<td>2.955</td>
<td>1.696</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send a Photo or</td>
<td>33.33%</td>
<td>9.09%</td>
<td>16.67%</td>
<td>25.76%</td>
<td>15.15%</td>
<td>19</td>
<td>2.803</td>
<td>1.511</td>
</tr>
<tr>
<td>Video</td>
<td>22</td>
<td>6</td>
<td>11</td>
<td>17</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post a Photo or</td>
<td>51.52%</td>
<td>4.55%</td>
<td>9.09%</td>
<td>25.76%</td>
<td>9.09%</td>
<td>66</td>
<td>2.364</td>
<td>1.536</td>
</tr>
<tr>
<td>Video Online</td>
<td>34</td>
<td>3</td>
<td>6</td>
<td>17</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Social</td>
<td>42.42%</td>
<td>0%</td>
<td>6.06%</td>
<td>4.55%</td>
<td>46.97%</td>
<td>36</td>
<td>3.136</td>
<td>1.913</td>
</tr>
<tr>
<td>Networking Site</td>
<td>28</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Twitter</td>
<td>74.24%</td>
<td>0%</td>
<td>4.55%</td>
<td>6.06%</td>
<td>15.15%</td>
<td>10</td>
<td>1.879</td>
<td>1.554</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online Banking</td>
<td>95.45%</td>
<td>1.52%</td>
<td>0%</td>
<td>1.52%</td>
<td>1.52%</td>
<td>66</td>
<td>1.955</td>
<td>1.143</td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Chat or Call</td>
<td>53.85%</td>
<td>3.08%</td>
<td>10.77%</td>
<td>23.08%</td>
<td>9.23%</td>
<td>65</td>
<td>2.308</td>
<td>1.530</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>2</td>
<td>7</td>
<td>15</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Get Directions,</td>
<td>54.55%</td>
<td>6.06%</td>
<td>30.30%</td>
<td>7.58%</td>
<td>1.52%</td>
<td>66</td>
<td>1.552</td>
<td>1.143</td>
</tr>
<tr>
<td>Etc.</td>
<td>36</td>
<td>4</td>
<td>20</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes. n is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.
Parents have used their cell phones to access a number of functions as shown in Table 20, but as was noted in Table 19, regarding student usage of cell phones to access these functions, there was a wide disparity over the frequency in which these functions were accessed. The highest agreement was that 95 (93.14%) parents indicated that they never use their cell phone to access Twitter. The next closest frequency of use were the 84 respondents (82.35%) who used their cell phone daily to send and receive text messages. There were several functions that more than 50% of the respondents listed that they never used their cell phone to do. It must be pointed out that in Table 16, 40 of 101 respondents indicated that although they have a cell phone, it is a basic cell phone not capable of performing some of the functions on the list. It was also interesting to note that 11 of the 16 respondents listed functions had a mean between 2 and 3, which indicated usage between once a year and once a month. There were actually 9 of the 16 respondents that fit in the 2 and 2.5 mean, which pushed the frequency closer to once a year. There were only 3 of the 16 functions with a mean greater than 3, which indicated more frequent use or less than 2 (2 of the 16), which indicated that the cell phone has never been used for the function or was used less frequently than once a year. When reviewing the standard deviation of the functions, the highest, 1.934, was for those who used their phone to send and receive email. There were 48 respondents who never used their phone for this purpose and 44 who used their phone to receive email on a daily basis. Hence, in viewing the standard deviations, there was a large disparity over the frequency in which parents used cell phones to carry out the listed functions.

It was quite possible that access to the Internet may be carried out more frequently on a cell phone than another device. There may be another device being used more frequently than a cell phone, or they could both be used equally to access the Internet.
Table 20

*Parent Usage of Cell Phones to Perform Selected Functions*

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send/Receive Email</td>
<td>47.52%</td>
<td>0%</td>
<td>2.97%</td>
<td>5.94%</td>
<td>43.56%</td>
<td>101</td>
<td>2.98</td>
<td>1.934</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send/Receive Texts</td>
<td>2.94%</td>
<td>0.98%</td>
<td>1.96%</td>
<td>11.76%</td>
<td>82.35%</td>
<td></td>
<td>4.6961</td>
<td>0.8180</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take a Picture</td>
<td>5.88%</td>
<td>4.90%</td>
<td>24.51%</td>
<td>38.24%</td>
<td>26.47%</td>
<td>102</td>
<td>3.745</td>
<td>1.087</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>5</td>
<td>25</td>
<td>39</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play Music</td>
<td>53.47%</td>
<td>4.95%</td>
<td>4.95%</td>
<td>13.86%</td>
<td>22.77%</td>
<td>101</td>
<td>2.475</td>
<td>1.730</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>5</td>
<td>5</td>
<td>14</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Download an App.</td>
<td>45.10%</td>
<td>4.90%</td>
<td>27.45%</td>
<td>17.65%</td>
<td>4.90%</td>
<td>102</td>
<td>2.324</td>
<td>1.336</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>5</td>
<td>28</td>
<td>18</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record a Video</td>
<td>46.53%</td>
<td>12.87%</td>
<td>28.71%</td>
<td>10.89%</td>
<td>0.99%</td>
<td>101</td>
<td>2.069</td>
<td>1.134</td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>13</td>
<td>29</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play a Game</td>
<td>54.46%</td>
<td>5.94%</td>
<td>5.94%</td>
<td>11.88%</td>
<td>21.78%</td>
<td>101</td>
<td>2.406</td>
<td>1.704</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access the Internet</td>
<td>35.29%</td>
<td>1.96%</td>
<td>4.90%</td>
<td>8.82%</td>
<td>49.02%</td>
<td>102</td>
<td>3.343</td>
<td>1.843</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch a Video</td>
<td>54.46%</td>
<td>9.90%</td>
<td>17.82%</td>
<td>10.89%</td>
<td>6.93%</td>
<td>101</td>
<td>2.059</td>
<td>1.340</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>10</td>
<td>18</td>
<td>11</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send a Photo or Video</td>
<td>29.41%</td>
<td>10.78%</td>
<td>22.55%</td>
<td>26.47%</td>
<td>10.78%</td>
<td>102</td>
<td>2.784</td>
<td>1.398</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>11</td>
<td>23</td>
<td>27</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post a Photo or Video</td>
<td>53.92%</td>
<td>8.82%</td>
<td>18.62%</td>
<td>14.71%</td>
<td>3.92%</td>
<td>102</td>
<td>2.059</td>
<td>1.296</td>
</tr>
<tr>
<td>Online</td>
<td>55</td>
<td>9</td>
<td>19</td>
<td>15</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Social Networking Site</td>
<td>58.44%</td>
<td>2.97%</td>
<td>5.94%</td>
<td>8.91%</td>
<td>25.74%</td>
<td>101</td>
<td>2.446</td>
<td>1.769</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 21 indicates a breakdown of the respondents’ preferences in accessing the Internet.

Table 21 Preference of How to Access the Internet

<table>
<thead>
<tr>
<th>Group</th>
<th>Response Percentage</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell phone</td>
<td>31.88%</td>
<td>22</td>
</tr>
<tr>
<td>Other Device</td>
<td>43.48%</td>
<td>30</td>
</tr>
<tr>
<td>Both equally</td>
<td>24.64%</td>
<td>17</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell phone</td>
<td>19.61%</td>
<td>20</td>
</tr>
<tr>
<td>Other Device</td>
<td>59.80%</td>
<td>61</td>
</tr>
<tr>
<td>Both equally</td>
<td>20.59%</td>
<td>21</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>102</td>
</tr>
</tbody>
</table>

Notes. n is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

As shown in Table 21, while both students and parents have utilized another device more often than a cell phone to access the Internet, more parents (59.80%) preferred this means of access than students (43.48%). Conversely, more students (31.88%) than parents (19.61%) preferred to use their cell phone to access the Internet. The nearest students and parents were in
terms of preference was to use a cell phone and other devices equally, as 24.64% of students chose this option and 20.59% of parents chose the option.

Tables 17 through 20 have shown how students and parents utilize cell phones and computers for various functions, and which method of use is preferred; however, to more completely address the question of usage of technology it also was necessary to look at how students used these technologies at school, and how prepared they were to utilize the technologies appropriately.

Several Likert scales were included in Table 22 to show the perceptions of students, parents, and teachers on various questions regarding Internet usage and knowledge.
Table 22

Students, Parents, and Teachers Perceptions Relating to Teens and the Internet

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teens waste a lot of time online when they could be doing more important things.</td>
<td>Student</td>
<td>2.60%</td>
<td>10.39%</td>
<td>24.68%</td>
<td>50.65%</td>
<td>11.69%</td>
<td>77</td>
<td>3.584</td>
<td>0.923</td>
</tr>
<tr>
<td></td>
<td>Parent</td>
<td>0.97%</td>
<td>4.85%</td>
<td>22.33%</td>
<td>55.34%</td>
<td>16.50%</td>
<td>103</td>
<td>3.8155</td>
<td>0.801</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>0.0%</td>
<td>3.85%</td>
<td>11.54%</td>
<td>53.85%</td>
<td>30.77%</td>
<td>9</td>
<td>4.115</td>
<td>0.766</td>
</tr>
<tr>
<td>The Internet helps teens do better in school.</td>
<td>Student</td>
<td>1.20%</td>
<td>3.61%</td>
<td>44.58%</td>
<td>33.73%</td>
<td>16.87%</td>
<td>83</td>
<td>3.6145</td>
<td>0.853</td>
</tr>
<tr>
<td></td>
<td>Parent</td>
<td>0%</td>
<td>2.94%</td>
<td>28.43%</td>
<td>56.86%</td>
<td>11.76%</td>
<td>102</td>
<td>3.7745</td>
<td>0.688</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>0%</td>
<td>0%</td>
<td>20%</td>
<td>68%</td>
<td>12%</td>
<td>25</td>
<td>3.92</td>
<td>0.572</td>
</tr>
<tr>
<td>I know more about using the Internet than at least one of my parents.</td>
<td>Student</td>
<td>1.20%</td>
<td>13.25%</td>
<td>4.82%</td>
<td>42.17%</td>
<td>38.55%</td>
<td>83</td>
<td>4.036</td>
<td>1.041</td>
</tr>
<tr>
<td>I know more about using the Internet than my child in 6-12th grade does.</td>
<td>Parent</td>
<td>22.55%</td>
<td>37.25%</td>
<td>24.51%</td>
<td>14.71%</td>
<td>0.98%</td>
<td>102</td>
<td>2.343</td>
<td>1.020</td>
</tr>
<tr>
<td>Many teens use the Internet to cheat on their schoolwork.</td>
<td>Student</td>
<td>1.20%</td>
<td>42.17%</td>
<td>31.33%</td>
<td>21.69%</td>
<td>3.61%</td>
<td>83</td>
<td>2.8434</td>
<td>0.903</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>0%</td>
<td>7.69%</td>
<td>34.62%</td>
<td>57.69%</td>
<td>0%</td>
<td>26</td>
<td>3.5</td>
<td>0.648</td>
</tr>
</tbody>
</table>

Notes. 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree.
n is not constant, as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

Well over 50% of each of the three groups agreed or strongly agreed that teens waste a lot of time online when they could be doing other things. Only 17 of the 226 respondents to this question disagreed or strongly disagreed with the statement. Teachers had the highest percentage of agreement followed by parents and then students, and there were no teachers who strongly disagreed with the statement.

The second statement in Table 22 stated that the Internet helps teens do better in school, yet the teens are the ones who were most neutral (44.58%), while parents who agreed (56.86%) and strongly agreed (11.76%) were second to teachers who agreed (68%) or strongly agreed...
There were four students who disagreed or strongly disagreed with the statement, but only three parents and no teachers selected these options.

The third and fourth statements related to the same idea, but were worded such that the respondent was comparing their own knowledge of the Internet to that of their parent or child, depending on the respondent. While the question was worded differently, the results were actually very similar. Almost 81% (80.72%) of the students indicated that they knew more than their parents, and 59.75% of parents disagreed or strongly disagreed that they knew more about the Internet than their child in Grades 6 – 12. By students agreeing with their statement and parents disagreeing with the statement they were given, it pointed to the fact that students know more about the Internet than their parents do at this point in their lives.

The last statement included in Table 22—Many teens use the Internet to cheat on their schoolwork—was asked only of students and teachers. It had the largest difference in perception of any of the statements presented to the three groups. Regarding this statement, 42.17% of the students disagreed with it, while the teachers were in a mirror opposite with 57.69% agreeing with the statement. The only area where the respondents were close in their response to this statement was that 31.33% of the students were neutral on the statement, and 34.62% of the teachers were neutral.

Technology and Internet usage in school was best addressed after examining how teachers indicated that they utilized these technologies in the school, and how they expected students to utilize these technologies. Table 23 shows how the teacher respondents indicated that they use these technologies.
Table 23

*Teacher Utilization of Computer and Internet Technologies*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using digital tools &amp; resources for instructional purposes</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>29.63%</td>
<td>18.52%</td>
<td>51.85%</td>
<td></td>
<td>27</td>
<td>5.22</td>
</tr>
<tr>
<td>Have students use digital tools and resources</td>
<td>0%</td>
<td>0%</td>
<td>29.63%</td>
<td>40.74%</td>
<td>3.70%</td>
<td>25.93%</td>
<td></td>
<td>27</td>
<td>4.259</td>
</tr>
<tr>
<td>For students to create web-based/multi-media presentations</td>
<td>11.54%</td>
<td>3.85%</td>
<td>19.23%</td>
<td>38.46%</td>
<td>23.08%</td>
<td>3.85%</td>
<td></td>
<td>26</td>
<td>3.692</td>
</tr>
<tr>
<td>Assign web-based projects that emphasize complex thinking strategies</td>
<td>14.81%</td>
<td>14.81%</td>
<td>44.44%</td>
<td>11.11%</td>
<td>11.11%</td>
<td>3.70%</td>
<td></td>
<td>27</td>
<td>3.0</td>
</tr>
<tr>
<td>Use Digital tools and resources to promote student creativity and innovative thinking</td>
<td>0%</td>
<td>11.11%</td>
<td>22.22%</td>
<td>37.04%</td>
<td>11.11%</td>
<td>18.52%</td>
<td></td>
<td>27</td>
<td>4.037</td>
</tr>
<tr>
<td>Promote, monitor and model ethical use of digital information and technology</td>
<td>0%</td>
<td>24%</td>
<td>20%</td>
<td>12%</td>
<td>20%</td>
<td>24%</td>
<td></td>
<td>25</td>
<td>4.0</td>
</tr>
<tr>
<td>Use different media and formats to communicate with students, parents and peers</td>
<td>4%</td>
<td>8%</td>
<td>24%</td>
<td>12%</td>
<td>20%</td>
<td>32%</td>
<td></td>
<td>25</td>
<td>4.320</td>
</tr>
<tr>
<td>Model and facilitate effective use of current and emerging digital tools</td>
<td>13.04%</td>
<td>26.09%</td>
<td>26.09%</td>
<td>21.74%</td>
<td>8.70%</td>
<td>4.35%</td>
<td></td>
<td>23</td>
<td>3.0</td>
</tr>
<tr>
<td>Primarily use digital tools to access Internet, grade student work</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>3.70%</td>
<td>3.70%</td>
<td>92.59%</td>
<td></td>
<td>25</td>
<td>5.889</td>
</tr>
<tr>
<td>Students use the digital tools to increase content understanding and improve basic skills</td>
<td>0%</td>
<td>7.69%</td>
<td>15.38%</td>
<td>19.23%</td>
<td>34.62%</td>
<td>23.08%</td>
<td></td>
<td>26</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Model the safe and legal use of digital tools and resources when delivering content

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>13</td>
<td>25</td>
<td>5.120</td>
<td>1.130</td>
</tr>
</tbody>
</table>

Instruct students in the “correct and careful” use of digital resources

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.83%</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>4.17%</td>
<td>24</td>
<td>3.458</td>
<td>1.444</td>
<td></td>
</tr>
</tbody>
</table>

Notes. 1 – Never, 2 – Once a Year, 3 – Once a month, 4 – Weekly, 5 – Daily, 6 – Many times a day. n is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

According to the information provided in Table 23, the majority of teachers have been doing every one of these activities at least once a month in their classroom. The only areas where more than five of the teachers fall into a combination of “Never” and “Once a Year,” as responses were in the areas of assigning web-based projects that emphasize complex thinking skills (8), promote, monitor, and model ethical use of digital information and technology (6), model and facilitate effective use of current and emerging digital tools (9), and instruct students in the “correct and careful” use of digital resources (7). Of particular note was that two of the four areas identified related to ethical and careful use of digital resources, information, and technology, yet only 13 of 25 respondents indicated that they model safe and effective use of digital tools and resources.

Student questionnaires included similar questions regarding how they believed teachers had students utilize digital tools and the Internet. These responses are shown in Table 24.
Table 24

*Student Perceptions of Computer and Internet Technology Usage for School*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am required to create web-based/multi-media presentations.</td>
<td>3.70%</td>
<td>6.17%</td>
<td>20.99%</td>
<td>27.16%</td>
<td>28.40%</td>
<td>13.58%</td>
<td>4.1</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5</td>
<td>17</td>
<td>22</td>
<td>23</td>
<td>11</td>
<td>81</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>I am encouraged to use Digital tools and resources to increase my creativity and innovative thinking.</td>
<td>3.75%</td>
<td>3.75%</td>
<td>20%</td>
<td>17.50%</td>
<td>23.75%</td>
<td>31.25%</td>
<td>4.4</td>
<td>1.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>16</td>
<td>14</td>
<td>19</td>
<td>25</td>
<td>80</td>
<td>75</td>
<td>5</td>
</tr>
<tr>
<td>I use the digital tools to increase content understanding and improve basic skills.</td>
<td>2.47%</td>
<td>6.17%</td>
<td>4.94%</td>
<td>18.52%</td>
<td>25.93%</td>
<td>41.98%</td>
<td>4.8</td>
<td>1.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>15</td>
<td>21</td>
<td>34</td>
<td>52</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>I have been instructed in the “correct and careful” use of digital resources.</td>
<td>2.47%</td>
<td>14.81%</td>
<td>14.81%</td>
<td>14.81%</td>
<td>13.58%</td>
<td>39.51%</td>
<td>4.4</td>
<td>1.59</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>11</td>
<td>32</td>
<td>07</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* 1 – Never, 2 – Once a Year, 3 – Once a month, 4 – Weekly, 5 – Daily, 6 – Many times a day.  

The majority of students believed that each activity was done weekly at a minimum as in each instance, over 50% of the students selected “Weekly,” “Daily,” or “Many Times a Day” regarding the frequency of the activities. The two areas with the most consistent frequency were using digital tools to increase basic content understanding multiple times a day (41.98%) and being instructed in the correct and careful use of digital resources multiple times daily (39.51%). While 39.51% indicated they were instructed multiple times daily in the correct and careful use of digital resources, the remainder of the responses was distributed rather equally across four of the other choices. Students indicated that they were instructed daily in the correct and careful use of digital resources (13.58%); however, only 14.81% of the students selected the weekly, once a month, and once a year options. With four of the six available responses being so close together, it made it difficult to determine how often students really were instructed in this area.
Parents have been certainly less knowledgeable about how their child has utilized digital technologies at school, so they were only asked to respond to three statements. These statements and the responses are shown in Table 25.

Table 25

*Parents Perceptions of Computer and Internet Technologies Usage for School*

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is encouraged to use Digital tools and resources to increase their creativity and innovative thinking.</td>
<td>4.08%</td>
<td>4.08%</td>
<td>14.29%</td>
<td>15.31%</td>
<td>24.49%</td>
<td>37.76%</td>
<td>98</td>
<td>4.653</td>
<td>1.422</td>
</tr>
<tr>
<td>My child has access to digital tools to increase content understanding and improve basic skills.</td>
<td>2.04%</td>
<td>1.02%</td>
<td>6.12%</td>
<td>13.27%</td>
<td>15.31%</td>
<td>62.24%</td>
<td>98</td>
<td>5.255</td>
<td>1.169</td>
</tr>
<tr>
<td>My child has been instructed in the “correct and careful” use of digital resources.</td>
<td>4.04%</td>
<td>12.12%</td>
<td>9.09%</td>
<td>22.22%</td>
<td>19.19%</td>
<td>33.33%</td>
<td>99</td>
<td>4.404</td>
<td>1.525</td>
</tr>
</tbody>
</table>

*Note.* 1 – Never, 2 – Once a Year, 3 – Once a month, 4 – Weekly, 5 – Daily, 6 – Many times a day. *n* is not constant as not all respondents answered all questions. Each response shows both the percentage and number of responses for each item.

Although parents are not in the school, it was important to learn about their perceptions of how digital technologies have been utilized in school. Table 25 also shows that the majority of parents believed that the identified activities have been happening at least weekly. In fact, there were only two areas where more than 10% of parents indicated a frequency less than weekly. With regard to students being encouraged to use digital tools and resources to increase their creativity and innovative thinking, 14.29% of parents believed this to be happening once a month. The second area was students being instructed in the correct and careful use of digital resources, and 12.12% of parents believed this to be happening once per year.
Qualitative Findings

A brief description of the individual’s demographics and some of their statements about computers and Internet technologies was included to provide background on the twelve individuals who were interviewed, who were four students, four parents, and four teachers. As all interviewees were assured anonymity, they were referred to by letter rather than by name. All demographic information and general overviews of the individual were discussed in the interviews. Each interviewee was asked the same basic questions; however, the answer to one question would take the conversation in an entirely different direction before returning to the listed questions. Each interview lasted between eight and fifteen minutes and was recorded and transcribed. The only specific organization to the presentation of information of the interviewees was that the interview vignettes were grouped by the role of the interviewee as a student, parent, or teacher.

Student Interviews

Student A was a 14 year-old female in eighth grade who attended the Selinsgrove Area Middle School and resided in Chapman Township, which is located in the southern half of the school district. In her home, she has access to a family computer connected to the Internet through a high speed digital subscriber line (DSL) connection. While she has no limits in using the computer, the computer has been located in the living room so anyone in the family can readily observe the computer screen.

While she has a cell phone that is hers, the basic phone has allowed her to only make calls and text messaging: it cannot be connected to the Internet. Of note was that in her case, while she has had access to a computer and the Internet at home and at school, she also had the experience of utilizing Kindles for projects. When asked if she preferred using a Kindle or a
computer, she said, “Because I think it's more hands on, and you can move the mouse around more, and you have a bigger screen.” When pressed a bit more for a comparison of a computer to a book, she responded her preference was a book because on a computer she could not really see how far she has gone in her reading, which has been a lot easier to do with a book. Her thought about technology in general was that students did not need more technology. “They need to be trained on how to use these technologies in a better way.” She also said, “Because we have three grade levels in the middle school and we have Surfaces, computers, and Kindles, so I think once you learn how to use them you should be set for that device.”

Student B was a 15 year-old female in tenth grade, lived in Selinsgrove Borough, and attended Selinsgrove Area High School. She has had access to a family computer in her home that has been connected to the Internet via a high speed DSL network. The family computer was not located in an area that made it easy to see the screen, and she indicated that someone actually needed to go out of his or her way to see what was on the computer monitor in the home.

While she did not have a personal computer, she possessed a smartphone that was often used. She indicated that one of the functions of the smartphone has been to access the Internet to check grades. When asked if she preferred to use a computer or her phone to check her grades, she reported that her phone has been easier to use because she is on it all the time. She also stated, “I feel if we could use our phones, it would be okay. But people would probably take it the wrong way, and like do things on it. I think with the Kindle that's a good thing. It's easier for us to look up books and stuff that we don't have here.”

While she believed that some teachers have used computers effectively, many have used the computers and projection units more as a blackboard than to really access the capabilities of the technology. In addition to her thoughts about the need to use the technology more
effectively, she also said, “Yeah, I don’t like making PowerPoints. When we have to make those, I don’t really like to do that.” When asked why, she said, “Because it takes work. Then you have to present them in class and I don’t like to do that either.”

Student C was a 16 year-old male living in Selinsgrove Borough and attending tenth grade at the Selinsgrove Area High School. In his home, he has had access to a family computer, but also has had his own desktop computer that has been kept in his room. The computers in the home have been connected to the Internet through a high-speed cable connection. In addition to having his own computer, he also had a smartphone, which has been used to access the Internet for projects or if he needs to look something up when he is away from home.

He believed that access to computers and the Internet has been important and should be easier at school. He said, “I think we need a little bit more. Sometimes when I go to lunch and try to print stuff off, all of the computers are used in the lunchroom, in the library, and then there's class, so like very few are open.” He also believed that one of the best uses for the Internet at school has been to access Google, as it has made searching for information so easy. He has considered himself to be pretty good with computers and the Internet and has sometimes had to help a teacher out which, he admitted made him feel pretty smart when he “knows more than the teacher does about computers and access.” He also felt that some teachers have been really good at using computers and some have been “awful.”

He particularly noted that he has disliked it when teachers use the computer technology to just project something in a Word format that would be similar to writing notes on a blackboard. When asked what could be done to improve technology use in the district, he said:
I don't like really carrying book bags. I think we should have iPads. My mom's school has iPads instead of book bags. I carry like four to five books a day usually, and it's just a lot of weight on my back and sometimes my back hurts. And it would be better if it was on the iPad because you can have kids, everything would pop up because we got, like… there's a new app or something and the T can get things, be on his computer and it could pop up on our screens and it could help us even more. When we were doing projects, we wouldn't need to get our laptops out and waste all of our time logging in and stuff. We can just get on an iPad, do something, and just get in and Google from there.

He concluded that teachers need more training to utilize the technology more effectively.

Student D was an 18 year-old male living in Washington Township, which is in the southern half of the school district. He was a senior at Selinsgrove Area High School, and was also taking a class at Susquehanna University during the regular school day as part of a dual enrollment agreement between the school district and the university. He has had access to a family computer at home with a high-speed cable connection to the Internet. He was able to use the computer at will, and his parents have trusted him in that they have not monitored his computer usage.

In addition to the computer access at home, he also has a smart phone, which has allowed him access to the Internet. He has used both technologies equally depending on his location when he wants to have access to the Internet. When asked about the role computers and Internet technologies play in education his response was, “It plays a pretty big role just because it’s a huge time saver. You can multitask, you can do research as you’re writing a paper and bibliographies at the same time. It’s just a big time saver. You can also finish a lot of
that in school if your teachers allow you the time. It just saves you time both at home and in school.”

He had a profound perspective on the use of computers and the Internet at school. When asked if he had been taught about the ethical and acceptable use of computers and the Internet at school, he responded that he had, but also cited that this has been included in the school handbook as well as the Acceptable Use Policy that students must sign. He followed this thought by saying, “I think the kids that truly want to learn research and do things like that will do it on their own. They're not going to try to play games or anything. But then some kids, obviously, they're not going to be really that productive, and they'll just kind of burn through class time so they'll try to look up games—things like that to do.”

When asked about one to one technology, he indicated that while technology has been great, he preferred to have a tangible book with him so he could bookmark things he wants and would not have to keep scrolling back and forth to find things that he already marked. Also, a book may be taken with him anywhere, which hasn’t been the case with technology, because he has needed to be able to carry it or charge it. At the time of this study, he was enrolled in a computer programming class at Susquehanna University. He informed this researcher he was not using an online textbook, but rather an actual textbook.

**Parent Interviews**

Parent A was 52-year-old male with a child who was in eleventh grade at the high school. He also had an older child, in college, who graduated from the high school three years ago. The family has resided in Monroe Township, which is located in the northern half of the school district. His children have had access to a family computer at home, and both of his children also have had their own computer and smartphone. The parents have not monitored their children’s
computer use at home, but the high school student has had limited access to data usage on the cell phone because of limitations of the cell phone plan. The college student has had a separate data plan due to the way the smartphone has been used when traveling to and from the college, which is four hours away from Selinsgrove.

When asked how his children used computers and the Internet at school, he had no idea and responded that he had not talked much about how they use these technologies for school. He followed that up by saying that at home, he has known that his children have used the computers for research and have done assignments on them, but other than that he was unsure how they used the available technology at school. While he didn’t know how his children used the technologies, he felt that use of computers and access to the Internet was something that was absolutely necessary for a student’s academic success. He followed this up by saying, “Because everything you do—it's ruling everything now. It makes students' lives a lot easier. You don't have to look things up. You don't really have to listen to the lectures if you don't want to. You just go home and type in 1875, what was going on there or something. It's a dangerous thing, but it's also a very valuable thing.”

He also believed that while some teachers seem to use the available technologies well, there are others who are going “old school” and not really using the technology that has been available. His statement about the future use of the Internet was intriguing as he said, “I think 20 years from now, I think it's going to be completely out of this world with the Internet, and I don't know if there's going to be text books, to be honest with you. But I think they'll just have to resource the Internet features.” While he has used the Internet to check on his children’s grades, he has not communicated with teachers through the Internet or email, largely because he didn’t feel a need to communicate with them about his children.
When he was asked if his children had been taught at school about ethical and acceptable use of computers and the Internet, his response was that it probably had happened, but he really didn’t know and hoped they had been instructed in this area. He talked about the topic with his kids, but his opinion was that if parents tell them something, it doesn’t have as much weight or importance as when someone else tells them. He felt that going to a one to one computing approach would be a good idea, particularly for low income students, but added that although schools may provide children with the hardware, if they do not have access to the Internet at home it may not be helpful in the long run. He also noted that there have been some dated technologies still in use and cited the example of giving a student a cassette tape and the student just stared at it and asked what it was, yet it was the only thing the teacher had to make a recording on at the time.

He tempered his ideas of one to one computing a bit with the idea that for all he knew, there was already enough technology available, but teachers just have not known how to use it appropriately or have not had the correct programs to use the available technology to their maximum ability. He also indicated that while computer technologies have provided many positive advantages, there has been no replacement for human contact. He then returned to the thought that computer and Internet technologies also may be dangerous if they are not utilized and monitored appropriately.

Parent B was a 44-year-old female with a child currently in seventh grade in the Selinsgrove Area Middle School. She and her only child lived in Selinsgrove Borough. In the home, the child has had access to a family computer located in a common space, and a personal computer that has been kept in his room. Both computers have high speed access to the Internet through a plan with their cable company. Her child also has a basic personal cell phone that does
not allow access to the Internet. She noted that when she has seen her child on one of the computers at home, it usually has been to play games. One of the technologies that her son has been using recently and seems excited about has been the Kindles at school used to read or to work on projects. She said that she has encouraged the use of a Kindle that they have at home because it has increased her child’s interest in reading. She indicated that her child’s preference has been to use technology to do research rather than to rely on books, and has found that he has been more engaged when using computer technologies.

She has felt that teachers are beginning to use technology better than they had been previously, but was unsure if it was because of the teachers her child had now or if there was simply more technologies available than there had been previously. In listening to other students talk about computers and the Internet at home, she believed most students have Internet access in their homes and has known quite a few parents of her child’s friends who have used various blocking programs to keep their child from going to inappropriate Internet sites. One of her concerns was that the district may be too involved in utilizing the Internet. For example she said, “They used to have a homework hotline and then I went without Internet and I called and said, ‘Can I get his work?’ Then they said I needed to check the Internet. It used to be the teachers got the work together. So I mean, I think they're trying to make it more steadily used, but in today's society, you can't expect that everybody's going to have access to these things at home.” Her caution about the benefits of the Internet was that the district must remember that not all families have Internet access at home.

She also thought that while students all have district emails, many of them either aren’t aware of this fact, they don’t know how to access the emails, may not have the time to check it at school or access to it at home, so, again, accommodations need to be made for these situations.
Her last thoughts were that it is important that all students be instructed in the ethical and appropriate use of computers and the Internet because parents aren’t watching it and many parents aren’t aware what their child is putting on Facebook and other sites. Students need to be knowledgeable that what they put on the Internet and on computers can be found, even if they delete it and they don’t seem to think that is the case. She valued computer and Internet technologies, but also saw the danger in their inappropriate use.

Parent C was a 50-year-old male who had a daughter who was a senior in the high school and a daughter who graduated from the district four years ago. They lived in Penn Township, which is located in the northern half of the school district. The high school senior has had access to a family laptop computer that may be taken anywhere in the house; however, he has trusted that she has not and will not use the computer inappropriately. They have high speed Internet access through a plan with their telephone company. In addition to being able to access the Internet on the computer, the student also has an iPad and a smartphone, which both allow access to the Internet. While both of his children had smartphones, he reported that he had an old flip-style cell phone and has been often heckled for not having a smartphone when his children have them.

He viewed computers and Internet technologies as somewhat important because while there have been plenty of educational tools available, a lot of tests taken and with differences from district to district, the technology may not be relied on all the time. He noted that his child has taken challenging classes and she has mostly used the Internet for research; however, because there are many things that a student needs to learn how to do on their own without relying on the Internet she has also used it for other purposes.
He believed from listening to his child that many teachers have used the available technology more as a high tech blackboard rather than to really tap into the Internet or some of the other capabilities offered by computers. He did not know if his children had ever been given formal training in the correct use of computers and the Internet, and he had not given them any training either. He reported that his basic thought has been that some Internet sites may be useful; however, he did not feel that his children would venture into areas that may be inappropriate. In further discussion, he shared the thought that it has been important that students be trained in the ethical and appropriate use of the Internet, and that they are made aware of the Acceptable Use Policy by the school district so that they are reminded of the “do’s and don’ts of computer and Internet usage.” However, when asked how many students and parents actually read the policy, he estimated it to be about 15%.

In closing, he voiced the opinion, “I kind of feel sometimes teachers use the technology just for the sake of saying they use technology. And my adviser, 100 years ago when I was in college, when personal computers were just coming out, was way ahead of the curve. You use computers to do something that a textbook can't do. And I don't think we do a lot of that. I think that most of the Internet usage is again, something that a book could do. If all textbooks were on computers or tablets that would be fine as it would make carrying things easier, but there would still be textbooks, they would just be on a device rather than in a bound book.” That seemed to be acceptable to him, as the textbook was not being replaced, just being presented in a different format.

Parent D was a 47-year-old female with two children: one in seventh grade in the middle school, and a second child in tenth grade at the high school. The family lived in Penn Township, and both children have had access to a family computer and own their own cell phones. While
there has been no specific monitoring, the computer has been located so that anyone in the
family who walks by it can see what is on the screen. When asked what she believed her
children use the computer for at school her response was, “Use them during class time, Study
Island (a computer program to provide instruction and benchmarking tests in different subject
areas), to prepare for PSSAs, and for research. If it's a computer class, maybe they use it for
word processing. So it's usually tied to what they're doing in their classroom.”

In further discussion, she again returned to the idea of utilizing Study Island being used to
prepare for PSSAs, and she indicated that she felt there was an overemphasis of this particular
program as a means to prepare for state testing. She was also one of the few parents who did not
see computers and Internet technologies as something that was really important to her children’s
academic success. Her reasoning was:

Because I think that their academic success is tied more directly to reading and doing
things, just studying, preparing, but not necessarily… well, the younger one, I would say
that's the case, more just doing the paper pencil work and that practicing. The older one,
though, would need Internet access to do research papers, so then that would help with
their learning. I think it depends upon the grade level that they're at.”

She also indicated that she would not consider herself to be really tech savvy, so that may have
shaped some of her responses.

**Teacher Interviews**

Teacher A was a 42-year-old male who has taught Grades 9 – 12 and has been teaching
in the school district for 16 years. He also lived within the school district and has two children
attending school: one in tenth grade, and one in eighth grade. He was asked to direct his answers
to his role as a teacher and not as a parent with students in the district. It was important to note
that in addition to being a social studies teacher, he was instrumental in the district’s involvement in the *Classrooms for the Future*, a program supported by the state of Pennsylvania to increase technology use by teachers and students for educational purposes. As a result of his involvement as a district coordinator, he has gained some excellent knowledge about computers and Internet technologies as well as having a strong interest in using them appropriately.

He has believed that the use of computers and Internet technology has been very important to being successful in his class. The students have been required to use word processing in doing writing assignments, they have used the Internet to do research, and they have used other media pieces such as videos and video editing as well as using Moodle. His goal has been to have a basically paperless classroom. While he has believed that students have adequate access to computers, his classroom has been an exception, as he has a dedicated computer cart in his room. Due to his interest in computers and Internet technologies, he often has talked to students about access at home. He reported that every year, more students have gained access at home. He indicated that it used to be about 50% of the students who indicated that they had access at home, but he estimated that at the time of this interview, 80% of the students have indicated to him that they have home access to the Internet. He also said:

I'm finding that some of the kids, when they're talking about access, they're actually talking about not only their home computer, but also their phones. And depending whether they're on a 3 or 4G network with their phones, depends on their speeds, so they could range anything from dial-up on their home computer to, 'I got 4G on my cell phone.’ I've had a couple of kids that are in that situation, but I think most of them now are moving to high speed since everybody has cable. And they're seeing that cable now
is becoming a very popular way for getting your Internet as well, so it's all part of the package you can get.

He also reported that some students have indicated that parents are basically hyper monitoring computer use at home, while others have no idea what is going on—especially regarding social media such as Facebook.

While he has believed that computers and the Internet have been very important to student academic success, he also mentioned that there has to be good practice behind their use. “If there isn’t good practice being used, it really isn’t as valuable a tool as it might be.” His thoughts on teacher use of the available technology was that there have been some teachers who use it very well and others who throw out a research topic and then don’t help the students narrow down the information they have found or don’t have the students use the technology or the information appropriately. He believed that when the Classrooms for the Future grant was received in 2007, he was one of the teachers who really embraced the technology and helped others learn about it. And now as more teachers have begun using the available technologies more effectively, he no longer stands out as using computers better or more than many of the other teachers do. He also pointed out that there have been some teachers who continue to resist using technology and use it primarily to do the same thing as a blackboard or a filmstrip projector did years ago.

He has tried to use the idea of a flipped classroom so that students can have anytime learning, but has found that very few students actually embrace it. He said that out of two of his classes (roughly 40 students), only five students actually embraced the idea. Others have used the technology in class, but once they left the classroom nothing happened with it.
Because of his involvement with *Classrooms for the Future*, he has made it a point to teach students about appropriate use of computers and the Internet and has shared some of the things he has found with his colleagues. Some of those colleagues acted as though they were already doing what he was suggesting, but he felt they really were not doing it appropriately and were more or less ignoring the information that he was presenting to them, which he found to be frustrating. About the idea of needing additional technologies, his concern was, “I think whatever the newest, latest thing that's coming out, we always need to look at, we should look at with a grain of salt. Because if we can do the same thing with a current piece of technology and it's going to wind up being cheaper, we can get more units of it and use it effectively.”

His thought was that it has been important to work backward. He explained that once determining what you want your end result to be, you then work backwards from there and ask what tools are needed to make that happen. That process has enabled a more informed decision about which tools are necessary to achieve the desired end product. He furthered this example by talking about the creation of a PowerPoint presentation as an assignment. He suggested that if all a student was doing to create the PowerPoint presentation was going out and finding information online and copying and pasting it into the PowerPoint, they really have not learned anything. There needs to be more practice to incorporate good questions that need to be answered, and to have a set goal that requires better practice and use of the technology available to the students.

Sadly, he believed that if a teacher plans an activity or lesson with computers and Internet technologies and it did not go well the first time, the idea is abandoned. He believed that much may be learned from the failures and ideas should be tweaked. However, he also thought that practice has included knowing whether students need to use computers and the Internet or if they
can learn as much or more in another way. “Sometimes doing something with paper and pencil has been a better learning experience than using computers, and that is where teachers need to know what their end goal is when they develop their lessons,” he said. More than anything, he stressed the need for patience on the part of teachers and students, and to realize that it may be frustrating, but if the learning experience was meaningful, it will be worth it to work through the planning and issues that arise.

Teacher B was a 53-year-old female who taught English to Grades 9 — 12 and has been teaching in the district for 30 years. She lived in the school district and has one child, a senior at the high school. While she insisted that she has not really been well versed in the use of computers and the Internet, she has believed that both have been necessary in her classroom. She also reported that her students have done a lot of research using the computers as well as utilizing Moodle when they can.

Her biggest issue with the use of computers in the school was that they do not always work, and it has been frustrating to plan to use computers and then not have all of them working. Through her discussion with students, she estimated that 85 – 90% of them have had access to a computer and the Internet at home; however, she has been still surprised to learn about a student who does not have this access at home. She also said that about 50% of the students who have access at home have indicated that their parents monitor what they do on the computer. She views the use of computer and Internet technologies as very valuable due to the digital age in which we live.

She continued this with the thought that many students have been more comfortable with a computer than with a textbook. She also believed that as a teacher, the Internet has had a wealth of resources such as education websites and the ability to create quizzes. When asked
whether she has trained students on the appropriate use of these technologies, her answer was curious because her first response was that she had trained students in this manner. However, when asked specifically about whom she has trained, she indicated that it has been generally the lower level students in her classes. As a follow-up to why she would instruct these students and not all students, she responded that the lower level students have tended to be the students who use websites and the computer for more inappropriate things than the other higher level students. She expressed the belief:

I know that there are risks in letting kids take stuff home, but at the same time, I don't think their education should stop at 2:55. I think it should go on. And as long as it's an assignment that can be monitored, such as in Moodle or something like that, if it would be a computer thing, I think that it would be fine. I would like to see that.”

Teacher C was a 42-year-old male who has taught technology education to students in Grades 6– through 8. While he has been teaching for 18 years, Selinsgrove was the third district he has taught in and he has only been at the school for 4 years. He did not live in the school district, but close to it. While he reported that his classes have been referred to as “tech ed.,” in sixth grade, students do robotics; in seventh grade, students do a little bit of graphic design, web design, computer animation, and some digital video; and in eighth grade, students do design and engineering where each student designs a car then they produce it in the shop on a Computer Numerical Control CNC machine. As a result, his classes have definitely required access to computer and Internet technology.

He has believed that student accessibility in the district has been fantastic, and while the district may not have the best in every area, as a total package, it has been one of the best districts in terms of technology. In talking to students, he estimated that 90% of them have had
access to computers and the Internet in their homes, but also reported that he considered that to be a conservative estimate. He expressed that occasionally he has come across a student who has not had access or someone who still has dial up access, but for the most part students have indicated to him they have high speed access to the Internet in their home. Furthermore, he has heard students talking about having smartphones as well as tablets or computers of their own.

In his experience, he has found that students need nearly zero time in learning how to navigate the Internet—“they are good at that.” What they have not seemed to understand has been how to save things such as documents on an internal network, so he has had to help some students with that. He indicated that the use of computers and the Internet have been huge for a student’s academic success and it has been increasing all the time. In discussing where the students are in Selinsgrove relative to technology, he gave the example of being at a conference. He said, “We were sitting with college juniors at Penn State whose heads were spinning when they found out that our kids [chuckles] that our eighth graders are doing engineering projects that they're doing in the college. It gives our kids access to learning that they would never be experiencing.”

When asked about how he thinks other teachers use computers and the Internet for instruction, he responded that he was not really sure how all teachers utilize these resources, but thinks that there are those who choose not to tap into them because they already teach things in a specific way and there are other teachers who are very interested in learning how to use what is available. He did not view this as a difference of age or teaching experience so much as an interest. He has seen some older, experienced teachers who grasp technology and do great things with it.
Due to his own use of computers, he has taught all of his students about the correct use of computers and Internet technologies and refers to it as Netiquette. He stressed that from the moment they log in to a computer until they log out, it is tracked so they need to be sure that they don’t search for anything that would be embarrassing to their mother. He lauded the use of engineering software being used in the district, but said that there is still a need for additional software and training for teachers so that they know how to use the software appropriately. He explained that the caveat to this has been that although teachers may have been trained in this area, there are some who will not use it, but it does not mean you should not provide the training. Another area where he felt the district was lacking was in digital video. That was one area where he felt he took a step back from his previous district.

After pointing out these two areas, he was asked about the need for one to one computing. His response was, “I don’t know that I agree with that, at all, so, if I poll our kids and say, how many of you guys have an Internet connected device, 95% of them—probably more —have their hand up. Why are we going to buy something else that they already have?”

Teacher D was a 59-year-old male who has taught technology education to Grades 9 –12 at the high school. He has been teaching in the district for 17 years but did not live in it. His subject area has been one that has absolutely required the use of computers and the Internet. He indicated that students have had access to computers and the Internet while at school, but it largely has been when teachers want students to access these technologies. He estimated that about 75% of students have access to computers and the Internet at home, but believed that access has been better at school than at home. In what he has heard from students, many have high speed access, but many who still have a dial-up connection at home.
He indicated that computers and the Internet have been very important to a student’s academic success because, “without it, I think we're just not... we won't be keeping up with the world if they cannot access the Internet and use all the possibilities that the Internet offers to us.” He was taking a class and said, “The course is designed to encourage school districts and states and the country, in fact, to get on board and get mobile devices into every student's hand. I’d like to believe that we're getting there, but I don't see that happening in this district for a while. It's a lot of money.”

He thought that if every student had a mobile device it would allow the classroom to extend beyond the walls of the school and enable students to continue to work at home and enable parents to see what their child is actually doing. Although he has been a technology education teacher, he mentioned that he did not train students on how to use computers and the Internet appropriately. His feeling was that students seem to be getting it somewhere. He felt his role should be more to enforce it or reinforce proper computer usage because students have been using these technologies long before they get to the high school. While the district has required that an Acceptable Use Policy be signed prior to students being able to access computers and the Internet, he does not believe that most students or parents take the time to read the document before they sign it.

He has allowed students to use their personal phones to download pictures for his Adobe Photo Digital class, as their phones often take better photographs than the school owned digital cameras. As a result, he posited that it would be beneficial to allow students to use their own phones or to have iPads available for students if the district doesn’t go to a one to one computing. That way, if students have a better device than the school provides, they can use their own. One of his frustrations with the availability of technology in the district has been that
there has been a lot of information that the school district’s filtering program blocks. His view was that teachers should be trusted a bit more to determine what is and is not appropriate for students to see or use.

**Results of Qualitative Data Obtained through Interviews**

Interviews were conducted with four students, four parents, and four teachers to provide qualitative data to compare to the quantitative data acquired through the questionnaires. The interviews were conducted in a face to face setting to facilitate discussion of the various questions. In each case, the student, parent, and teacher was associated with one of the grade levels between sixth and twelfth grade. In the case of the student, the association was the grade they were enrolled in at the time of this study, and for parents it was the grade level of their child. In the case of the teachers, it was a grade range, since the teachers interviewed were not assigned to a specific grade level.

The questions for each group were either identical or had a slight alteration made to align with their association to the school. An example of this was students being asked if they had ever been instructed in the correct and ethical use of computers, while parents and teachers were asked if they had ever instructed the child/student in the correct and ethical use of computers. There was one question that was asked of students and parents that was not asked of teachers. This was question 3, which was about the student’s use of the computer and Internet in their own home. While both students and parents could answer this question appropriately, a teacher could not answer it effectively. Because of the similarities in both questions and responses for the bulk of the questions, the results are shown in one table, Table 26. Column 1 is an abbreviated form of the question that was asked, column 2 identifies responses received, and the remaining columns break down the responses by student, parent, and teacher as well as a total response
column. By showing the information in this manner it was more understandable and also showed that in most cases, there were very similar responses across the three groups.

The interview responses were coded based on three basic themes: access to computer technology and the Internet, use of computer technology and the Internet, and effectiveness of utilization of computer technologies and the Internet. The first three questions in the interview generally addressed the theme of access, while the fourth, fifth, and ninth questions generally addressed the theme of utilization. Questions six, seven, and eight dealt with effective use by students and teachers. It was important to note that in the course of the interviews, an individual’s answer to a question fell into more than one of the three identified themes that were utilized in the coding process.

The first question asked regarding computer and Internet access in the schools showed the similarity of responses across groups. In each grouping, the majority of respondents felt that computer and Internet access at the Selinsgrove Area Middle School and Selinsgrove Area High School was good rather than very good, but no respondents indicated that access was less than good. It reviewing the interviews, it appeared that some respondents described access as good largely because teachers have generally controlled the access, and student access on their own was limited due to time constraints or availability.

The second question asked respondents to identify who determined when students can have access to computers. As previously stated, teachers have generally controlled the access, although in both buildings, access has been available to students on a limited basis before school or during lunch periods. Some teachers also have allowed students to use computers in their classroom if the student has finished other work and computers are available. Since neither
building had study hall periods, student access has been further limited by available time. One person in each of the groups felt that student-determined access should be increased.

All students and parents indicated that students have access to at least one computer and the Internet at home. The difference between answers was the level of monitoring done by the parents. In some instances, there was no monitoring of computer use while in others, monitoring consisted simply of having the computer in one of the common areas of the home so that parents could walk by and see what was on the computer screen.

Nine of the twelve interviewees believed that over 50% of students had access to computers and the Internet in their home. The estimations for accessibility at home ranged from over 50% to 90% of students having access. Again, the only real variation was in whether parents monitored access, and most individuals who were interviewed really had no clue how much monitoring of access went on in other people’s homes.

Interviewees were asked how students used computers and the Internet in school and at home. The responses are listed in Table 26 in descending order from most often received response to least mentioned use.
**Table 26**

**Interview Responses**

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>S</th>
<th>p</th>
<th>t</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you describe access to computers and the Internet at school?</td>
<td>Very Good</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Using this description, what access do you believe students currently have at school?</td>
<td>Teachers determine when to access</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Students can access on their own</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Should increase ability for student to determine access</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>How would you describe your access to computers and the Internet at home?</td>
<td>Have access at home monitored by parents</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have access at home but not closely monitored</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What kind of access do you believe most students have at home?</td>
<td>Over 50% have computers and Internet access</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Parents monitor access</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Parents don’t monitor access</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Some depending on the parent</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>How do you/students use the computers or Internet at school?</td>
<td>Research</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Creating PowerPoints</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Creating Projects</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Word Processing</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Check grades</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Playing games</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Webquests</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Social Media</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>How valuable are computers and the Internet to your/student academic success?</td>
<td>Absolutely necessary</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Very important</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Important</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>How effectively do you/teachers use the computers and the Internet to teach?</td>
<td>Very effective</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Effective</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Not as effective as they could be</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>It is getting better</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>How effectively do you/teachers use the computers and Internet to communicate with parents and students?</td>
<td>Not utilized</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>I don’t know</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>At least one teacher uses it well</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>It is getting better</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>How could technology be used better to improve a student’s learning experience?</td>
<td>Provide more training to use what is already available</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Teachers must use what is available in a better way</td>
<td>2</td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Flipped classroom</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Have you ever been trained/trained students on the appropriate and ethical use of the Internet?</td>
<td>At school – yes</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>At school – no</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>At school – I don’t know</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>At home – yes</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>At home – no</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rely on the Acceptable Use Policy for parameters</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
The most often cited use for computers and the Internet was for research with nine respondent, which was followed by creating PowerPoints, with seven respondents, and creating projects by five respondents. These responses may have resulted in some confusion, as there were some individuals who considered a PowerPoint to be a project and vice versa. However, it should be noted that at least two students cited both as separate uses for computers and the Internet, thus these two options were identified as different uses. Word processing and to check grades each had four mentions. For clarity, it should be noted that the school district has utilized a program that allows both parents and students to check a student’s grades via the Internet whenever it is convenient. Playing games was mentioned three times while webquests and social media were each mentioned twice. It was important to note that no matter the response given, even with only two people giving the same response, more than one group provided the response, again indicating the crossover from one group to another regarding student computer and Internet usage.
Similar to the question regarding access to computer in the schools being identified as good or very good, when asked how important computers and the Internet are to a student’s education, all those interviewed had similar responses. At the least, these technologies were considered important to three of the interviewees, and seven viewed them as very important. One person indicated that these technologies were absolutely necessary.

When asked how effective teachers were in the use of the technologies, there was a bit more disparity in the responses received. While two interviewees viewed teachers as very effective and three viewed them as effective in the use of the computer and Internet in instruction, five felt that the instruction by the teachers could be better. Two people were a bit kinder in their response and said that they thought instruction was becoming more effective, but they were unable to give specific explanations of this perspective.

The question with the least response was how well teachers use the computer and the Internet to communicate with students and parents. As was seen in Table 26, there were only eight responses, which indicated that of all the individuals interviewed, there were several who really had no response to the question, as they really didn’t know how often or effectively teachers used it.

When asked how technology could better be used to improve a student’s learning experience, it was a nearly an even split between using the technology already in the district in a better way with six responses, and providing more training to the teachers so that they know how to use the technology that is available, which generated five responses. While these answers may seem to be implying the same thing, what was explained in interviews was that in many instances, teachers have used some of the available technologies as a glorified blackboard rather than to tap into some of the other options that have been available. It was the view of a few
individuals that the teachers needed the training to know how to do this, while others felt that teachers knew how to use some of the technologies differently, but they just chose not to do so. One teacher respondent advocated the use of a flipped classroom. A flipped classroom is set up so that the students may review discussions, PowerPoints, etc. at home in the evening so that when they come in during the next day they have the information already presented to them and the classroom time is then used to work in groups, do writings, work on problems, and other things that traditionally would have been given as homework. The teacher is available to facilitate and answer question as the students do this work in the classroom. This has been a rather new concept to the respondents, which would likely account for only one person suggesting this as a way for teachers to be more effective in their use of computers and Internet technologies.

When asked about whether students had been trained on appropriate and acceptable use of computers and the Internet or if the parents or teachers had trained students, the responses were intriguing as most students indicated they were not trained at school or at home, parents were not sure if the teachers trained students and they didn’t train their student at home, and only three of the four teachers said they trained the students at school. One person from each group believed that the training came through the Acceptable Use Policy, but even those who cited this as a form of training believed that most people never read the policy and just have signed it.

The question regarding additional technologies that should be available in the district to benefit the students’ education was listed in descending order from the most often given response to the lest given response, with the exception of responses given regarding one to one computing, where every student would have individual access to some type of computer or tablet. These responses were grouped together at the bottom of the section for easier comparison. The most
often cited item that respondents felt should be available to students was Kindles, as noted by six of them. This was followed by a tie between iPads and the use of personal phones with each being mentioned three times. Two individuals identified additional software as a means of improving students’ education. Regarding one to one computing, there was no agreement in responses. Four individuals said it should be a goal, two felt it wasn’t necessary largely due to what was currently available in homes and at school, and one individual mentioned the idea of one to one computing, but wasn’t really sure if it was needed in the district or not.

When asked what else should be known about computers and Internet technologies in the district, there were limited responses—particularly from students. The three responses that were each mentioned twice included the need to make sure students were taught the acceptable and appropriate use of computers and the Internet, the possibility of having textbooks on Kindles or iPads, and the need to unblock parts of the Internet for teachers. Of particular note was that only parents thought it was necessary for the district to make sure that all students received training in appropriate use of these technologies, and only one parent and one student wanted textbooks on Kindles or iPads. Also, only one parent and one teacher felt that teachers should be trusted more to control access to the Internet and what may be appropriate to be shown in school.

One teacher suggested that the district needed to be aware that the use of technology requires patience and is a process, “not something that you can just throw at people and think they can figure it out,” while another teacher cited issues with the infrastructure and frustration with computers that “don’t work consistently.” This researcher would suggest that the idea of patience could be applied to frustration with the infrastructure, but both individuals have valid points that needed to be mentioned.
Data Analysis

As previously explained, the purpose of the first section of this chapter was to present in a statistical format the responses received through questionnaires anonymously distributed to three different groups within the school district, as well as to provide additional responses obtained through individual interviews with representatives of each of the aforementioned groups. The second section of the chapter provides an analysis of the previously presented information and how it addressed the overall question of identifying the perceptions of parents, students, and teachers about accessibility and utilization of computer and Internet technology in the school district. To facilitate the analysis of this overall question, the results were broken down to individually address each of the three sub-questions that were identified:

1. How do parents, students and teachers describe how technology is being used in the school district?
2. What components of digital equity are found to exist within the district and community?
3. What is the relationship between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology outside of school?

As the study was also a grounded theory study in part, the resulting theory and how it was derived through the course of the study has been addressed last. By addressing the research questions first, it enabled a better understanding of how the theory was developed through the course of the overall study.
Sub Question 1: How do Parents, Students and Teachers Describe How Technology is Being Used in the School District?

The first question was to identify how parents, students, and teachers described how technology has been used in the school district. It was important to note that this referred not only to how technology has been used while at school and for school, but also how students—who have lived in the school district—have utilized computers and Internet technology at school and when not at school, as well as how parents might use the same technology. Table 18 showed how students have utilized computers to perform selected functions, while Table 19 represented how parents use technology to perform the same functions. Appendix J provides a comparison of frequency of utilization of each function by parents and students. For ease of comparison, the specific numbers of respondents has been removed and only the percentage of respondents has been included for each function. For specific numbers of responses, Table 18 provides information on student responses and Table 19 for parent response.

There have been a few functions that both parents and students perform equally as often such as using social networking, shown in Figure 4, with daily access being noted by 46.05% of the students and 48.04% of the parents.
Figure 4. Use of computers for social networking.

As shown in Figure 5, using a search engine was also a daily occurrence for 67.09% of students and 66.34% of parents.

Figure 5. Use of a computer to access a search engine.
On the other end of the spectrum, there were significant differences in how often parents and students have utilized computers to perform other functions. Figure 6 shows that while over half of the parents indicated using computers to do online banking daily (22.55%) or once a week (38.24%), 93.83% of students indicated that they never used computers to do online banking.

![Figure 6](image)

*Figure 6. Use of computers for banking.*

Due to the age of some of the students, it was quite possible that they did not utilize this function because they did not have a bank account or did not have online access to it. Another large discrepancy was seen in the frequency of checking email. Figure 7 indicates that over 75% of parents indicated that they have used their computer to send and receive email daily, while only 23.08% of students send and receive email on a daily basis.
Again, this could have been a result of the age of the students or that many parents had jobs that required regular use of email. Parents have used computers more often than students to buy a product online, and students have used computers more often than parents to play music and to play games.

The idea of students using computers more often than parents to play games was further supported in Table 26 when overwhelmingly every group of questionnaire respondents agreed or strongly agreed that teens waste a lot of time online when they could be doing more important things. The table indicated that 62.34% of the students agreed or strongly agreed with the statement, 71.84% of the parents agreed or strongly agreed and 84.62% of the teachers agreed or strongly agreed that students waste time online. This was also seen in the comparison table found in Appendix J when one quarter of those interviewed indicated that students use the computers to play games at school.
The comparison of frequency of use for various activities on a computer, is found in Appendix J, while Appendix K shows a similar comparison based on how students and parents utilize cell phones. Again, only percentages are shown and for specific numbers of respondents, and it is necessary to refer to Table 20 for student usage and Table 21 for parent usage.

As shown in Appendix K, the frequency with which students access certain functions on their phones was very similar to the frequency with which they access similar functions on a computer. The same may be said in some instances for the frequency in which parents performed certain functions on their cell phone. An important item to be reminded of when looking at how students and parents utilize cell phones for certain functions is to refer back to Table 16, which shows student ownership of cell phones and the type of cell phone owned, and Table 17, which shows parent ownership and type of cell phones owned.

In the case of students, 15.66% of them did not own a cell phone, and 32.53% indicated that the cell phone that they owned was a basic one that limited the ability to perform some of the selected functions. In the case of parents, every parent who completed the questionnaires indicated that they owned a cell phone. It is important to note that only a random representative sampling of parents completed the questionnaires, thus it should not be assumed that all parents in the district own a cell phone. Of the questionnaire respondents, 39.22% indicated that their phone was a basic cell phone, which limited their access to certain functions. Students have used their cell phones more frequently for entertaining functions such as playing games and listening to music as well as downloading apps, recording or watching videos, to post videos online, and to access social networking sites. While parents have also used their cell phones to perform these types of functions, they have done so with less frequency. The most notable disparity in accessing functions was the frequency with which students access Twitter weekly (6.06%) or
daily (15.15%) as compared to parent access to Twitter weekly (2.94%) or daily (0%). This disparity is readily apparent in Figure 8.

![Use of cell phones to access Twitter](image)

**Figure 8.** Use of cell phones to access Twitter.

According to the responses, 93.1% of parents never used their phone to access Twitter, while only 74.24% of students indicated that they never access Twitter on their cell phone.

As was seen regarding frequency of use for certain functions on the computer, Figure 9 shows parents have used their cell phones more frequently to do online banking either weekly (16.67%) or daily (7.84%), as compared to students who indicated weekly and daily access each being 1.52%.
Figure 9. Use of cell phones for banking.

Again, this could be the result of students not having a bank account or not having Internet access to their account. Another similarity was seen in a comparison of the frequency with which parents and students send and receive email. Figure 10 indicates that parents have a rather even split between those who check email daily (47.56%) with those who never check email on their phone (47.52%), but since 39.22% of parents indicated that they only have a basic cell phone, this would likely impede their ability to utilize their cell phone in this manner. As was the case with students, over half of them never checked email (57.58%), even though only 32.53% indicated owning a basic cell phone.
Most compelling was the areas where parents and students were evenly matched in their frequency of performing functions are in the areas of sending and receiving texts, taking pictures, and sending photos or videos to others. This may be a function of sharing information with family members or friends, or in some instances, it may simply be easier for someone to use their phone to take a picture than to carry a camera with them.

As was shown in Table 22, students have generally preferred to use their cell phones to access the Internet more often than their parents. It was reported by 31.88% of students that they preferred to use a cell phone to access the Internet, while 43.48% preferred using another device. In the case of the parents, only 19.61% of them preferred to use their cell phone, and 59% preferred to use another device to access the Internet.

While there were differences in the frequency in which students and parents have accessed various functions via computers and cell phones, each group used the technology for each of the functions; however, it was just less frequently than the other group. Students may

Figure 10. Use of a cell phone to access email.
have used the technology more often for leisure and entertainment functions compared to parents, but this may simply be a result of parents having different types of responsibilities than their child does at this point in life.

An area that students, parents, and teachers all addressed were perceptions relating to teens and the Internet, which was shown in Table 23. Every group believed that teens wasted a lot of time online when they could be doing more important things, but in each group 50% or more of the respondents agreed or strongly agreed that the Internet helped students do better in school, thus each group believed that access to the Internet was being used appropriately to further a student’s education.

Table 24 identified a few of the exercises that teachers require students to do utilizing computer and Internet technologies. There were several practices that over 50% of teachers indicated that they do daily or many times a day. These included using digital tools and resources for instructional purpose (70.37%), using different media and formats to communicate with students, parents, and peers (52%), primarily using digital tools to access Internet, grading student work (96.29%), having students use the digital tools to increase content understanding and improve basic skills (57.7%), and model the safe and legal use of digital tools and resources when delivering content (72%). However, when this was compared to student responses in Table 25 involving how they have been required to utilize computer and Internet technologies, some disparity existed between the two. While students agreed that they use digital tools to increase content understanding and improve basic skills several times a day or on a daily basis (67.91%), they also believed that they were encouraged on a daily basis or several times a day to use digital tools and resources to increase their creativity and innovative thinking. Yet only 29.63% of teachers believed that this was done several times a day or on a daily basis. As can be
seen in Table 26, parents have an optimistic view of their child’s access to digital tools to increase content understanding and improve basic skills several times a day or on a daily basis (77.55%) as compared to the 57.7% indicated by teachers. Parents also believed that their child has been encouraged to use digital tools and resources to increase their creativity and innovative thinking several times a day or on a daily basis (62.25%). So, while teachers, students, and parents may agree with how the technology has been used, the frequency of use for a particular purpose has not been necessarily in agreement. When comparing interview responses to these results, again, there was some disparity in how technology was being used. While Table 24, Table 25 and Table 26 indicated that many conditions occur several times a day or on a daily basis, most of those interviewed indicated that research was the primary use for computers and the Internet, and creating PowerPoints was a close second. Only two people interviewed indicated that teachers were very effective in the use of computers and the Internet, and almost half of those interviewed (five) believed that teachers were not using these technologies as effectively as they could be.

This all has indicated that while there has been much agreement with what computer and Internet technologies are being used for within the school district, there has not been a consistent perspective on how often these technologies are utilized. Students and parents have appeared to be more optimistic about how and how often computer and Internet technologies have been utilized by teachers.

**Sub Question 2 What Components of Digital Equity are found to Exist Within the District and Community?**

The second research question was to identify the components in the district that would have an impact on digital equity or the lack of digital equity. Some of the factors that were often
cited as issues in digital equity were age, gender, sex, and race. As was shown in Table 7, there was a relatively equal number of male and female respondents to the questionnaire. Middle school and high school grade levels were relatively equally represented, as were the townships and boroughs after Shamokin Dam Borough was combined with Monroe Township. The greatest disparity was seen in race and family income. Only 3 students responded to being Hispanic with 80 responding as being White, Non-Hispanic. As to family income, 16.25% were in the range of less than $30,000 per year, while over 32% were in a range exceeding $75,000 per year. However, based on the demographic overview of the school district, the races represented were rather accurate in terms of the number of minorities in the district. Income was not as accurate a reflection of the district, since over 30% of the student body has been eligible to receive free or reduced price lunches under federal guidelines. A similar pattern was observed in Table 8, which showed parent responses to the questionnaires. The only major difference in the parent questionnaire responses was that females (82.35%) far outnumbered males (17.65%). This may simply have been due to more mothers than fathers completing school paperwork. Due to the similarities in many of the factors that were traditionally used to look at digital equity, the most efficient way to examine it was to refer to the tables that reflected who reportedly owned what gadgets, and what type of Internet connection they have had in their home.

Table 27 provides a side by side comparison of what students indicate their family owns, what parents indicated the family owns, and what students own personally.
Table 27

Comparison of Gadgets Owned by Families and Students

<table>
<thead>
<tr>
<th>Item</th>
<th>Student Response</th>
<th>Parent Response</th>
<th>Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family Owned</td>
<td>Family Owned</td>
<td>Personally owned</td>
</tr>
<tr>
<td>Cell phone</td>
<td>95.06%</td>
<td>100%</td>
<td>85.90%</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>67.90%</td>
<td>70.59%</td>
<td>15.38%</td>
</tr>
<tr>
<td>Laptop Computer</td>
<td>82.72%</td>
<td>80.39%</td>
<td>57.69%</td>
</tr>
<tr>
<td>MP3 Player</td>
<td>75.31%</td>
<td>50.98%</td>
<td>67.95%</td>
</tr>
<tr>
<td>Game Console</td>
<td>82.72%</td>
<td>67.65%</td>
<td>65.38%</td>
</tr>
<tr>
<td>E-Book Reader</td>
<td>40.74%</td>
<td>35.29%</td>
<td>19.23%</td>
</tr>
<tr>
<td>Tablet Computer</td>
<td>41.98%</td>
<td>32.35%</td>
<td>16.67%</td>
</tr>
</tbody>
</table>

In reviewing the information in this manner, it was noted that over 75% of families and individual students own a cell phone. The gadgets owned most often by families as well as individual students were laptop computers, game consoles, and MP3 players. While most families owned a desktop computer, relatively few students personally owned one (15.38%). The only gadgets that fewer than 50% of families owned were e-book readers and tablet computers. However, it was interesting to note that when a student indicated that a family owned either of these gadgets, nearly half the time it was owned by the student. It was clear according to student respondents that a majority of families owned all of the identified gadgets except e-book readers and tablet computers. Thus, it was necessary to examine whether there were any factors that determined whether a family did or did not own those items.

An analysis of variance (ANOVA) was used to ascertain if income, location, or age were factors that would determine if a family did or did not own the three most commonly owned technological gadgets: cell phone, laptop, and game console. In addition, the least often owned item, an e-book reader, was tested to determine if one of those factors would influence if a family would have one of the less often owned gadgets. The results of the ANOVA are shown in Table 28.
As observed in Table 28, the $p$ values for most gadgets and identified factors were well above the $p = .05$ range, which indicated little difference between the groups. A family’s income or location or a student’s age had little impact on whether a family owned any of the technological gadgets.

Based on parent responses, the most commonly owned technological gadgets in a family were cell phones, laptop computers, and desktop computers. As can be seen in Table 29, there were factors that influence whether a family would or would not own a cell phone, as all parents indicated the ownership of one. Table 29 also shows that income, location or age have little impact as to whether a family does or does not have access to the Internet. Again, similar to what was observed with the students, the $p$ values were generally significantly larger than .05, which indicated that none of these factors influenced if a family did or did not own the most or least popular technological gadgets. The only test where $p$ was less than .05 was the ownership of a tablet based on location.
Table 29

ANOVA Results for Parent Responses of Family Ownership of Select Technological Gadgets Influenced by Income, Location, or Age

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Phone</td>
<td>4</td>
<td>0.0000</td>
<td>0.0000</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Laptop</td>
<td>4</td>
<td>2.049</td>
<td>0.512</td>
<td>3.54</td>
<td>0.10</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>4</td>
<td>0.707</td>
<td>0.177</td>
<td>0.84</td>
<td>0.505</td>
</tr>
<tr>
<td>Tablet</td>
<td>4</td>
<td>0.820</td>
<td>0.205</td>
<td>0.92</td>
<td>0.453</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Phone</td>
<td>1</td>
<td>0.0000</td>
<td>0.0000</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Laptop</td>
<td>1</td>
<td>0.006</td>
<td>0.006</td>
<td>0.03</td>
<td>0.853</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>1</td>
<td>0.374</td>
<td>0.374</td>
<td>1.80</td>
<td>0.183</td>
</tr>
<tr>
<td>Tablet</td>
<td>1</td>
<td>1.095</td>
<td>1.095</td>
<td>5.16</td>
<td>0.025</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Phone</td>
<td>3</td>
<td>0.0000</td>
<td>0.0000</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Laptop</td>
<td>3</td>
<td>0.945</td>
<td>0.315</td>
<td>2.04</td>
<td>0.113</td>
</tr>
<tr>
<td>Desktop Computer</td>
<td>3</td>
<td>1.076</td>
<td>0.359</td>
<td>1.75</td>
<td>0.162</td>
</tr>
<tr>
<td>Tablet</td>
<td>3</td>
<td>0.296</td>
<td>0.099</td>
<td>0.44</td>
<td>0.725</td>
</tr>
</tbody>
</table>

The results of the interviews also indicated that most students have computers available at home and have Internet access at home or through their phones. Table 14 indicated the interviewees’ beliefs that most students have Internet access at home, as only 3.70% of students indicated that they had no access to the Internet at home and 4.90% of parents indicated that they had no home Internet access. Furthermore, some interviewees indicated that they believed most families had high speed access, and again, this would be correct as only 1.23% of students and 4.90% of parents indicated that they utilized a dial up connection to access the Internet. Also, most families have some type of Internet access in their home, and there was little variation due to outside factors.

While Table 16 indicated that 15.66% of student respondents own no cell phone and 32.53% indicated that their cell phone was a basic one, this was largely offset by students’ ability to access a computer and the Internet from home or at school. It appeared that there was no significant digital inequity in access to computers and the Internet within the district. This was
also true of parent and teacher responses, though teachers underestimated the connectivity of students (See Table 30).

Table 30

**ANOVA Results for Family Internet Access**

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported by Student</td>
<td>3</td>
<td>1.886</td>
<td>0.629</td>
<td>4.38</td>
<td>0.007</td>
</tr>
<tr>
<td>Reported by Parents</td>
<td>4</td>
<td>6.270</td>
<td>1.568</td>
<td>8.83</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported by Student</td>
<td>1</td>
<td>0.375</td>
<td>0.375</td>
<td>2.47</td>
<td>0.120</td>
</tr>
<tr>
<td>Reported by Parents</td>
<td>1</td>
<td>0.337</td>
<td>0.337</td>
<td>1.45</td>
<td>0.231</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported by Student</td>
<td>7</td>
<td>4.800</td>
<td>0.686</td>
<td>6.17</td>
<td>0.000</td>
</tr>
<tr>
<td>Reported by Parents</td>
<td>3</td>
<td>0.048</td>
<td>0.016</td>
<td>0.07</td>
<td>0.978</td>
</tr>
</tbody>
</table>

Sub Question 3. How Does the Teachers’ Knowledge of Student Access at School Compare to Student Access to Technology out of School?

The final sub-question that was asked to determine the relationship between teachers’ knowledge about students access to technology at school compared to the teachers knowledge of student access at outside of school. Table 13 showed the teachers’ viewpoint of how many students have access to digital technologies, Table 15 presented the teacher perceptions of Internet access, and Table 14 revealed the responses from students and parents regarding Internet access. By putting this information together in Table 33 and comparing it with the information in Table 15, it was easy to see that the teachers have greatly underestimated student access to computers and the Internet. Table 28 showed that over 80% of families owned a laptop computer, and over 60% of families owned a desktop computer. It is quite possible that a family would own either a desktop computer or a laptop computer, which would increase the overall percentage of families who have access to a computer. The greatest disparity was shown in the estimates made by teachers regarding Internet access. Only one teacher, accounting for 3.85% of
the questionnaire respondents, believed that 91-100% of students had Internet access in their home. As is shown in Table 31, over 95% of the parent and student respondents indicated that they had some type of Internet access in their home. While the questionnaires were a representative sampling, it would be hard to believe that the percentage of families with Internet access would drop to the 61-70% range that was suggest by 23.08% of the teachers.

Table 31

*Comparison of Teachers Perceptions and Reported Access to Computers and the Internet*

<table>
<thead>
<tr>
<th>Teacher Perception of Digital Technology Access</th>
<th>Teacher Perception of Internet Access</th>
<th>Internet Access Reported by Students</th>
<th>Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>0</td>
<td>3.70%</td>
<td>4.90%</td>
</tr>
<tr>
<td>11-20%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21-30%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31-40%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>41-50%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>51-60%</td>
<td>0</td>
<td>7.69%</td>
<td>0</td>
</tr>
<tr>
<td>61-70%</td>
<td>3.85%</td>
<td>23.08%</td>
<td>0</td>
</tr>
<tr>
<td>71-80%</td>
<td>23.08%</td>
<td>26.92%</td>
<td>0</td>
</tr>
<tr>
<td>81-90%</td>
<td>26.92%</td>
<td>38.46%</td>
<td>0</td>
</tr>
<tr>
<td>91-100%</td>
<td>46.15%</td>
<td>3.85%</td>
<td>96.29%</td>
</tr>
</tbody>
</table>

In Table 24, teachers indicated how often they utilized computers and the Internet for certain purposes, and Table 25 revealed how often students believed they were engaged in the same purposes. For ease of discussion, the common items were combined in Table 32.
Table 32

Comparison of Student and Teacher Responses to Frequency of Use of Computers and Internet Technologies

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating Web-based/Multi-media Presentations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3.70%</td>
<td>6.17%</td>
<td>20.99%</td>
<td>27.16%</td>
<td>28.40%</td>
<td>13.58%</td>
<td>81</td>
<td>4.111</td>
<td>1.275</td>
</tr>
<tr>
<td>T</td>
<td>11.54%</td>
<td>3.85%</td>
<td>19.23%</td>
<td>38.46%</td>
<td>23.08%</td>
<td>3.85%</td>
<td>26</td>
<td>3.69</td>
<td>1.32</td>
</tr>
<tr>
<td>Use Digital Tools and Resources to Increase Creativity and Innovative Thinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3.75%</td>
<td>3.75%</td>
<td>20%</td>
<td>17.50%</td>
<td>23.75%</td>
<td>31.25%</td>
<td>80</td>
<td>4.475</td>
<td>1.405</td>
</tr>
<tr>
<td>T</td>
<td>0%</td>
<td>11.11%</td>
<td>22.22%</td>
<td>37.04%</td>
<td>11.11%</td>
<td>18.52%</td>
<td>27</td>
<td>4.037</td>
<td>1.255</td>
</tr>
<tr>
<td>Use Digital Tools to Increase Content Understanding and Improve Basic Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>2.47%</td>
<td>6.17%</td>
<td>4.94%</td>
<td>18.52%</td>
<td>25.93%</td>
<td>41.98%</td>
<td>81</td>
<td>4.852</td>
<td>1.324</td>
</tr>
<tr>
<td>T</td>
<td>0%</td>
<td>7.69%</td>
<td>15.38%</td>
<td>19.23%</td>
<td>34.62%</td>
<td>23.08%</td>
<td>26</td>
<td>4.5</td>
<td>1.241</td>
</tr>
<tr>
<td>Instructed in the “Correct and Careful” Use of Digital Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>2.47%</td>
<td>14.81%</td>
<td>14.81%</td>
<td>14.81%</td>
<td>13.58%</td>
<td>39.51%</td>
<td>81</td>
<td>4.407</td>
<td>.595</td>
</tr>
<tr>
<td>T</td>
<td>8.33%</td>
<td>20.83%</td>
<td>25%</td>
<td>12.50%</td>
<td>29.17%</td>
<td>4.17%</td>
<td>24</td>
<td>3.458</td>
<td>1.444</td>
</tr>
</tbody>
</table>

Note. 1 – Never, 2 – Once a Year, 3 – Once a month, 4 – Weekly, 5 – Daily, 6 – Many times a day

As Table 32 shows, there was a large disparity between teacher and student awareness on how frequently an act has been done on computers and through the Internet. This raised the question as to if some of this disparity has been based on teachers answering the question from a position on their own frequency, while the students may have based their answer on having multiple teachers in a day? Students’ perceptions were higher in nearly every area regarding how often they were asked to do something on the computer. This may be due in part to having multiple teachers in a given day. While one teacher may teach the same class repeatedly meaning similar assignments, this has limited the frequency with which they personally have students create a web-based or multi-media based presentation. While the existing differences between teacher and student perceptions were notable, the largest difference existed in the responses to being instructed in the “correct and careful” use of digital resources. Over 50% of the teachers responded that they instructed this less than once a month, while 77.90% of students
indicated that they received this instruction at least once a week if not daily or several times a day. This was almost in direct contrast to what was shown in Table 24, where three of four teachers indicated that they trained students on proper use of computer and Internet technologies, but only one student indicated that they received this training at school.

Based on the information provided, it was concluded that while teachers may have a good idea how students utilize computers and the Internet at school, they really have been unaware of student access and utilization outside of the school day. The only statement they agreed with students on was that students have wasted time online when they could be doing more productive tasks.

Grounded Theory

According to Stern (2007), it was necessary to have a representative sampling to develop a grounded theory; however, it may be almost counterproductive to collect too much data. The author pointed out that Barney Glaser, who co-authored *The Discovery of Grounded Theory*, which was published in 1967, noted in a later work that large files have gone untouched or too much information may overwhelm a researcher. With the number of questionnaires that were completed in order to develop interview questions, the amount of information at times was a bit overwhelming to this researcher. Glaser and Strauss (1967) suggested that “coding need consist only of noting categories on margins” (p. 106). Further, the authors asserted that an analyst’s commitment to the growing theory “allows him to cut down the original list of categories for collecting and coding data, according to the present boundaries of his theory, in turn, his consideration, coding, and analyzing of incidents can become more select and focused” (p. 111). The ideas that coding could consist of categorizing in margins and that the original list of
categories could be cut down to create a more focused list were both employed in the coding process.

The use of Survey Monkey allowed questionnaire results to be printed out in a variety of ways such as separating responses by income, age, sex, and location. By printing out responses for each group of respondents and making notes and comparing them, a beginning list of categories to code utilizing open coding emerged. Initially, the coding consisted of looking for factors that could be used to define digital inequities of ownership or access within the school district. With this in mind, the initial theory was that there would be some factor—most likely income—that would be used to define a digital divide or digital inequities within the school district. However, as was noted in Tables 10, 11 and 12, there was little variation in who did or did not own gadgets based on their age, family income, or location. Furthermore, information in Tables 16 and 17 indicated that there was no factor that could be used to identify what would influence the fact that a student or parent owned a cell phone, and all parents indicated they owned some type of a cell phone. What emerged as a theory was that at the time of the study, the existence of a digital divide and digital inequity within the school district was minimal based on the factors of age, income, or location. Consequently, in the process of coding, other patterns were actually identified, which brought about a change in theory. As is shown in Figure 11, the broad coding that was expected in the was narrowed into a focus on three areas: access to computers and the Internet at home as compared to at school, how these technologies were used both at home and in the district, and how effectively these technologies were utilized.
By changing the focus of what emerged in the coding, the data indicated that while there has not been digital equity and access issues within the district, there was a disconnect between how each stakeholder group has used computer technologies and the Internet, how each group has believed these technologies have been utilized by students and teachers, and whether the use of the technologies has been effective. The theory that emerged over the course of the study was that access to technologies has not been the most pressing need in the district. There was an effective use of computer and Internet technologies by educators. If educators have better training in the use of computer and Internet technologies and can tap into technological gadgets already owned by a large number of students, the district would be able to make strides in preparing students for the technological world in which they live. A perfect example of this was shown in Table 10. No matter the income level, location, or age of students or parents, a large number of families owned gaming systems and cell phones. If the teachers would find a creative
way to tap into gaming systems or cell phones, students would have learning opportunities at their fingertips.

**Reliability and Validity**

This study employed a mixed methods approach that utilized both quantitative and qualitative research. The quantitative research was conducted through the use of a questionnaire that was sent out to randomly selected students, parents, and teachers. The quantitative research was conducted through one on one interviews after the questionnaires were completed and analyzed in order to help develop questions to be asked during the interviews. After all collection of data was completed, the results were jointly compared.

Many of the questions on the questionnaire were adapted from a PEW Family Research Center survey and were used with permission. After the questionnaire was developed, it was piloted to ensure understanding of the format of the questions as well as an understanding of them.

By utilizing a mixed methods approach, there was a broader response. The questionnaires were able to provide a great deal of information, and conducting the one on one interviews with representatives of each of the identified groups: students, parents, and teachers, this researcher was able to formulate questions from the results of the questionnaires. The interviews enabled more specific and personal information and opinions to be obtained.

**Summary**

The initial expectation was that there would be a wider variation in responses to how computers and Internet technologies were utilized within the Selinsgrove School District. However, while there were some disparities, most were not glaring in any differences. Additionally, there was an expectation that there would be more digital inequities of access
identified within the district, but that was not mostly the case. The one expectation that did seem
to be well founded was that teachers have really not been aware of how students utilize
computers and the Internet outside of school hours. In conducting the research and analyzing the
data, certain patterns emerged that would have been alluring to pursue, but this was not done as it
was beyond the scope of this study. The emerging patterns and suggestions for further study are
included in Chapter 5.
Chapter 5: Interpretation, Conclusions, and Recommended Actionable Solution

Introduction

This chapter provides a summary of the study of the perceptions of students, parents, and teachers regarding accessibility and utilization of computer and Internet technology in the Selinsgrove Area School District. It addresses the interpretations of the findings and the results of the quantitative and qualitative aspects of the study and shows how the findings were in concert with information provided in chapter 2 as part of the review of literature pertaining to this study.

The chapter has been divided into three sections: a brief explanation of the study including how it was conducted with the results analyzed and a brief snapshot of the breakdown of the literature review; a discussion of the outcomes of the research including how the study related to items in the review of literature, and a summary of the findings and conclusions determined by this researcher; a recommendation for possible use of the study results for the Selinsgrove Area School District as well as recommendations for further studies on the findings in this study.

Relationship to the Literature Review

The conceptual framework was based on three assumptions made by the researcher. The hypotheses were that access to computer technology and the Internet was not equal in the Selinsgrove Area School District, teachers have not been aware of how students actually use computers and the Internet, and computers and the Internet have been used on a daily basis. As a result of these assumptions, the research streams evolved and became the direction taken in the review of literature.
Prior research suggested that the idea of a digital divide has morphed over time into a different idea of what has created a divide. Rather than being focused on physical accessibility, it has become a question of digital equity and if people have equitable access to computers and the Internet (Modarres, 2011; Becker, 2006; Gorski, 2009; Hawkins & Oblinger, 2006; Middleton & Chambers, 2010; Warschauer, Knobel, & Stone, 2010). The evolving idea of digital equity involved questions about individuals having access to the same technologies for the same amount of time or for the same purpose. The review of literature also suggested that a digital divide has been used to describe the apparent disconnect between home and school regarding access and usage of computer and Internet technologies. As the concept of a digital divide changed over time and new technologies have been added, an opportunity for new studies examining changes in perceptions of individuals regarding the existence of a digital divide as well as the use of computer and Internet technologies has emerged.

Outcomes of the Study and its Relation to Theory and Literature

The results of this study were intended to provide information about a specific school district at a specific point in time, and about the perceptions of accessibility to computer and Internet technologies both in the school itself and in the broader community. By providing this information, the goal of this researcher was to help the school district develop plans to address weaknesses and support strengths identified within the current perceptions of use of computers and Internet technologies.

While making the comparison of the review literature to the results of the study, there were instances where it appeared that respondents had access to prior research on the subject matter before their involvement in this study because many of the results mirrored prior studies.
However, there also were times when this researcher expected to find similarities to prior studies and none were found.

As Angus, Sutherland-Smith, and Snyder (2003) discovered there was no formal connection made between school and home regarding technology, this researcher’s study also found no formal connections, particularly when parents gave responses about computer and Internet usage by their child that were significantly different than what students or teachers expressed. Additionally, in conducting interviews, there were several times when a teacher could not provide an answer about students’ home access or use of computers and the Internet. When parents were asked similar questions about their child and school usage, they did not know how to answer the question because they had no idea what the answer would be.

Mangu-Ward (2010) pointed out that the cost of textbooks has continued to increase while the cost of computers decreases. The author took the position that in the not too distant future “books full of non-hyperlinked text already must seem like a cruel joke to the congenitally connected” (p. 45). Similar sentiments were shared by several of the interviewees who suggested that textbooks should be replaced with iPads or some other form of technology that would enable the textbooks to be downloaded allowing for ready research. Along the same line of thought, Warschauer, Knobel and Stone (2010) suggested that one way to address unequal access to the home computer has been by doing things such as allowing laptops to be checked out. While only one interviewee expressed this very sentiment, several believed that one to one computing should be a goal of the school district. This in itself would help overcome and digital inequity.

Another connection between the literature review and the interviews was the belief that teachers be given the opportunity to receive necessary training and have adequate technology
hardware, software, and the infrastructure necessary to effectively use technology in the classroom (Schnellert and Keengwe, 2012; Reinhart, Thomas, & Toriskie, 2011; Warschauer, Knobel, & Stone, 2010). Half of those interviewed believed that teachers needed to use what they had more efficiently, while five of the twelve interviewed indicated that the teachers needed more training to use technology better. Individual interviewees often expressed ideas similar to those present in the review of literature. One of the interviewees stressed that the use of technology was a process and should be used as such, which echoed the observation of Warschauer, Knobel, and Stone (2010) that while teachers may use computer technology or the Internet, there has been a tendency for the completion of the task to be an end in itself without including the technology aspect as a learning goal. A second interviewee’s response compared to that of Webber’s (2003) believe that it has no longer been necessary for a student to sit in a chair to receive an education. Children now receive their education at home and at their convenience as the Internet has enabled communication to occur within a school district, a state, or even across the globe. Yet a third interviewee expressed the same idea as Ramirez (2001), who indicated that teachers have needed to remember that not all families may have access to the technology, so there will always be a place for paper communication with parents.

Several questionnaire responses fell in line with Lewis’s (2007) observation that the majority of students (56%) have used computers at home to play games, which has aligned with the 43.21% of students who responded in the questionnaire that they used the computer at home to play games daily or the 23.46% who indicated they played games weekly. Another parallel between the questionnaire responses and the review of literature was found in studies cited by Hargittai and Hinnant (2008), that those with higher education have been more likely to use the Internet for e-mail, banking online, news, searching for information pertaining to finance,
politics, travel, product information or the government, and less likely to use it to download music or instant messaging. This pattern was consistent with questionnaire responses that parents used the computer and the Internet more often to do banking and purchase items online, while students used the same technologies more often to play games and download music.

On the other hand, there were areas were the review literature and the results of the study that were significantly different. While past studies cited several examples that poorer parents have not been able to afford materials or chose not to have computers or Internet access, the respondents to the questionnaires and interviews all indicated a high rate of computer ownership and Internet access no matter the economic status of the family. This was also the case with education. While the literature review indicated that those with a higher education had more Internet access, the results of this study—with 95% or more of the respondents indicating Internet accessibility with education ranging from no high school diploma to a college graduate or beyond—indicated that this has not been the case within the school district.

Conclusions

The responses to the questionnaires and participation in the interviews provided the opportunity to develop a theory that the effective use of computer and Internet technologies by educators are beneficial in helping to prepare students better for the technological world in which they are living. The data collected was compared to the information found as a result of the literature review and allowed this researcher to investigate three basic assumptions in order to answer three sub-questions pertaining to perceptions of access to computers and Internet technologies within the Selinsgrove Area School District.
Having reiterated and revisited the assumptions of this researcher when the study was begun, makes it logical to take each assumption and provide findings and conclusions as they relate to these assumptions and how the assumptions then relate to the three sub-questions.

The first assumption was that access to computer technology and the Internet is not equal. This assumption was largely supported by items in the literature review that defined various forms of digital inequity based on race, gender, age, location, or other variables. As a result, this researcher developed the theory that there are gaps in digital equity within the district, and there are students who have no access to computer technology or access to the Internet in their home. However, the only disparity seemed to be in how many gadgets a family or an individual student might own. This study indicated that only 3.7% of students and 4.90% of parents responded that they did not have Internet access at home. Only 1.23% of students and 5.88% of parents indicated that their access to the Internet was through a dial up connection. All surveyed parents owned a cell phone, and 85.9% of students indicated cell phone ownership. This is the case despite having family incomes anywhere from less than $30,000 to an excess of $75,000. While economics was expected to be a factor in digital inequities, it actually was not a factor. The only way any inequity seemed to be identified was an observation that families in the townships located in the southern half of the district had fewer technological gadgets than those in the boroughs and townships in the northern half of the district. However, this was only determined in the beginning of the coding process to support the original theory that there is a digital divide within the district.

Examination of the data provides an answer to the sub-question that asked what components of digital equity are found to exist within the district and the community at large.
Based on this particular study, the conclusion must be made that there really are no well identified components or threats to digital equity within the school district.

The second assumption made by this researcher was that computers and the Internet are used on a daily basis. Based on student, parent, and teacher responses, this was an accurate inference. However, the assumption that may have been more interesting would have been to assume that while computers are used daily, they are used differently by each group. The results obtained through the study presented an excellent response to the sub-question that asked how parents, students, and teachers describe how technology is being used in the school district. This study shows that students, parents, and teachers use computer technologies and the Internet on a daily basis. The difference is in how each group uses these technologies. As was noted previously, students mostly use available technologies to play games and music, while parents are more likely to use the technologies to check their email or do online banking. While other factors, such as the need to check email for work and a student’s lack of a bank account that permits online banking, may influence how the technologies are used, the results indicated that the technologies are used daily. The conclusion must be reached that each identified group uses computers and the Internet daily, but not necessarily in the same way. The differences in usage by each group was not anticipated, but provided a thought-provoking aspect to the study.

The third and final assumption was that teachers are not aware of how students actually use computers and the Internet. This assumption actually ties to two of the study’s sub-questions: how do parents, students, and teachers describe how technology is being used in the school district, and what is the relationship is between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology
outside of school? In many ways, examining this facet of the study provided the most insight into the perceptions of the three groups regarding computer and Internet access and usage.

The results of the questionnaires indicated that teachers really do not have a good idea of the type of access students have to technology outside of school. Teachers are relatively baffled about the percentage of families who own computers and are even farther off on their estimates of the percentage of families that do not have Internet access or high speed access to the Internet. This was not the only discrepancy noted between what teachers believe and what students and parents reported. This disparity was observed in comparing home technology access and usage to such access at school, but also in comparing what teachers believe is going on in school and what students indicate is happening. For instance, 41.98% of students indicated that they create web-based/multi-media presentations many times a day, while only 26.93% of the teachers indicated this to be the case. While it is possible that students are lumping all of their teachers together, it is important to note that the high school is on a block schedule and, as a result, a student never sees more than four teachers in a day. Multiple teachers must be making these types of requirements.

Harkening back to the interviewee and literature review, it was noted that technology should be included as part of a learning goal. Accordingly, 55% of the students indicated that daily or many times a day they are required to use digital tools and resources to promote creativity and innovative thinking, yet only 29.63% of teachers indicated that this occurs daily or many times a day. Additionally, while teachers generally indicated that they do not teach students about the ethical and appropriate use of computers and the Internet, parents believed it was happening at school and students report that it was happening.
Based on the results of the study, the conclusion must be made that teachers do not really have an indication about student access to computers and the Internet outside of the school. Also, their perspective on what is going on at school regarding computers and the Internet does not match the response given by parents and students. Fortunately parents and students seem to have a more positive outlook on how teachers have been using computers and the Internet than the outlook presented by teachers themselves. There are many factors that may enter into this disconnect. The fact that the school district has limited minorities may have influenced the lack of a digital divide. The lack of a digital divide may also be based on the number of questionnaires that were returned, as it is possible that those who do not have access to computers and the Internet chose to not return the questionnaires. It also is possible that parents just believe that no news is good news, thus if they don’t hear something negative, they assume teachers are doing everything correctly.

**Recommendations**

The conceptual framework was accurate in some but not all areas of this study; however, it resulted in the shaping of recommendations outlined for the both the Selinsgrove Area School District and other school districts. Of the three assumptions that were made and discussed throughout this study, the assumption that access was not equal was not completely accurate. However, the assumption that teachers were not aware of how students use computers and the Internet and that computers and the Internet are used on a daily basis was correct. Based on the accuracy of the assumptions, the need for further examination into how to identify and rectify a digital divide may not be a pressing need for the school district at this time. However, since teachers have been unaware of student use of technologies despite them being used on a daily
basis, the use of the ISTE standards and the LoTi and H.E.A.T. frameworks should continue to be beneficial to consider.

**Recommendations for the Selinsgrove Area School District.** This study was conducted solely in the Selinsgrove Area School District in Grades 6 – 12 and, as a result the recommendations being made pertain specifically to the district. The first recommendation is to implement the ISTE standards across the school district, as the standards include creativity and innovation as well as how to be a good digital citizen. The need for instruction in how to be a good digital citizen is significant, and teachers should either teach this information periodically or not at all, since parents and students believe this kind of instruction is happening. If parents and students simply sign the district’s Acceptable Use Policy but do not read it, they have no idea what the district considers to be appropriate use of technology. Often, the only time parents or students read the form is if the student gets in trouble for misuse of computers by violating the Acceptable Use Policy. Additionally, if educators are trying to create good digital citizens, we should all be speaking the same language and teaching the same lesson. If this information is shared with parents, it will also help them to reinforce this lesson at home and create an important home to school connection. Angus, Sutherland-Smith, and Snyder (2003) expressed the idea that having pedagogical connections between home and school are beneficial for student success.

A second recommendation is have teachers become familiar with the ISTE standards so they know how to use technology not only as a tool, but also as a part of a learning goal. Using technology as a learning goal as well as a tool is also part of the LoTi and H.E.A.T. theories. These sources should be used to educate teachers to improve their use of technology. Just
instructing a student to make a PowerPoint without providing them with directions or ways to improve their final product diminishes the possible learning activity.

A third recommendation is to train teachers how to use technological tools effectively. As was indicated in several interviews, some teachers have used technology very effectively while others simply have used technology as an updated version of a chalkboard or overhead projector. While there will always be teachers who may not be using technology as effectively as another teacher, or a subject that doesn’t lend itself as well to the use of technology, technology should be used appropriately. Just placing information in a Word document and projecting it on a white board through a projection may be a way to use technology, but using it that way makes it nothing more than an updated overhead projector. As one of the teachers observed, technology may not always be the most effective tool for student learning to occur, thus teachers must be encouraged to identify the learning process that will be most beneficial to student success and learning.

The last recommendation for the district is to really examine whether more technology is needed or if the district should consider developing a policy to allow students to bring their own device (BYOD) and provide devices only to those students who do not have them. In several interviews, the idea of one to one computing was discussed. One of the teachers who was interviewed and spends most of the day teaching about technology felt that going to a one to one system with all students having their own tablet or laptop would be excessive since the cost for both is high and most students already own some kind of computer technology. As was pointed out most often in the interviews, without teachers being taught how to use technology effectively, having more technology will not improve instruction. It also may be more efficient and cost effective to start a loaner program to see what need there may be for more devices.
Recommendations for additional research. This study focused on answering very specific questions about use and beliefs about technology at school. In the process, other possibilities for additional study evolved.

The first recommendation for additional study appeared as the result of the questionnaires being compiled. This researcher believed that there would be disparities in access to computers and the Internet based on income, education, or some other specific factor. What emerged was that if the district was separated into a northern and a southern half, there were some differences in ownership of devices, access, and usage of technology. This idea of a difference being based on location within the district would be an interesting topic to be pursued in a district that has one area that is more rural or urban compared to another area of the district. The Borough of Selinsgrove has been home to Susquehanna University, with Monroe Township having the majority of the shopping areas, and the southern part of the district being more rural. The difference in device ownership based on location was noted but not pursued, as there was not enough data that could be used to effectively research this condition.

Another area for further study would be to examine the technology that has been most readily available to students, and to research ways that these technologies could be used to improve education. Many students indicated that they personally owned a gaming system or a cell phone. If it would be possible to tap into this technology by using Quick Response (QR) codes or creating games that would work on a gaming system, students may become more engaged in their education.

These recommendations for further study could be conducted in any school district and would be a good step toward identifying strengths and weaknesses in a district’s computer and
Internet access both at school at home. The first step would be to identify the perception of significant stakeholder groups to begin to develop a plan to move the district forward.

**Summary**

The most significant factor to be remembered when considering the result of this study was that it was a snapshot in time of the perceptions of students, parents, and teachers regarding computer and Internet access and utilization in one school district. Technology has been rapidly changing and as a result it would follow that perceptions of access and utilization will also change. As Reinhart, Thomas, and Toriskie found (2011), teachers have needed to prepare their students for the twenty-first century, which has meant that students have needed to have computer skills in order to fully participate in society. If educators do not keep up with society’s needs for ever expanding technology, they will be doing a disservice to their students. On the other hand, if the reliance on technology becomes the be all and end all of education, we will have lost the idea that students should use the best tool available to them to learn. In a few instances, the tool could be to create something with your hands or to openly debate with another student, while with others it may be to utilize technology. Education and educators must keep pace with changing technology and technological needs but, in doing so, it must be remembered that technology has been both a tool and part of the learning process.
References


Yu, R., & Today, U. (2012, August 22). 19M Americans can't get fast Internet Service; Efforts grow to improve access in rural areas. *USA Today*, pp. 2B.

Appendix A

Teacher Questionnaire

You have been randomly selected as one of 30 teachers who teach in grades 6 – 12 in the Selinsgrove Area School District to complete a questionnaire about computer and Internet access and use both in school and outside of school. The questions are broken into three basic groups: demographic information which asks some demographic information about you, computer and Internet access and utilization outside of school, and computer and Internet use that is connected with school activities. Please respond to the statements in terms of your present uses or support of technology in the classroom. Use the scale to determine your response based on how frequently you experience the activities described in the statement. Please answer all questions and do not include your name or any other identifying information on the questionnaire.

Part of this questionnaire is based on questions created for the LoTi Digital-Age Survey for Teachers – used with permission from LoTi, Carlsbad, CA.

DEMOGRAPHICS – Please circle the appropriate response

1. I am a: Male Female

2. Including the current school year, I have been a teacher for:
   a. 1 – 2 years
   b. 3 – 5 years
   c. 6 – 10 years
   d. 11 – 15 years
   e. 16 – 20 years
   f. 21 – 25 years
   g. 26 – 30 years
h. 30 + years

3. My age is:
   a. 18 – 29
   b. 30 - 49
   c. 40 – 64
   d. 65 +

COMPUTER TECHNOLOGY AND INTERNET ACCESS OUTSIDE OF SCHOOL

4. I believe that the percentage of students in the school who have access to some form of
digital technologies (cell phone, computer, MP3 players, gaming consoles, E-book readers) is
in the range of:
   a. 0-10%
   b. 11 – 20%
   c. 21 – 30%
   d. 31 – 40%
   e. 41 – 50%
   f. 51 – 60%
   g. 61 – 70 %
   h. 71 – 80%
   i. 81 – 90%
   j. 91 – 100%

5. I believe that the percentage of students in the school who have access to the Internet at home
falls in to the range of:
   a. 0-10%
Please identify the extent to which you agree or disagree with each of the following statements.

6. Teens waste a lot of time online, when they could be doing more important things.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

7. The Internet helps teens do better in school.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

8. Many teens today use the Internet to cheat on their schoolwork
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

COMPUTER TECHNOLOGY AND INTERNET ACCESS AND USE FOR SCHOOL

All questions in this section have been modified from questions that are part of the LoTi Digital Age Survey and are being used with permission from LoTi, Carlsbad, California.

9. How often are you (the teacher) using digital tools and resources during the instructional day for instructional purposes (this does not include taking attendance of recording grades)
   a. Never
b. At least once a year

c. At least once a month

d. At least once a week

e. At least once a day

f. Multiple times each day

10. How often are your students using digital tools and resources during the instructional day for instructional purposes?

   a. Never
   
   b. At least once a year
   
   c. At least once a month
   
   d. At least once a week
   
   e. At least once a day
   
   f. Multiple times each day

The remaining questions deal specifically with your thoughts on how computers and Internet technology are used in your education. Please use the scale below to answer all remaining questions.

0 – Never     1 – At least once a year     2 – At least once a semester     3 – At least once a month

   4 – A few times a month     5 – At least once a week

11: Students in my classroom use the digital tools and resources to create web-based (e.g., web posters, student blogs or wikis, basic webpages) or multimedia presentations (e.g., PowerPoint) that showcase digitally their research (i.e., information gathering) on topics that I assign more than for other educational uses.

0  1  2  3  4  5
12: I assign web-based projects (e.g., web collaborations, WebQuests) to my students that emphasize complex thinking strategies (e.g., problem-solving, decision-making, experimental inquiry) aligned to the content standards.

0 1 2 3 4 5

13: I use the digital tools and resources in my classroom to promote student creativity and innovative thinking (e.g., thinking outside the box, exploring multiple solutions).

0 1 2 3 4 5

14: I promote, monitor, and model the ethical use of digital information and technology in my classroom (e.g., appropriate citing of resources, respecting copyright permissions).

0 1 2 3 4 5

15: I use different digital media and formats (e.g., blogs, online newsletters, online lesson plans, podcasting, digital documents) to communicate information effectively to students, parents, and peers.

0 1 2 3 4 5

16: I model and facilitate the effective use of current and emerging digital tools and resources (e.g., streaming media, wikis, podcasting) to support teaching and learning in my classroom.

0 1 2 3 4 5

17: I use my school’s digital tools and resources primarily to access the Internet, communicate with colleagues or parents, grade student work and/or plan instructional activities for my students.

0 1 2 3 4 5

18: I model for my students the safe and legal use of digital tools and resources when I am delivering content and/or reinforcing their understanding of pertinent concepts using
multimedia resources (e.g., PowerPoint, Keynote), web-based tools (e.g., Google Presentations), or an interactive whiteboard.

19: I have instructed my students in the “correct and careful” (e.g., ethical usage, proper digital etiquette, protecting their personal information) use of digital resources and are aware of the consequences regarding their misuse.

20: My students use the digital tools and resources in my classroom primarily to increase their content understanding (e.g., digital flipcharts, simulations), to improve their basic math and literacy skills (e.g., online tutorials, content-specific software) or for research purposes.
Appendix B

STUDENT QUESTIONNAIRE

You have been selected as one of 30 students who reside in (correct township/borough inserted here) to complete a questionnaire about computer and Internet access and use both in school and outside of school. The questions are broken into three basic groups: demographic information which asks about you and your family, computer and Internet access and utilization outside of school, and computer and Internet use that is connected with school activities. Please answer all questions and do not include your name or any other identifying information anywhere on the questionnaire.

Thank you for your participation.

DEMOGRAPHICS

11. I am a: Male  Female

12. I am in Grade: 6 7 8 9 10 11 12

13. My age is: 10 11 12 13 14 15 16 17 18 19

14. My race is best identified as:
   a. White – Non-Hispanic
   b. Black – Non-Hispanic
   c. Hispanic

15. My family income level is best described as:
   a. Less than $30,000
   b. $30,000 - $49,999
   c. $50,000 - $74,999
   d. $75,000 +
16. Which of the following gadgets does your family own (please choose all that apply)
   a. Cell phone
   b. Desktop Computer
   c. Laptop Computer
   d. MP3 player
   e. Game Console
   f. E-Book reader
   g. Tablet Computer

17. What type of Internet access do you have in your home?
   a. None
   b. Dial-up
   c. High-speed access

18. Which of the following gadgets do you own (please choose all that apply)
   a. Cell phone
   b. Desktop Computer
   c. Laptop Computer
   d. MP3 player
   e. Game Console
   f. E-Book reader
19. Please identify how often you use a computer to do each of the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Once a Year</th>
<th>Once a Month</th>
<th>Once a Week</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use social networking sites such as Facebook or My Space</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Buy a product online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Do banking online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use a search engine</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send or receive email</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play a game</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

20. Which of the following best describes the type of cell phone you have?

   a. Do not own a cell phone (skip to question 14)
   b. Basic cell Phone
   c. iPhone
   d. Blackberry
   e. Android
   f. Windows phone
   g. Other ___________
21. If you have a cell phone, how often do you use your cell phone to do the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Once a Year</th>
<th>Once a Month</th>
<th>Once a Week</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send or receive email</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send or receive text Messages</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Take a picture</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Download an App.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Record a video</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play a game</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access the Internet</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Watch a video</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send a photo of video to someone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Post a photo or video online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access a social networking site</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access Twitter</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Check your bank account or do online banking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Participate in video Chat or call</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Get directions, recommendations or other information based on your present location</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
22. Overall, when you use the internet, do you access it mostly using your cell phone or mostly using some other device like a desktop, laptop or tablet computer?
   a. Cell phone
   b. Other device
   c. Both equally

Please identify the extent to which you agree or disagree with each of the following statements.

23. Teens waste a lot of time online, when they could be doing more important things.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

24. The Internet helps teens do better in school.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

25. Many teens today use the Internet to cheat on their schoolwork
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

26. I know more about using the Internet than at least one of my parents do.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

COMPUTER TECHNOLOGY AND INTERNET ACCESS AND USE FOR SCHOOL

All questions in this section have been modified from questions that are part of the LoTi Digital Age Survey and are being used with permission from LoTi, Carlsbad, California.

The remaining questions deal specifically with your thoughts on how computers and Internet technology are used in your education. Please use the scale below to answer all remaining questions.

0 – Never  1 – At least once a year  2 – At least once a semester  3 – At least once a month
   4 – A few times a month  5 – At least once a week
17. I am required to use digital tools and resources to create web-based (e.g., web posters, student blogs or wikis, basic webpages) or multimedia presentations (e.g., PowerPoint) on topics that my teacher assigns.

0  1  2  3  4  5

18. I am encouraged to use the digital tools and resources in school to increase my own creativity and thinking (e.g., thinking outside the box, exploring multiple solutions).

0  1  2  3  4  5

19. I have been taught the “correct and careful” (e.g., ethical usage, proper digital etiquette, how to protect my personal information) use of digital resources and know the consequences if I don’t use them correctly.

0  1  2  3  4  5

20. I use digital tools and resources at school mostly to increase my understanding of a subject (e.g., digital flipcharts, simulations) or to improve basic math and reading skills (e.g., online tutorials, content-specific software) or for research.

0  1  2  3  4  5
Appendix C

PARENT QUESTIONNAIRE

You have been selected as one of 30 individuals who has a student who attends Selinsgrove Area Middle School and/or Selinsgrove Area High School who resides in (correct township/borough inserted here) to complete a questionnaire about computer and Internet access and use both in school and outside of school. The questions are broken into three basic groups: demographic information which asks about you and your family, personal computer technology and Internet access, and computer and Internet use that is connected with school activities. Please answer all questions. Please do not include your name or other identifying information anywhere on the questionnaire.

Thank you for your participation.

DEMOGRAPHICS

27. I am a: Male Female

28. My age is:
   a. 18 – 29
   b. 30 – 49
   c. 40 – 64
   d. 65 +

29. My race is best described as:
   a. White – Non-Hispanic
   b. Black – Non-Hispanic
   c. Hispanic
30. The highest level of education I have obtained is:
   a. No high school diploma
   b. High School Graduate
   c. Some College
   d. College graduate or beyond

31. My family income level is best described as:
   a. Less than $30,000
   b. $30,000 - $49,999
   c. $50,000 - $74,999
   d. $75,000 +

**PERSONAL COMPUTER TECHNOLOGY AND INTERNET ACCESS**

All questions in this section are being used with permission from the Pew Internet & American Life Project, a project of the Pew Research Center: http://pewinternet.org/About-Us/Our-Mission.aspx

32. Which of the following gadgets do you own (please choose all that apply)
   a. Cell phone
   b. Desktop Computer
   c. Laptop Computer
   d. MP3 player
   e. Game Console
   f. E-Book reader
   g. Tablet Computer
33. What type of Internet access do you have in your home?
   a. None
   b. Dial-up
   c. High-speed access

34. Please identify how often you use a computer to do each of the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Once a Year</th>
<th>Once a Month</th>
<th>Once a Week</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use social networking sites such as Facebook or My Space</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Buy a product online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Do banking online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use a search engine</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send or receive email</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play a game</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

35. Which of the following best describes the type of cell phone you have?
   a. Basic cell Phone
   b. iPhone
   c. Blackberry
   d. Android
   e. Windows phone
   f. Other ___________
36. How often do you use your cell phone to do the following:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Once a Year</th>
<th>Once a Month</th>
<th>Once a Week</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send or receive email</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send or receive text Messages</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Take a picture</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Download an App.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Record a video</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Play a game</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access the Internet</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Watch a video</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Send a photo of video to someone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Post a photo or video online</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access a social networking site</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Access Twitter</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Check your bank account or do online banking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Participate in video Chat or call</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Get directions, recommendations or other</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>information based on your present location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
37. Overall, when you use the internet, do you access it mostly using your cell phone or mostly using some other device like a desktop, laptop or tablet computer?
   a. Cell phone
   b. Other device
   c. Both equally

Parents have different opinions about the impact of the Internet on children today. Please identify the extent to which you agree or disagree with each of the following statements.

38. Teens waste a lot of time online, when they could be doing more important things.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

39. The Internet helps teens do better in school.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

40. I know more about using the Internet than my child does.
   Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

COMPUTER TECHNOLOGY AND INTERNET ACCESS FOR YOUR CHILD’S EDUCATION

All questions in this section have been modified from questions that are part of the LoTi Digital Age Survey and are being used with permission from LoTi, Carlsbad, California.

The remaining questions deal specifically with your thoughts on how computers and Internet technology are used in regard to your child’s education. Please use the scale below to answer all remaining questions.

0 – Never  1 – At least once a year  2 – At least once a semester  3 – At least once a month
   4 – A few times a month  5 – At least once a week
15. My child is encouraged to use the digital tools and resources to promote student creativity and innovative thinking (e.g., thinking outside the box, exploring multiple solutions).

16. My child has been taught the “correct and careful” (e.g., ethical usage, proper digital etiquette, protecting their personal information) use of digital resources and is aware of the consequences regarding their misuse.

17. My child has access to digital tools and resources at school to increase their content understanding, to improve their basic math and literacy skills or for research purposes.
Appendix D

INTERVIEW QUESTIONNAIRES FOR STUDENTS IN GRADES 6 – 12 (Ages 11-19)

This interview questionnaire will be administered over a two-week period in November 2013 to students in the Selinsgrove Area School District. Appropriate consent forms and quality control measures will be implemented in the conduct of the interviews.

Any student under the age of 18 will have both parent and individual consent prior to the interview.

Behind each question is an identification of the purpose of asking the question and what is hoped to be gained by asking the question.

RESEARCH QUESTION:

4. How do parents, students and teachers describe how technology is being used in the school district?
   a. While teachers and other school personnel may believe that computers and the Internet are being used effectively, students and parents may have a completely different view.

DIRECTIONS: Prior to beginning the interview, the following directions will be read to participants:

You and your parent have agreed to participate in this interview to find out how you believe computers and the Internet are used both at home and in the school. The first questions that are asked will be about you but when the final paper is written, no names will be used, you will be referred to as a number.

When you are asked a question, please answer it completely but if you don’t understand the question, please ask for the question to be reworded so that you know what you are being asked. If you feel uncomfortable answering any question, you do not have to answer it. This interview has nothing to do with you and school; you are actually going to be helping me in a big study about the school district and computers.

The interview should take less than half an hour and if you want to stop at any time, just tell me and we can stop. I will be recording the interview so that I can attention to what you say and not have to take too many notes.

Recording the interview will also make sure that I have your exact words, not what I think you said. I may take some notes if there is another question I want to ask you or something that I need you to explain in more detail. Do you have any questions for me right now?
We will start with some easy questions about you. Next, I will ask you questions about computers and the Internet.

1. What is your age? (Background/Demographic to identify basic information about the student)

2. What is your grade level? (Background/Demographic to identify basic information about the student)

3. Where do you live in the school district, not your home address; but do you live in Selinsgrove, Freeburg, Shamokin Dam, or one of the townships in the district? (Background/Demographic to identify basic information about the student)

4. Do you have a computer that you are allowed to use at home? (Knowledge about student computer access at home)

5. Do you have the Internet at home? (Knowledge about student computer access at home)

6. Do you have a cell phone? If so, is it a smartphone? (Knowledge about student access to a personal cell phone and the Internet via the cell phone)

Now we will talk about computer and Internet use at home and school.

7. How would you describe access to computers and the Internet at your school? (Knowledge – facts about access)
   a. Probe: Do you know what access to computers means? If not, they will be told access means being able to use the computers.
   b. Probe: If they have difficulty answering the question: For instance, would you describe access meaning using computers when you want to or is access having computers available if teachers want students to use them?

8. Using your description of access, what access do you believe students currently have to computers and the Internet in Selinsgrove? (Opinion/Values – based on their own beliefs about access in the school)

9. How would you describe access to the computer and Internet at home? (Knowledge – facts about home access)

10. What kind of access do you believe most students in the Selinsgrove Area School District currently have at home? (Knowledge – facts and opinions about student access)

   a. Probe: Use your description of access if it will make it easier for you to explain your answer.
11. How do students use computers or the Internet at school? (Opinions/values – a description of what the student thinks.)
   a. Probe: How do you use computers or the Internet at school?

12. How valuable are computers and the Internet when it comes to your academic success? (Opinions/values – based on what the student thinks about their success and the role of computers in that success)
   a. Probe: Are students able to use computers and the Internet as they would like to or is this all teacher directed?

13. How effectively did your teachers use computers and the Internet in the classroom to teach, mentor or communicate with you in the past year? (Sensory and Knowledge – what have the students seen and heard and what are the facts of computer use.)

14. Describe in as much detail as you can how your teachers could use technology better to improve your learning experience and make it as good as it can be. (Knowledge – what are the students facts about improving their learning)

15. Have you ever received training on appropriate and ethical use of the Internet? (Knowledge and behaviors – to get the facts about training and also find out what students have heard or seen)
   a. Probe: If so, who provided this training?
   b. Probe: How was the training provided to you?

16. In addition to computers and the Internet, please describe any additional technology that you think would be beneficial to your education or ways to make current technology use more effective at home or school. (Knowledge – what are specific technology that would be helpful to the student)

17. What else would you like to tell me about computer and Internet access in the Selinsgrove Area School District?
   a. Probe: Is there another student whom you think would be a good candidate to interview based on their view of computers and Internet access in the school district? (Opinion – based on what they think about other students’ knowledge)
Appendix E

INTERVIEW QUESTIONS FOR PARENTS

INTERVIEW QUESTIONAIRES FOR PARENTS OF STUDENTS IN GRADES 6 – 12

This interview questionnaire will be administered over a two-week period in November 2013 to parents who have a student in grades 6-12 in the Selinsgrove Area School District. Appropriate consent forms and quality control measures will be implemented in the conduct of the interviews. Behind each question is an identification of the purpose of asking the question and what is hoped to be gained by asking the question.

RESEARCH QUESTION:

1. How do parents, students and teachers describe how technology is being used in the school district?
   a. While teachers and other school personnel may believe that computers and the Internet are being used effectively, students and parents may have a completely different view.

DIRECTIONS: Prior to beginning the interview, the following directions will be read to participants:

You have agreed to participate in this interview to find out how you believe computers and the Internet are used both at home and in the school. The first questions that are asked will be about you but no names will be used in the final study, you will be referred to as a number. When you are asked a question, please answer it completely but if you don’t understand the question, please ask for the question to be reworded for clarity. If you feel uncomfortable answering any question, you do not have to answer it.

This interview has nothing to do with your student’s success at school. The interview should take less than half an hour and if you want to stop at any time, please let me know. I will be recording the interview so that I can attention to what you say and not have to take too many notes. Recording the interview will also make sure that I have your exact words, not what I think you said. I may take some notes if there is another question I want to ask you or something that I need you to explain in more detail. Do you have any questions for me right now?

We will start with some questions about you and then I will ask you questions about computers and the Internet.

1. What is your age? (Background/Demographic to identify basic information about the student)

2. What grade is your child/children in currently? (Background/Demographic to identify basic information about the student)
3. Where do you live in the school district, not your address but do you live in Selinsgrove, Freeburg, Shamokin Dam, or one of the townships in the district? (Background/Demographic to identify basic information about the parent)

4. Do you have a computer that you allow your child to use at home? (Knowledge about student computer access at home)

5. Do you have Internet access at home? If so, what type of connection is it? (Knowledge about student computer access at home)

6. Does your child have a cell phone? If so, is it a smartphone? (Knowledge about student access to a personal cell phone and the Internet via the cell phone)

Now we will talk about computer and Internet use at home and at school.

7. How would you describe access to computers and the Internet at your child’s school? (Knowledge – facts about access)
   a. Probe: For instance, would you describe access meaning using computers when a student wants to or is access having computers available if teachers want students to use them?

8. Using your description of access, what access do you believe students currently have to computers and the Internet in Selinsgrove? (Opinion/Values – based on their own beliefs about access in the school)

9. How would you describe your child’s access to the computer and the Internet at home? (Knowledge – facts about home access)

10. What kind of access do you believe most students in the Selinsgrove Area School District currently have at home? (Knowledge – facts about student access)
    a. Probe: Use your description of access if it will make it easier for you to explain your answer.

11. How do students use computers or the Internet at school? (Opinions/values – a description of what the student thinks.)
    a. Probe: How does your child use computers or the Internet at school?

12. How valuable are computers and the Internet when it comes to your child’s academic success? (Opinions/values – based on what the parent thinks about their child’s success and the role of computers in that success)
    a. Probe: Are students able to use computers and the Internet as they would like to or is this all teacher directed?
13. How effectively did teachers use computers and the Internet in the classroom to teach or mentor your child or communicate with you in the past year? (Sensory and Knowledge – what have the parents seen and heard and what are the facts of computer use.)

14. Describe in as much detail as you can how teachers could use technology better to improve your child’s learning experience and make it as good as it can be. (Knowledge – what are the facts about improving their learning)

15. Has your child ever received training on appropriate and ethical use of the Internet? (Knowledge and behaviors – to get the facts about training and also find out what students have heard or seen)
   a. Probe: If so, who provided this training?
   b. Probe: How was the training provided to your child?

16. In addition to computers and the Internet, please describe any additional technology that you think would be beneficial to your child’s education or ways to make current technology use more effective at home or school. (Knowledge – what are specific technology that would be helpful to the students)

17. What else would you like to tell me about computer and Internet access in the Selinsgrove Area School District?
   a. Probe: Is there another parent whom you think would be a good candidate to interview based on their view of computers and Internet access in the school district? (Opinion – based on what they think about other students’ knowledge)
Appendix F

INTERVIEW QUESTIONS FOR TEACHERS

INTERVIEW QUESTIONAIRES FOR TEACHERS OF GRADES 6 – 12

This interview questionnaire will be administered over a two-week period in November 2013 to students in the Selinsgrove Area School District. Appropriate consent forms and quality control measures will be implemented in the conduct of the interviews. Any student under the age of 18 will have both parent and individual consent prior to the interview. Behind each question is an identification of the purpose of asking the question and what is hoped to be gained by asking the question.

RESEARCH QUESTIONS:

1. How do parents, students and teachers describe how technology is being used in the school district?
   a. While teachers and other school personnel may believe that computers and the Internet are being used effectively, students and parents may have a completely different view.

2. What is the relationship between teachers’ knowledge about student access to technology at school compared to teachers’ knowledge about a student’s access to technology outside of school?

DIRECTIONS: Prior to beginning the interview, the following directions will be read to participants:

You have agreed to participate in this interview to find out how you believe computers and the Internet are used both at home and in the school. The first questions that are asked will be about you but when the final paper is written, no names will be used, you will be referred to as a number. When you are asked a question, please answer it completely but if you don’t understand the question, please ask for the question to be reworded so that you know what you are being asked. If you feel uncomfortable answering any question, you do not have to answer it.

This interview has nothing to do with your position in the school district; you are actually going to be helping me complete research about the use of computers and the Internet in the school district. The interview should take less than half an hour and if you want to stop at any time, just tell me and we can stop. I will be recording the interview so that I can attention to what you say and not have to take too many notes. Recording the interview will also make sure that I have your exact words, not what I think you said. I may take some notes if there is another question I want to ask you or something that I need you to explain in more detail. Do you have any questions for me right now?
We will start with some questions about you and then I will ask you questions about computers and the Internet.

1. What is your age? (Background/Demographic to identify basic information about the teacher)

2. What grade do you teach? (Background/Demographic to identify basic information about the teacher)

3. How long have you been teaching? (Background/Demographic to identify information about the teacher)

4. Do you live in the school district? (Background/Demographic to identify basic information about the teacher)

5. What subject do you teach? (Background/Demographic to identify basic information about the teacher)

6. Do you consider your class to be one that requires the use of computers or the Internet, such as you would need in a Computer Applications class? Why or why not?

Now we will talk about computer and Internet use at home and at school.

7. How would you describe access to computers and the Internet at your school? (Knowledge – facts about access)
   a. Probe: For instance, would you describe access-meaning students using computers when they want to or is access having computers available if teachers want students to use them?

8. Using your description of access, what access do you believe students currently have to computers and the Internet in Selinsgrove? (Opinion/Values – based on their own beliefs about access in the school.)

9. How would you describe student access to the computer and Internet at home? (Knowledge – facts about home access)

10. What kind of access do you believe most students in the Selinsgrove Area School District currently have at home? (Knowledge – facts about student access)
    a. Probe: Use your description of access if it will make it easier for you to explain your answer.

11. How do students use computers or the Internet at school? (Opinions/values – a description of what the student thinks.)
    a. Probe: How do you have students use computers or the Internet at school?
12. How valuable are computers and the Internet when it comes to student academic success? (Opinions/values – based on what the teacher thinks about the role of computers in student success)
   a. Probe: Are students able to use computers and the Internet as they would like to or is this all teacher directed?

13. How effectively did you use computers and the Internet in the classroom to teach, mentor or communicate with your students or their parent in the past year? (Knowledge – what has the teacher done in regard to computer use.)

14. Describe in as much detail as you can how you could use technology better to improve a student’s learning experience and make it as good as it can be. (Knowledge – what is the teacher’s reflection about improving student learning experiences)

15. Have you ever trained students on appropriate and ethical use of the Internet? (Knowledge and behaviors – to get the facts about training and whether teachers have done it)
   a. Probe: If so, to whom did you provide this training?
   b. Probe: How did you provide the training?

16. In addition to computers and the Internet, please describe any additional technology that you think would be beneficial to students’ education or ways to make current technology use more effective at home or school. (Knowledge – what are specific technologies that would be helpful to students)

17. What else would you like to tell me about computer and Internet access in the Selinsgrove Area School District?
   a. Probe: Is there another teacher whom you think would be a good candidate to interview based on their view of computers and Internet access in the school district? (Opinion – based on what they think about other teachers’ knowledge)
Appendix G

Student Interview Transcriptions

Student A

LK  What is your age?
SA  Fourteen.
LK  And what is your grade level?
SA  Eighth.
LK  Where did you live in the school district, not your home address, but Selinsgrove Borough, Washington Township, Monroe Township?
SA  Chapman Township.
LK  Do you have computer that you are allowed to use at home?
SA  Yeah.
LK  Is it your computer or is it a family computer?
SA  Family.
LK  And is it in a location that family can see it? Or is it somewhere that you can like take a laptop and go somewhere else with it?
SA  It's a laptop but we keep it in the living room.
LK  Do you have internet at home?
SA  Yeah.
LK  Do you know what kind of access it is? If it's high speed or through the cable or dial up or—
SA  It's, I would say, high speed DSL.
LK  DSL. Okay. Do you have a cellphone?
SA  Yeah.
LK  Is it a smartphone or it's just a basic phone?
LK Okay. How would you describe access to computers and the internet at your school?
SA I think it's pretty supervised. In the morning, we can go on for homework or research, but other than that not much.
LK Okay. So would you say with access, is it usually when teacher wants you to be on it, or when you want to be on it, or is it sort of a mix, depending on the time of day?
SA It's mostly when teachers want us on them.
LK Okay. At home, do you have access to the computer whenever you want it at home? Or do parents have certain limitations like, this many hours or in-between times or--?
SA We don't have limitations, but a lot of the things I go on the computer, for example, are like reading or doing research for homework or something like that.
LK How would you say that the access would be for most students in the district, based on the kids in your grade level that you've talked to, do they have computers at home or not or--?
SA I think a lot of them do.
LK And do they have internet at home?
SA A lot of them, yeah.
LK Cellphones. Do a lot of your friends have smartphones or is it basic phones?
SA Most of them have smartphones.
LK So do you get picked on for a basic phone?
SA No.
LK Yeah, my daughter does. She doesn't like that at all, and she's not getting a smartphone. I don't even use my smartphone [chuckle].
LK How do students use the computers and the internet at school? Is it mostly just to type up projects, do they do research on it? How do they use them when they are on them here at school?
SA It's mainly for projects and research.

SA: A lot of them are PowerPoints. Sometimes we need to put like a simple movie together or something like that.

LK: Have you used the Kindles at the middle school at all yet?

SA: Yeah.

LK: And how do you like using them?

SA: I think they're cool.

LK: Do you like them better, or not as well as the computer?

SA: I like a computer better.

LK: Why?

SA: Because I think it's more hands on. And you can move the mouse around more and you have a bigger screen.

LK: How valuable do you think computers and the internet have been to your education personally? Has it been of value or not really?

SA: I think it has.

LK: Why?

SA: I think we rely on them a lot in school.

LK: Do you prefer-- and I ask this question only because I had a senior who answered this and I'll explain why I'm asking it, after I know what your answer is-- do you prefer a computer to read, a Kindle, or a book?


LK: Why?

SA: Well, I like to read a lot. And I think I just like being able to feel how far I've gone in a book.
And I was curious because I talked to a senior and that's pretty much what he said. He liked holding the books, feeling the book, and he thought it was easier to mark pages in a book. [corsstalk]

I just like reading them, I like them.

Because of the feel or because of the ability to mark things more readily in a book?

It's because I can't really tell how far I am.

Do you cheat and read the back of the book?

No.

Oh I do that [chuckles]. How effectively, do you think, most of your teachers have used computers and the internet? Pretty effectively in teaching you, or is it, you've got some who are really good and some who are not so good? What do you think?

Pretty good.

And how about communicating with your parents? Do they use them to send things to parents, communicate with parents to your knowledge?

My science teacher, she has a couple of different ways to-- like we have the school website, she has an email and she set up a texting thing, that she could send texts out before a test or something.

Now you guys all have email addresses, do you use them?

I am rarely ever on my email.

Can you tell me if there's a way that you think teachers could use technology better to help you learn? And if so what would that be?

I think they're pretty good now.

Should we have more-- like some schools districts are going for a one to one computer, so that everybody has a computer that's theirs. Do we need more devices, do you think, in the school, or do we need to teach people to use the devices we have a better way?

I think we need to teach them to use them a better way.

Why would you say that?
SA Because we have three grade levels in the middle school and we have Surfaces, computers and Kindles. So I think once you learn how to use them you should be set for that device.

LK This is not a question - no teacher's going to get in trouble so you need to understand that [chuckles] - but do you think that there are some teachers that don't really use the computers any differently than like a chalk board? That all it is, 'I'm projecting up the notes I would have given you', like when I was in school, writing on the chalkboard, or do they really tap into the ability to go out to the internet to show you things?

SA A lot of them use the internet for the notes.

LK If there would be something else that you think we should have, what would it be? Should everybody have Kindles, every room have a Kindle? More access to smartboards or—

SA If anything I think it would be Kindles for the reading classes.

LK Why would you say that because you just said you don't like-- you'd rather read a book, but—

SA Because a lot of things we do projects in, like for reading and language arts classes we do a lot of projects and when we used the Kindles before, I saw that you could-- PowerPoint worked really good on them.

LK What else is there, if anything, that you think I should consider or be aware of with computers or internet technologies that I haven't already asked you in our district or even in our communities? If you don't know or if there's not anything—

SA I don't know.

LK I have one more question for you. I was just reading an article-- and this is one of those questions that nobody else has gotten asked because I just read the article - do you know where in our community - in Selinsgrove or Freeburg or anywhere - which areas have WiFi and which ones don't?

SA No.

LK Do you think if we would have something that students would know, if they don't have internet at home, if they would know that Dunkin' Donuts has WiFi, would that be helpful, more to a high school student who'd have a driver's license, or it would be something that, no, they would probably just go to the home or to their library?

SA I think they'd go out.
Student B

LK What is your age?
SB Fifteen.
LK What is your grade level?
SB Tenth.
LK Where do you live in the school district? Not your home address but do you live in Selinsgrove Borough, Freeburg Borough, Monroe Township?
SB Selinsgrove.
LK In the Borough?
SB Yeah.
LK Do you have a computer you're allowed to use at home?
SB Yeah.
LK Do you have your own computer or is it a family computer?
SB A family computer.
LK Do you have the internet at home?
SB Yeah.
LK Do you know what kind of access you have, like is it dial-up, is it through the cable, is it a DSL?
SB I think it's a DSL.
LK Do you have your own cellphone?
SB Yes.
LK Is it a smartphone or just a basic cellphone?
SB Smartphone.
LK  Do you access the internet much on your phone?
SB   Yeah.

LK  And what do you do with it when you're accessing it?
SB   Check my grades.

LK  [laughter] Okay.
SB   Yeah.

LK  How would you describe your access to computers and the internet at school? What do you have to do to get to-- Is it only when teachers allow you to get to them? Can you get to them other times?
SB   Yeah, mostly when teachers tell you to, but if we have a free period we can use them.

LK  And where do you go to use them then?
SB   Depending on what class you're in, I think.

LK  Okay. Do you believe students have good access or bad access currently to computers and the internet while at school?
SB   We have good access and people don't use it right.

LK  They don't use it right or they don't use it because there is no time? You know what I mean?
SB   Yeah. Well, they use it, but don't use it for the right things.

LK  Okay, like doing searches for stuff they shouldn't [laughter]. How would you describe access to the computer and the internet at home for you? Is it monitored? Can you get on whenever you want to?
SB   I can go whenever I want to.

LK  Is it in a location that your whole family sees or is it you have to go out of your way to look at it, like in an office or something?
SB   You have to go out of your way to look at it.
LK  What kind of access do you think most students in the Selinsgrove School District have at home based on your friends? Do most of them have computers that they can access or not?

SB  Yeah.

LK  When you want to look - like you said look at your grades - do you tend to use your phone more to look at that stuff or your computer at home?

SB  My phone.

LK  Why?

SB  Because I'm on it all the time.

LK  [laughter] How do students use computers and the internet at school? What do they use them for here at school?

SB  Computers and phones?

LK  Computers and just the internet here at school because you’re not supposed to have your phone on at school.

SB  Right. I don't really know. They use it for classes that they're in or they check their grades or they play math games.

LK  When you say classes that they are in, is it to research stuff? Is it to write papers? Is it to—

SB  It's sometimes to do web quest or to look up things or try to write an essay and get information on it.

LK  How valuable do you think computers and the internet are when it comes to your success as a student?

SB  Really valuable because you can search up things that you might not even know and they can help you do stuff.

LK  How effectively do you think your teachers use computers and the internet in the classroom to teach or mentor or help you out in the past year?

SB  They don't really use them that much, but when I use them they're for good reasons, like with the teacher that helps a lot.

LK  Can you give me an example of how a teacher uses it that it really helps you?
SB When one teacher in WAHG, when we’re about to get tests she’ll assign you a web quest to help you review for it.

LK How do you think teachers - because we know teachers are a mix, some use stuff a lot and some don't - how do you think teachers could use technology to better improve your learning experience to make it as good as it can be? Should they have more stuff or should they use what they have differently or does it vary?

SB Have more stuff.

LK Like what?

SB Because they do the same things like-- I don't know. They should have more options instead of doing only web quests. They should think of something more fun.

LK So instead of doing a web quest, it would be like, 'Here is a topic, go search it and create your own web quest on it,' or something like that?

SB Yes, that would be interesting. That would be different.

LK You're doing more of the deciding what the questions are going to be.

SB Yes.

LK Have you ever received training on the appropriate and ethical use of the internet, which basically is that you know how to use it so you're not doing the stuff kids are not supposed to? Has anybody trained you or talked to you about that?

SB No

LK Parents?

SB Kind of, not that much.

LK And at school? In addition to computers and the internet, what other pieces of technology do you think might be beneficial to your education or ways to make current technology more effective? There's really two questions there. The one is, is there something else we ought to be using that's technology? And the other one is, should we use some of the stuff we have more effectively, for instance your phone? Is there a way that could be used at school to make it more effective and help you more?

SB I feel if we could use our phones, it would be okay. But people would probably take it the wrong way and like do things on it. I think with the Kindle that's a good thing. It's easier for us to look up books and stuff that we don't have here.
LK Do you like using the Kindles?

SB I don't really use them that much but when I use them, it's easier because I like downloading things that would take us a while to get. So, it's easier.

LK What else do you think I ought to know about computers and internet access in the school district? And that could be here at school or outside of school.

SB I don't know.

LK You've talked to kids from other schools. Do you think ours is as good as what goes on in other schools or not as good? Could be better?

SB I think we're the same. The same things.

LK What's your favorite thing that you've done using technology in school?

SB Probably the Kindle, with the stuff. I like doing that.

LK What's the thing that you've had to do maybe most often or that teachers have used most and you're just like, 'Not again?' Is it, 'If I see one more PowerPoint I'm going to scream,' or?

SB Yeah. I don't like making PowerPoint. When we have to make those, I don't really like to do that.

LK Why?

SB Because it takes work. [laughter] Then you have to present them in class and I don't like to do that, either.

Student C

LK What is your age?

SC Sixteen.

LK What is your grade level?

SC Ten.

LK Where do you live in the school district? Not your home address, but do you live in the Borough, Freeburg Borough, Monroe Township?
LK: Okay. So you walk to school?
SC: No.
LK: You have a nice parent then. Do you have a computer that you are allowed to use at home?
SC: Yes.
LK: Is it yours personally or is it the family's?
SC: Yes. It's mine.
LK: And what kind is it? Is it a laptop? A desktop?
SC: Desktop.
LK: Okay. Do you have internet access at home?
SC: Yeah.
LK: And do you know what that is, [name]? If it's—
SC: Cable
LK: So it's through your cable?
SC: Yes.
LK: Okay. Do you have a cell phone?
SC: Yes.
LK: If so, is it a smart phone or is it just a basic cell phone?
SC: Smart phone.
LK: Do you access the internet much from your phone?
SC: Yeah.
LK: For what kind of stuff?
SC Projects sometimes, and if I need help looking at something when I'm not home.

LK Is it difficult to look at stuff like that? Like certain websites? Or you guys are just so used to it that—

SC I'm used to it. It's pretty easy.

LK Okay. Are you a stellar texter too? You just sit there and—

SC Yeah.

LK How would you describe access to computers and the internet at your school? Or in this school particularly?

SC I think it's pretty easy. I mean, if you need help with anything I just ask a teacher and I just go there. I can get on anything pretty much.

LK Would accessing it that way and asking the teacher - generally are you using computers in school when you want to? Or when the teacher directs you to? Or a little bit of both?

SC A little bit of both.

LK Which way do you prefer? When they tell you what to do or when you just ask to use it because you know how to use it?

SC When I ask to use it.

LK Okay. Why do you like that better?

SC Sometimes, if we're going through a book and I can't really find-- we usually highlight words we that we don't know if we read through a section or something. Sometimes I don't know the words. A lot of people doesn't. So sometimes the teacher will search out words for us or let us get on the computer and look up stuff.

LK Do you think students currently in the high school have decent access to the computers?

SC Yeah.

LK Do we have enough? Do we need more?

SC I think we need a little bit more. Sometimes when I go to lunch and try to print stuff off, all of the computers are used in the lunchroom, in the library and then there's class so like very few that are open.
LK So for access when you guys want to?

SC Yes.

LK Okay. How would you describe access to computers and the internet at home for you? Is it something that-- does somebody watch over it? Is it in your room?

SC In my room.

LK Okay, so when you're looking at stuff and surfing and everything, does anyone pop in and say, "Hey, what are you looking at?" Or is it just pretty much you're on your own.

SC I'm on my own.

LK What kind of access do you think most other students have? Do most people have their own computer in their room? Or do you think it's a family computer? Or—

SC I think a lot of people have family computers, but some do have their own.

LK Okay. Do you think many parents monitor what their kids are doing on the computer?

SC Very few.

LK How do students use computers here at school? And the internet? How do they use it? Is it always for projects? Or is it—

SC Sometimes it's for projects, but I'm pretty sure it's mostly just games that they play.

LK Okay. Someone whom I've already talked to said that there are certain things they’re tired of doing with computers or technology, because it's doing the same kinds of things. Do you have any feelings like that?

SC No.

LK How about PowerPoints? Do you like making PowerPoints where you—

SC They're easy.

LK So, they’re easy for you-- are you fine yourself and think you're pretty good with computers and technology?

SC Yeah.
LK Have you got any kids who you just want to go like, "Are you kidding me, You don't know how to do that?"

SC Yeah.

LK Have you run into any teachers that you feel that way about?

SC Yeah. Sometimes that is how I see it.

LK Are there many teachers that ask you guys for help and say, "Hey, I don't know how to do this?"

SC I've had two teachers before. That's pretty much it.

LK Does it make you feel smart when you do it?

SC Yeah.

LK Yeah it should because you guys are so much better at that. How valuable do you think computers and the internet are to your success as a student? Do they help you be a better student or do they distract you from being a better student, for lack of a better word?

SC I think it helps us be a better student and sometimes on projects you don't know stuff and if you can get it out of a book and can expand your mind. If you work on a computer, you get more information out of it.

LK How effectively do you think teachers that you've had use computers and the Internet in the classroom to teach you to communicate in the past year? Like we have e-mails for everybody. So how effective are teachers at using the technology we have?

SC They are pretty effective I would say.

LK If you would have to pick the one most effective use of computers or the Internet, what would that be do you think?

SC Probably Google.

LK Why? That's an interesting answer. I'm just—

SC I like Google because I think it's the biggest search engine. I like it the most because it's just pretty much simple. You just type something in. While at other places it will pop up with some ads or stuff so I like Google.

LK Do you see a lot of teachers using Google?
LK Because they want to or because you guys ask them something and they don't know?

SC No sometimes they just get on it. We asked a question in class and he didn't know it so when we were doing a worksheet, the projector is on and he gets on Google and just types stuff in.

LK Okay. How do you think teachers could use... technology better to improve your learning experience as student?

SC I don't know.

LK Do all teachers use it equally effectively? They're alright in computers, or are some like really good and some are like—

SC Not really good and some are awful.

LK The ones who are really good, what have they done that makes them really good with the way they use it?

SC Some people they don't like-- sometimes I don't stay if I'm getting late. I don't like to look. I can just kind of daze off. Sometimes they'll put some animations on the board so it will keep people looking at the board and writing stuff down instead of just sleeping.

LK Okay. And the ones who don't use it effectively?

SC It's just like showing letters-- like nothing. They are projecting something on Word or they're trying to show us something that will be really boring.

LK Sort of like the old style, write notes on the board type thing or some other way?

SC Yeah.

LK Okay. Has anybody here in this school - and I don't mean just in the high school, but through the school district - trained you on the appropriate and ethical use, that you're not to break any rules on how to use the internet?

SC No.

LK Even in middle school nobody said, "You shouldn't do this. You shouldn't do that"? How did you find that stuff out?

SC I just think it's a common sense, do some stuff on the computer.
LK  Okay. Have you ever typed something in and you hit the wrong thing and you were like, "Oh I better get this off before somebody sees it"?

SC  No.

LK  No? You're very lucky then. [laughter] What other technology, in addition to computers and internet, do you think might be beneficial to your education? That's the first part. This is a two-part question. That's the first part. Is there something else that we ought to have here that would help you guys?

SC  Well, I think that we should have, instead of like-- I don't know. I don't like really carrying book bags. I think we should have iPads. My mom's school has iPads instead of book bags. I carry like four to five books a day usually and it's just a lot of weight on my back and sometimes my back hurts. And it would be better if it was on the iPad because you can have kids, everything would pop up because we got, like-- there's a new app or something and the teacher can get things, be on his computer and it could pop up on our screens and it could help us even more. When we were doing projects we wouldn't need to get our laptops out and waste all of our time logging in and stuff. We can just get on an iPad, do something, and just get in and Google from there.

LK  So you're more talking like a one-to-one like every student has one and you were pairing with him?

SC  Yeah.

LK  Okay. What ways could we use the current technology better that we do have? Like we have Kindles in some rooms, we just got Surfaces that are coming into some rooms - what do you think we could do for teachers to use it better? Or is it more as you said some teachers are really effective and some aren't, is it more a 'train the teacher to use what they already have more effectively'?

SC  Yeah, I think it's that the teachers need to be trained a little bit more so they can keep students on task and moving instead of a lot of them just falling asleep. Because there's this one class my teacher's really boring, and a lot of kids, I'll sit down and I'm just like gazing off and there's a lot of kids already sleeping around me and just not taking notes, they're just lying there.

LK  Okay and they're using that-- using the computer?

SC  Yeah.

LK  Okay. What's your idea about technology and the internet, either in the school or in the school district itself, is there anything else that's important that I should have asked you about?

SC  No, I don't think so.
**Student D**

LK  The first couple of questions are just about you, and then we'll get into the stuff about computers and the internet. What is your age?

SD  18.

LK  What is your grade level?

SD  12.

LK  Where do you live in the school district? Not your home address, but is it Selinsgrove Borough, Monroe Township—

SD  Washington Township.

LK  Okay. Do you have a computer that you are allowed to use at home?

SD  Yes.

LK  Is it your own or is it the family's?

SD  Family computer.

LK  Do you have internet access at home?

SD  Yes.

LK  What is that form of internet? Is it dial up? Is it high speed through cable? Do you know?

SD  Through cable, high speed.

LK  Okay. Do you have a cell phone?

SD  Yes.

LK  Is it a smart phone?

SD  Yes.

LK  Do you use the computer more often to access internet things, or your cell phone, or does it depend on where you are?
SD: It depends.

LK: So you sort of use them equally?

SD: Equally, yes.

LK: How would you describe access to computers and the internet here at school? Is it good? Is it bad? Is it—

SD: It's good if you need to access a computer. It's accessible.

LK: Okay. With that accessibility, is it whenever you want to use it, or is it generally only when the teacher wants you to use it?

SD: It's usually when a teacher does, but if you have free time, like during your lunch, you could go to the computer lab in the library.

LK: How about access to the computer and internet at home? You said that it's a family computer. Do you find yourself fighting over it, or it's okay and you can use it whenever and wherever?

SD: I can use it whenever.

LK: Okay. Do your parents monitor your internet use at all?

SD: No, not particularly.

LK: So they trust you?

SD: Yeah.

LK: Okay. What kind of access do you think most students here in the district have to the internet at home? You know, your conversations with other students.

SD: I would assume most of them have family computers, if not also laptops.

LK: Okay. Do students use them a lot, or use the internet a lot at home? Or is it for their own good? Or is it more like they're playing games and maybe only doing some research?

SD: A lot of people use them at home, but most of it, hearing conversations, is just for social media.

LK: How do you think students use computers here and the internet here at school? Is it for research? Is it just word processing? How exactly do they use it?
A lot of them use it for word processing when they have free periods in the library, and a lot of people also do it for research - things like that.

How valuable do you think computers and the internet are when it comes to your academic success? I mean, you’re taking classes for Susquehanna as well, so obviously you’re strong academically. How or what role has computers and the internet played in that?

It plays a pretty big role just because it’s a huge time saver. You can multitask, you can do research as you’re writing a paper, bibliographies, at the same time. It’s just a big time saver. You can also finish a lot of that in school if your teachers allow you the time. It just saves you time both at home and in school.

How effectively do you think teachers use the internet and the computers to teach here in the school?

I think they use them very effectively. I’ve taken two classes now where a lot of the examples and simulations are online, and you do work based off of websites where you have to find your independent answers to different questions and follow along in packets, so it’s used pretty well.

Do you find that teachers are equally well versed in the use of computers and the internet, or do you find some are very strong and some are not so strong and that students surpass them?

I think the faculty's pretty well suited in the computer access. The more advanced classes I have is the ones where obviously you have more computer-based things to do, but even the average general classes - they're still well versed.

How do you think teachers could use technology better to improve your learning experience? Should there be more use of computers on your own? Should there be more access to the internet, or do you think it's pretty good the way it is right now?

The only problem I see is the primary two forms that we present are either word documents and PowerPoints, and it'd probably just be a little more useful to be more versed in Excel and spreadsheets - things like that - instead of just word processing.

Especially if you're going into engineering or something you'd like to have strength in, okay. Have you ever received, at school, training on the appropriate and ethical use of computers and the internet - like the dos and don'ts?

Yeah. A lot of that's also in the school manual that you're allowed to and what you're not allowed to look up.
LK Alright. Do you think most students follow that at school or do you think it's our blocking that forces them to follow it?

SD I think it's a combination. I think the kids that truly want to learn, research, and do things like that, will do it on their own. They're not going to try to play games or anything. But then some kids, obviously, they're not going to be really that productive and they'll just kind of burn through class time so they'll try to look up games, things like that to do.

LK Okay. In addition to computers and the internet, have there been other forms of technology here at school that teachers have used that you have found to be helpful?

SD Not personally, but I know that one of the teachers - or several of them actually - have Kindles that they use, so I haven't been able to use those because I haven't taken those specific classes, but I'm sure those would be very helpful.

LK There are a lot of schools that are going to a one to one technology. Do you think that that would be beneficial here, or do you think it's more a case of 'our teachers need to use better what we have. Our students need to use better what we already have'?

SD Technology is great, but I also personally like to have the tangible book with me and I can bookmark things so I don't have to always keep going back and scroll through. And I just like to have the book with me because I don't always have to be around technology because even if you have a smartphone, it's still-- it's much harder to read things on it. So I'd just rather have the book that I can take with me places.

LK Okay, what else do you think I should know about computers or internet usage here in the school district, either in the schools or just in our area that I haven't already asked you about? Is there anything?

SD Not that I can think of.

LK So when you go to college next year, will you have your own laptop?

SD Yes.

LK And have you-- you've taken your classes at Susquehanna. Have you run into anything yet where you have like an online text book or talked to students who are already in college who've run into that?

SD I'm actually in the computer programming class right now, and we still have an actual text book. Yeah.
LK    Oh, neat.
SD    Yeah.
LK    Okay, thanks.
Appendix H

Parent Interview Transcriptions

Parent A

LK  Okay, what is your age?
PA  52.
LK  What grade is your child in currently?
PA  11.
LK  And did you have any other children younger or older who are in the district?
PA  Yes, older.
LK  And, when did they graduate?
PA  He's a junior in college now.
LK  Okay. Where do you live in the school district, not your address but, Selinsgrove Borough or one of the townships?
PA  Monroe Township
LK  Do you have a computer that you allow your child to use at home?
PA  Yes.
LK  Do they have their own computer at home?
PA  Yes.
LK  Do you have internet access at home?
PA  Yes.
LK  What type is it as far as a DSL or cable or-- ?
PA  It's Verizon DSL.
LK  Okay. Does your child have a cell phone?
PA  Yes.
LK  Is it a smartphone?
PA  Yes.
LK  Do you notice which way they use-- like do they use the cellphone more or the computer more to access the internet when they are at home versus out and about?
PA  I would say it’s like 50/50 at home.
LK  Okay. And then do you know if they use it, their cell phone more to access internet
outside or is it more like Facebook and that kind of stuff, versus, going to search for information on the internet.

PA Well no, because we have the data plan, so I don't allow her to go too much on the internet.

LK Okay.

PA Outside its home.

LK How would you describe access to computers and the internet at the school? Like is it fair, is it really good, really bad from what you-- or wherever what your kids have said?

PA In general or--?

LK In general.

PA In general, when my child is at school, how much could she access the internet?

LK Yeah.

PA I guess very good.

LK Okay. Do you believe students currently have enough computers and the internet access here at school, or do you think there's- has she talked about frustrations about not being able to get on the computer or having issues?

PA She has not talked about that. So--

LK Either way?

PA Okay, I think there should be more access for students.

LK Okay.

PA I'm not sure how, but some schools are going to give a laptop to every student.

LK Right.

PA I think you mentioned that is what's going to have to happen.

LK And I think-- Just so you know that's something that we just actually talked about to the superintendent. Maybe us moving in that direction and coming up with a plan for that--

PA Especially lower income kids.

LK Yeah. How about computer and the internet at home? Is it-- the question that I asked the students is, Is your computer in your room or is it in a common area where parents can see it all the time?

PA She has one in her room and we also have a common one.

LK Which one does she tend to use most?

PA Her room.
LK What kind of access do you think most students in the school district have at home? Is it pretty good access? You could do that as a percent or based on her friends or what you've heard from kids.

PA I'm guessing most have access at home, I don't think by phone that they do, but I think by internet that they should at least. I know some don't, but most probably do.

LK In your knowledge of your child, how has she had to or been, requested or required to use the internet and or computers while at school?

PA While at school?

LK Uh hum?

PA I don't really know, to be honest with you.

LK Because it's something she doesn't talk about--?

PA Right. I know at home she uses it for school assignments.

LK And that was going to be the next question. At home, how does she use it for school?

PA Mainly for research. Sometimes it's easier to spell-check. There's no dictionaries anymore. [laughter] To spell something, to translate something from a foreign language, to just research in general.

LK How valuable do you think computers are for your child's academic success? Not in their social stuff but academic.

PA 100%. They absolutely have to have it--

LK And why would you say that adamantly and that quickly?

PA Because everything you do-- it's ruling everything now. It makes students' lives a lot easier. You don't have to look things up. You don't really have to listen to the lectures if you don't want to. You just go home and type in 1875, what was going on there or something. It's a dangerous thing, but it's also a very valuable thing.

LK And to jump away from your daughter who is still in school. Your son who is in college, do you find that when he is home, is he doing a lot on the computer as well for College stuff?

PA Everything, he reads some of his books which are online, as you probably know too. So he doesn't buy the book he just finds the licenses, I guess from the internet. I am not sure how that works.

LK I don't know either.

PA Yes. He is on it, all the time. And for that reason, we got him an unlimited data. [chuckles] I mean we were driving him back to Pitt doing-- hopefully homework, but-- [laughter] They have to have a computer, they have to.
As a parent, how effectively do you think teachers have used computers and the internet to either teach or monitor your child or - and it is two parts - to communicate with you in the past year. So start with your child. How effectively do you think teachers have used computers and internet for your child's education.

Not nearly as much as teachers can. I think we are still a little leary of it with text books and so forth and going old school. So I think that's just been tasked to a bare minimum. I think 20 years from now, I think it's going to be completely out of this world with internet and I don't know if there's going to be text books, to be honest with you. But I think they'll just have to resource the internet features.

And then, as a parent, do you get much communication by internet from teachers? E-mails? Or is it something that doesn't happen a lot?

I don't think I've ever gotten emails from teachers.

Do you use the internet through our PowerSchool. Do you check her grades through PowerSchool?

Yes. PowerSchool's great. Again, that's just it. A small portion we just have, even the district, I think, we got a lot more to be done to internet, in general. The only problem it shows, is some parents don't have it. You can't really use that as an end-all. For instance, in Band, we have an e-mail list, but we don't have all our parents on it, so if the rehearsals cancelled tonight, well, it might be eight parents that only get e-mail. The kids don't have e-mails anymore either--

That's true.

I'm not sure how, but I think it's going to be 20 years from now, I think it's going to be a completely different ballgame.

In your experience, have there been teachers who you felt have used the technology available very well, for your kid's education, and if so, how was that? And have there been others who have just-- it's like, a blackboard. They're using the internet and computers the same as the blackboard.

Right. Yes, basically some. I think Parker had Jason Heiser, who uses-- puts all his stuff on, I'm not sure what he uses, but I remember him going on there, and XXXX he uses it quite a bit. But there's some teacher's that don't use it at all and, that would be like the black and white. I'm kind of not sure if math teachers, have ever seen them go away from that, you know they have study guides, once in a while. As far as music goes too, I don't really use it that much, except to go on for general music class. When they put YouTube on, that's the best that could ever happen for us on this Department.

Because you have more access to somebody--?

Yes. And you talk about something in pop trends and let's say, you're talking about Ringo Starr being in music. Who's Ringo Starr? [laughter] I think-- I'm not sure if teachers have really explored that yet, I'm not sure why.
LK With the whole thing of let's use the internet, let's use it responsibly. To your knowledge, did either one of your kids ever receive specific training on the appropriate and ethical use of the internet, and what you should and should not be doing with it? At school.

PA Probably, but I don't know.

LK Okay.

PA I would hope they would have.

LK And have you ever talked about it with your kids?

PA Absolutely.

LK So they're getting it from you but they may or may not have gotten it at school.

PA Well, it's just like, you say to your kids - Okay, don't eat that candy, they'd go on there and eat the candy--

LK Right [chuckles].

PA Don't go on to sex sites, they go on sex sites. [laughter]

LK Do we need additional technology in the district to help the students learn better, or going back to something you said previously, do we need to use the technology we have better, to help students?

PA Both, certainly there's enough in this district that we have, to keep going with. But, I'm not sure if it's just this district or what, like for instance, the YouTube thing, I'm not sure why every other district had it before us, they were just too conservative. So I think it's there for us and we just have to let the teachers have more say in what they should and shouldn't use--

LK But we've gotten-- some teachers have gotten Kindles, some have Surfaces now, which is like a tiny computer, basically. Do you think-- and you mentioned the one-to-one computing - do you think that's a direction we should be going, that every student has something when they come in the door?

PA I'm not sure, because you certainly can't just substitute a teacher, a body up there for the internet, but I think certainly, if every teacher have a laptop in front of them. For you to look something up or to do research or whatever. And again, especially for the low-income students, because it's just a valuable resource, I'm not sure-- I don't know, to answer your question, I don't know.

LK Is there, like digital recorders, that would be a technology thing. For music, should we have lots of digital recorders for different things? Or for foreign languages, is there other technology that we've gotten instead of using computers? Are there other technologies that we're not using or should have be able to use?

PA Well, during the parent and teacher thing, the other day I was recording something for a jazz audition for a student and I said, I gave him a cassette. I thought I was recording down there with an old cassette. And he goes, "What the heck is this
thing?"

[Chuckles]

PA He was just looking that thing-- technology.

[Laughs]

LK Okay. I didn't know we still have them around much.

[Laughs]

PA Turntables. I had a record player and I didn't get a CD for it yet. So yeah, as for as the music goes, it could be great for students who are interested like in piano that they can record themselves and then listen to it. There's programs out there that could cost money, but some schools have gone to where, instead of keeping practice records, or practice 15 minutes a night, they have a - I don't know what it's called - but you actually record yourself, and then I can hear them immediately, or I can listen to them next week, or I can listen to them at the end of the semester. It's all recorded digitally.

LK Wow. That's interesting.

PA Yes, and it's not that much money, and then our keyboard, it would be great to have stuff that we can actually play most out on a computer, have a recording studio, so we can actually record the band and sound, but there's a lot of things that are out there.

LK Do you think that we can get so wrapped up in getting technology, that we buy it, but we don't then teach people how to use it effectively, if they don't already know?

PA Yeah, absolutely. There's no substitute for one on one, or a teacher to a student, absolutely not. So if I say, Okay go home and read this chapter, we'll have a test on it tomorrow, well that's memorizing and regurgitating, you've got to have human contact. So it can be dangerous, I think, absolutely.

LK Is there something else I should know about technology used in the district that I haven't already asked you about or availability?

PA I think there's things-- I don't want to paint the district as being archaic or anything because I think there's tons of stuff out there. But I think teachers probably should be trained more on how to do stuff like XXXXX, or XXXXX is doing. Or even like... getting away from e-mail, because lots of parents don't have e-mail. Some kind of cellphone thing where you just press it and it goes to their cellphone, text message or something, I don't know. But communication with the parent could be a lot better I think with all this technology. I'm not sure how, because I'm not a computer person.

LK That actually may improve with the new system that we're going to from Power school to Sapphire. I think there is actually - and I have to check - but I think there's a way that a teacher could actually send a message out to kid's parents
through that system, where we do an automatic calling thing. I think that's one of those things that they talk about is in there. So that might enable that just by changing to a new program.

PA Right. And so some kids don't get - it's not specific, again - but some kids don't fall through the cracks. It's like you said, I know we have-- if you're failing for sports, but what do the kids learn in sports or what the kids learn in an extracurricular activity? It be nice for other teachers to know that they are not doing well in other subjects. Like XXXXXX--

LK So maybe look at a different way to let everybody know-- [crosstalk]

PA I can't access kid's grades, Can I?

LK Not to my knowledge. [crosstalk] Maybe you can see some of them but I'm not sure.

PA Yes I have been here forever and I don't even know how to do that.

LK Yeah, well, if you could access PowerSchool, maybe and since we're moving to a new one, I'm not sure how that's going to change. Because we're just learning what the capabilities are of that new system anyway.

PA Right. I think you have everything in place. I mean, it's ready to go, I just think it could be used a little more. I'm not sure how, but it will be, I think. It will be.

LK That's it. Thank you.

PA You're welcome.

**Parent B**

LK What is your age?

PB Forty four.

LK What grade is your child or children in currently?

PB Seventh.

LK Do you have any other children that went through school or already graduated?

PB No.

LK Where do you live in the school district? Not your physical address but Selinsgrove borough, Penn Township.

PB Selinsgrove borough.

LK Do you have a computer that you allow your child to use at home?

PB Yes.
LK  Do they have their own computer or is it a family computer?
PB  They have their own.
LK  When they use the computer, is it used in a common space that it's being monitored or you just trust them to use it in their room?
PB  Common space.
LK  Do you have internet access at home?
PB  Yes.
LK  What kind of connection is it? Like dial up, DSL, cable?
PB  Cable?
LK  Does your child have a cellphone?
PB  Yes.
LK  Is it a smartphone?
PB  No.
LK  Do you have a smartphone?
PB  Yes.
LK  Do they ever use your smartphone to access internet or do any of that kind of stuff?
PB  No.
LK  How would you describe access to computers and the internet at your child's school, based on what they've told you? Is it ready access, or they can't get to it very often, or it's only when teachers say, go get on the computer?
PB  It's just when teachers say go get on it, I think.
LK  Does he like using it?
PB  Yes, at school.
LK  Do you believe that students currently in Selinsgrove have enough access to computers and the internet while at school?
PB  Yes, I think. For his grade, I think it's an acceptable amount. I think maybe at the high school level, they could use some more access to them for some things.
LK  When you say access to them for some things, when the kids want access, or when the teachers want access?
PB  When you get to do research and there's not a computer in every room. I know they said in the Special Ed rooms so that they can use those to research things and give them extra time. A lot of kids don't have at home.
LK In your home, the access for your child, you said he has his own computer, can he access the internet from his own computer or is it only work, offline things? What kind of stuff does he use it for on the internet; playing games or just looking things up?

PB Playing games

LK What kind of access do you think most students in the school district have at home based on what you heard from his friends or from kids that you know in the district?

PB Complete access, I think. So many parents that I know have limits or parental locks on their computers.

LK Are there many kids that you have heard that instead of using a computer to look something up will use their phone instead? Do they use them interchangeably or when kids want to do research do they primarily go to computers somewhere?

PB I think they primarily go to a computer.

LK How do, based on what you've heard from your son particularly, how do students use computers and the internet here at school or in his school, since he's not in high school?

PB I think basically, for like projects and PowerPoints, and when they need to present something. I don't know if they're really--I think that's the only time he ever gets to use them.

LK So in old school when they would make a poster, they're now just doing a PowerPoint?

PB Doing a PowerPoint.

LK With that in mind, how effective, or how useful do you think computers are for your student's academic success?

PB I think it's very important, because more and more things are coming to that, and they know how to work them better than we do, or my son does.

LK Does he prefer to do that over books like--

PB Absolutely.

LK -- when he has research and do things?

PB He needs to read. I can get him to read a book online, but I can't get him to read a physical book.

LK All right. How effectively do you think teachers use computers and the internet for your son's education?

PB It keeps getting better.

LK I like the way you say that, because it's sort of a question, why would you answer it that way?
I know that when he got to the middle school that he did have use of Kindles in his social studies class. And he was really excited about that. He got to bring in headphones, and you could look up things, and listen to things. A lot of kids learn differently instead of just lecturing and taking notes. It makes it more exciting and more interesting. I think he's had more access to them being in the middle school than from let's say the intermediate school.

From kids you know to high school, is it still exciting to them to be able to use computers or at this point, do they get to use them so much that it's like, okay yeah we're just getting the computers out?

I think it's we're just getting the computers out and then sometimes they think it's a time to just goof off here and there when they get access to them.

Do teachers all use computers and the internet equally effectively? Or do you think there's some teachers who are really excellent at using it and others it's just like a glorified blackboard for lack of a better way to say it.

I haven't really been in classes that use them too much here in the high school. I know that in science classes and things like that they can use them for research. Which is sometimes easier to pull from books for kids because they can just type specifically what they're looking for. But I'm in math classes we don't really get them out much. So I think that there's some classes that it's more effective to use them with like in English and in Science maybe, then maybe per say Math.

How effectively do you think teachers use computers, internet, whatever technology they have available to actually communicate with parents?

I think it's getting better too.

Why getting better? What's changing that's making it better?

Well a lot of it has gone to online, but then you're still kind of stuck in that spot where some homes don't have internet or have smart phones. If you're expecting a child to be able to check the homework that they missed online, which is one thing they've done at the middle school check online. Well at one point I didn't have internet, so it made it really difficult for me to help my child through this technology-

Because you didn't have it?

And that's the only way that they do it now.

They used to have a homework hot line.

They used to have a homework hotline and then I went without internet and I called and I said, "Can I get his work?" Then they said, "Well you need to check the internet." It used to be the teachers used to get the work together. So I mean, I think they're trying to make it more steadily used, but in today's society, you can't expect that everybody's going to have access to these things at home.
So in using the technology, in some ways we've gone too far toward technology, forgetting that some people may not have access.

Yes.

That makes perfect sense. Do you ever check your son's grades online, and use Power School in that way?

Yes.

Have you found that to be effective as a parent? Or is it, I check on him, but not intrusively kind of thing.

I check on him, but not intrusively. One, because I had a really hard time setting up my own account to get in there. Every time I try, it doesn't let me in, so I have to go through his password, like his login and his password. So I'm logging in as a student. I can never get logged in as a parent. I've tried for three years to create my own parent account.

I wonder why that is?

I don't know.

How do you think teachers can use technology more effectively? I mean certainly the example of they’re using it so much for homework, but are they using it effectively in school? Do you hear them talking about that or have you observed or heard from other kids like, "This teacher does a really good job because they do this with it, and this one never does it."

No, I've not really heard anything. I think the mimeos are big. I think they do run through the internet. They have to for math classes, it's really nice to have it up there and big, and to have the pages up there for the work. So I think that that makes a big difference. Instead of just writing things on the blackboard.

In your knowledge of your child's education, has at any time in the school district, not from you but at the school district, ever been instructed in the ethical and proper use of computers and the internet?

I don't think so.

Have you ever talked to him about it?

Yes.

Should that be something that's instructed in the school district?

Yes, they're giving guidelines of what they can and can't do but they're not really giving free knowledge of what you put out there on the internet is there. They don't have an understanding of that. Sometimes I think that they are doing wrong when they do a lot of these things on the internet because it's just what everybody does.
LK  Well we have the Acceptable Use Policy, it had some of that in there, how many kids
do you think actually read it before they sign it?

PB  None.

LK  How about parents?

PB  Maybe fifty percent.

LK  So that's an area probably we ought to be looking at improving. In addition to
computers and the internet, are there any additional technologies, you mentioned
Kindles, that you think would be beneficial to your child's education here in
Selinsgrove?

PB  I think maybe the Kindles or an iPad when they're doing a project. It would all
depend on what the district would have money for, but I know it makes every topic a
little more exciting. It's a little different way to present things. So kids get really
excited about that. They might be more excited about learning.

LK  Based on what you heard about, like our district compared to another one, how do
you think, technologically, are we about on par with other people who have kids in
other districts or other states that you know are, do we seem better or farther behind?

PB  I think we're about middle ground. We have come far. The students have emails now,
a lot of them don't know that though. They don't know how to access them. I didn't
know I had an email. So, these things are out there for them but, I don't know if they
exactly know how to properly access and use them for their advantage. I know that, I
heard that some other schools they're doing a lot of things on laptops like, every kid
has a laptop.

LK  Is that something you think we should aspire to?

PB  I'm not sure because that's a lot of responsibility and a lot of money. I see how kids
lose things and are disrespectful towards things that aren't theirs. I guess you'd have
to weigh your options of how much damage, you know what happens, if you do that.

LK  With just technology and internet in mind, is there anything else that I should know
about the district and what we have or don't have or should we just be trained better?
Should kids be trained better? You said the ethical piece that we should have that.
Should we, for instance, you mentioned email, should we actually do a training on
how to get into your email or provide them information? Is there other stuff we
should be doing that we're not?

PB  I don't know if maybe that should be in the handbook or-- Didn't we just get the
email last year?

LK  Two years ago.

PB  Two years ago? Okay, I just learned about it last year.

LK  A lot of people were not using them.

PB  So they weren't using them and there is so much out there. I know that when they're
doing projects in WAHG, they can all put their stuff in this one thing and it can be combined. I don't even understand how all of that works. I know the teachers had some problems describing it. I think for the most part, the kids coming up through have way more computer knowledge than we do.

LK  Right, as parents and teachers, yeah. So I guess we should capitalize on that and try to learn with them?

PB  I try. Every time I try to get my kid to do something I'm like, "Show me how to do this" and he's like it's so easy. I'm like no, take two seconds instead of just doing it and show me how to do this so I don't have to ask you all the time.

LK  It's probably just easier for him to do it.

PB  And it is easier for him to do it and I understand that because there's a lot of things in life like that. But I think we're doing good. I know the kids aren't getting at home, a lot of them, is the cyber-bullying thing and that really upsets me.

LK  When you say aren't getting at home? Parents aren't watching it, parents aren't talking to them about it?

PB  Parents aren't watching it. Parents aren't talking to them about it. I've personally have gone through my son's Facebook page and pulled him off and wouldn't let him on because you can't say some of those things. They're out there. They have no idea. I don't know if they are not grasping the concept of it's out there, it's forever.

LK  So that's something that we should be teaching every kid. If we would have some kind of a-- I don't know that little kids, in the elementary school, would need that but maybe a reinforcement for middle and high school.

PB  Yes and even kids in the intermediate school are online and on Facebook and saying and seeing things and are exposed.

LK  Now when your son was in the intermediate school that they still have some, because I don't know when it was lost, did they still have the computer class that they went to? There was a teacher and they actually had a computer class in the library and they had computer class assignments.

PB  I don't remember that.

LK  Then it's probably gone because I think the year we did furloughs, I think, it was axed to that point. So that's been what three years now?

PB  Yes.

LK  Yes so maybe you missed it because I'm not even sure it was taught in that class but that would be logical.

PB  Kids are being taught ethical values at home, my personal opinion, lately. There's a lot of problems being caused. Even today you see it. So and so said this. I'm being told constantly about cyber-bullying. It's almost out of control where it's gotten to this point. I think maybe if the kids are educated a little bit more about it. That part scares me. That's it.
LK: Actually what I'm finding repeatedly is that.

Parent C

LK: What is your age?
PC: 50-years-old.
LK: What grade is your child in currently?
PC: She's a senior.
LK: And did you have students who are older than she is?
PC: Yes. I have a daughter that graduated in 2010.
LK: Where do you live in the school district? Not your physical address, but in Selinsgrove Borough, Monroe Township--?
PC: Penn Township.
LK: Do you have a computer that you allow your child to use at home?
PC: Yes.
LK: Is it in a common space where you can see all the time or is it in a--?
PC: She usually uses my school laptop.
LK: Do you have internet access at home?
PC: Yes.
LK: What kind of connection is it? High-speed, cable, DSL--?
PC: It's Verizon internet, so it's high-speed.
LK: Does your child who is still in the high school have a cellphone?
PC: Yes.
LK: Is it a smartphone?
PC: Yes.
LK: Do you know how she uses it? Does she use the internet, does she use to check the internet? Or does she usually use it just as phone and texting?
PC: It's mostly phone and texting. She has an iPad, whatever it is; that's what she usually does the internet with.
LK: How would you describe access to computers and internet at the high school for your child, not for a teacher, but for your child?
PC: Adequate.

LK: What do you mean by adequate?

PC: It's available when they need it. Any time that we need to get a computer, we can.

LK: Do you believe that students currently have, when you say adequate access to not only computers, but to the internet at school?

PC: Yes.

LK: Is it on their terms, or is it on the teachers' terms? Is there a place where they can access it if they need it, or is it only when a teacher says, "I need you to go get a computer and do it."

PC: I would say it's the latter, because most students don't have any free time, so when they are using the computer, it's in a class. It's not like there are study halls, and they can just go down and surf or do whatever.

LK: Your child's access to computer and the internet at home. Do you monitor it, or is pretty much--?

PC: It's self-monitored, because it's the school computer. She knows that she's not allowed to do anything inappropriate on the school computer.

LK: What kind of access do you think most students in the district have to computers and the internet in their homes, based on what you've heard from her friends or other kids?

PC: I think all...I can't say all, but I'd say that the majority of the kids have free internet and wide variety of how it's monitored.

LK: And smartphones, do you think most kids have smartphones, or not so much so?

PC: Yeah. As an owner of the flip phone, I get confused quite often [laughter] about not having a smartphone.

LK: How do students use the computers and or the internet at school? Is it research? Is it just typing papers?

PC: I'd say probably 70% using it as a word processor, and maybe the other 30% as research.

LK: How valuable are computers and the internet for your child's academic success?

PC: Somewhat important. Here's where we're at, I think with the whole thing is that, we want people to be able to access the internet and use all the wonderful tools that are available, but yet the tests that they are governed by, there's no internet part of the test. There's no ability to research. So, AP Calculus will use the tools, but we don't put a lot of emphasis on it, because for the AP exam there's no internet access to do
it. So I think we're in a bit of a conundrum there that, yes, I'm available, but the tests
govern their future, they're not allowed to use it.

LK Do you think that's based on the disparity between districts, as far as availability, or
it's always been done and we're going to keep doing it that way?

PC The testing companies have not come up to speed yet, is my opinion. I always tell
the AP Calculus kids, until that day that there's an internet access part of your test
then, we'll absolutely explore more, but until then it's pretty much used to look up
the answers.

LK How effectively do you think teachers use the computers and/or the internet in the
classroom to teach your child specifically, based on what she said, or does she not
talk about it?

PC Yes, she talks about it. It's mostly internet is for research, and again, in Science and
Math, we really don't use it as a tool that much. There's all kinds of programs to
solve equations, to do graphs, but we don't really emphasize that because it's not
available on the big tests, or the calculators is where we do most of that in math
class. So, I'd say it's mostly the Internet is just research.

LK Based on what she said, are there some teachers that use computers and the Internet
really well, like beyond that word processing, and others that essentially use it as a
glorified blackboard?

PC I think most of it is again, they use it for research. I haven't heard anybody that this
whole class or this whole unit is Internet-driven. So, I have not heard any of that. I
think most of it is just doing some research and some blackboard-type usage.

LK How well do you think teachers, in general, use the Internet and computers and e-
mail or whatever to communicate with parents? For instance, our superintendent
just went to creating his own Twitter account. Do you think they use it well, or is it
again, it's such a variation that it's hard to--?

PC I know a lot of teachers, like my circle of friends, we e-mail parents back and forth,
good and bad. I think that's really opened it up. It's really helped me to
communicate for the kids that are absent. We e-mail each other, I can send them all
the notes through e-mail. As far as Twitter goes, I don't think the current generation
is all that up to speed on Twitter yet. Kids, yeah. Parents, no.

LK Has your child - to your knowledge - ever received training from someone in the
school district about the ethical and appropriate use of computers and the internet?

PC I do not know that answer.

LK Have you gone through that with your kids and talked about how you should or
shouldn't? Or do they just sort of pick it up?

PC I have not given them any formal training. My internet is, 'Here are sites that you
can use to look up things, to solve things.'
LK If we don't teach that to all kids somewhere, do you think with the way we're going with computers we should make sure that they are instructed in ethical and proper use of the Internet?

PC Oh, yes. Because kids that don't are going to be caught and punished. And you definitely want to have it out there that, 'Here are the dos and don'ts of the Internet.' So, yeah, that is important.

LK How many kids do you think actually read the Internet Use Policy before they sign the paper, or their parents?

PC 15%.

LK In addition to computers and the Internet, what additional technology do you think would be beneficial to your child's education? Is there any out there that we aren't using and should be?

PC Most of the technology, for instance in the math program is graphing calculators, which we do provide if kids need them. I would like to see, eventually, all our textbooks and whatnot on some device, whether it be a tablet or a Kindle, or whatever. I don't know. You would know better than that when that's coming, but I think that would be a huge benefit, especially with the rumors that backpacks are going to disappear.

LK I would like to see them disappear [chuckles].

PC I'm with you.

LK Do you think there should be more training for teachers on how to use some of these resources effectively? Is it, we need additional resources or do we also need training on how to use some of them better. The Classrooms for the Future was around a couple of years ago, and now there's nothing.

PC I kind of feel sometimes teachers use the technology just for the sake of saying they use technology. And my adviser, 100 years ago when I was in college, when personal computers were just coming out, it was way ahead of the curve; you use computers to do something that a textbook can't do. And I don't think we do a lot of that. I think that most of the internet usage is again, something that a book could do.

LK What should I know about computer and internet access at Selinsgrove, in the school district? You said maybe getting to one-to-one would be beneficial. Is there anything else that we ought to be looking at or thinking about that would be beneficial to the students and the teachers?

PC What you mentioned earlier about maybe the formal dos and don'ts, I don't know if we teach that anywhere. That's a definite thing that we need. But again, I think the biggest thing is, it would be nice if everything was textbooks that are all based off the internet. I don't really have anything else for that one.
Parent D

LK  What is your age?
PD  47.
LK  What grade is your child or children in currently?
PD  Seventh and tenth.
LK  Where do you live in the school district, not the physical address, but Selinsgrove, Freeburg, Shamokin Dam--
PD  Penn Township.
LK  Do you have a computer that you allow your children to use at home?
PD  Yes.
LK  Is it a family computer, or is it their personal computer, or both?
PD  Both.
LK  And the family computer, is it in a location where it's easily seen by others? Or is it something that can be moved around, like a laptop? Or--
PD  It's a laptop. Just a laptop and a desktop.
LK  Would you say you monitor their use at home?
PD  Somewhat.
LK  Which is pretty common, actually. Do you have internet access at home?
PD  Yes.
LK  And is it wireless?
PD  Yes.
LK  Do you have a cell phone?
PD  Yes.
LK  Is it a smartphone?
PD  Yes.
LK  Do either one of your children have a cell phone?
PD  Yes.
LK  Are they both, or either one of them, a smartphone?
PD  One of them is a smartphone.
LK  And would that be the older--?
PD  Older child.

LK  Do you have any idea how they use the cell phone when you're not around? As a smartphone, or is it just--?

PD  Internet access. YouTube, watching YouTube, watching sporting events, same as on television.

LK  From what you've heard from your kids, how would you describe access to computers and the internet at your children's school as far as, for instance, is it that they can get on it in free time, or they can only get on when the teacher says get on?

PD  I believe it's only when the teacher says they can get on it.

LK  Do you believe students currently have-- What kind of access to the computers and the internet here? Is it good, is it not so good, is it--?

PD  I think it's good. I think they have access.

LK  How about your child's access to the computer and the internet at home? Like with two kids, do they fight over it, or is there pretty ready access?

PD  Pretty ready access.

LK  And are they on it often?

PD  Yes.

LK  And what kind of things do you notice that they do with the computer or the internet?

PD  Games, playing games, watching YouTube clips, sporting events. That's about it, I think.

LK  What kind of access from what you've heard from your children or their friends, the kind of access that most students in the Selinsgrove school district have to computers and Internet in their homes?

PD  What kind of access do they have?

LK  Do they have access, or are they saying, 'I can never get on it', or--

PD  No, I think they have access, yes.

LK  How do students use computers or the Internet at school, based on what you've heard?

PD  Use them during class time, study island, to prepare for PSSAs, research. If it's a computer class, maybe they use it for word processing. So it's usually tied to what they're doing in their classroom.

LK  Do you hear often like kids say they use it to review for, not for PSSAs, but to improve their skills, or for a particular class, or is it largely just maybe doing PowerPoint projects, or doing research, as you said, for--
PD: PowerPoint, or research or writing something for a language arts class for processing it, or not for processing skills beyond the day to day stuff, like study island.

LK: How valuable do you think computers and the internet are when it comes to your children’s academic success?

PD: Not so much.

LK: Why do you say that?

PD: Because I think that their academic success is tied more directly to reading and doing things, just studying, preparing, but not necessarily-- Well, the younger one, I would say that's the case. More just doing the paper pencil work, and that practicing. The older one, though, would need internet access to do research papers so then that would help with their learning. I think it depends upon the grade level that they're at.

LK: Does the course itself make a difference?

PD: Yes.

LK: Because I'm thinking like when you're talking researching, I see more social studies, English, versus math.

PD: Correct. Correct, yes.

LK: How effectively do you think teachers, again, based on what you heard from your kids, use the computers and the internet in the classroom to teach, versus go and use this word processing, because a kid could write that, but do they use it as a teaching tool?

PD: I don't know. I have a tendency to say they don't, because I'm not hearing that from my kids.

LK: Have you had teachers who have used email or other means, electronic means such as that, to communicate with you? Or to send newsletters or anything?

PD: No. I think not beyond the grades that are posted online.

LK: And do you access those grades and check them?

PD: Occasionally.

LK: Do your kids check them?

PD: Yes.

LK: Could you describe in as much detail as you can, how teachers could use technology better to improve your child's learning experience to make it as good as it can be?

PD: I'm not sure.

LK: From what you've heard from the kids, and this goes in sort of similar direction, and it comes from kids' answers, do you think teachers are educated in how to use
computers and the technology as an instructional tool? Or do you think they actually need more instructions in how to use them effectively?

PD I would imagine, and what I experience, is that it's divided. That there is a population of teachers who use materials effectively. Like the whiteboards, the Mimos. And then there's a population of teachers that don't have that experience, that are uncomfortable and don't utilize technology. So I think it depends upon maybe the age of the teacher, and experience the teacher has with their own technology and such. Does that answer the question?

LK Yes. Has your child ever received training on the appropriate ethical use of the internet, to your knowledge, from a teacher?

PD Not to my knowledge.

LK We have acceptable use policy and again for all students, and it's signed. How many kids do you think really read it before they sign?

PD Just a few.

LK How about parents?

PD Maybe half, I'm guessing.

LK Based on that, do you think that as a district we have everybody is telling the same policy all the time? In regards to how you're supposed to use it?

PD Is the district giving information to families that's consistent? On a form to complete, yes. I think they are,

LK And then our teachers following through with that, do you believe?

PD Do I believe?

LK Right, do you believe.

PD I believe.

LK Are there any other additional technologies that you think would be beneficial to your child's education, or ways to make current technology more effective at home? So there's really two parts. The first is, are there technologies out there that we don't have that we should? Because we're starting to get Surfaces. We are getting Kindles and so forth. Let's start with that one. Are there other technologies we should have more of, or maybe don't have any of, and should have some of?

PD No. I think that they-- I'm not really tech savvy, so with the Surfaces being new and different for the kids now, that's an addition that they haven't had before. They've got mobile computer labs, and they've got, then, stationary labs. I think that those kids have access to all that they need. I can't think of what else that they would need. They have Kindles. So, I can't imagine that there's anything additional.

LK Is there something that we should be looking at within the district to make current
technology use more effective either at home, or at school? Like more accessibility, or being able to sign them out for home?

PD I haven't given thought to anything like signing out laptops or stuff like that. I don't know how many families run into problems with not having access to a computer in your home, to know that that was an area of need. So, I think it's nice to make that available for those families who would need it.

LK You're on the internet piece still. Is there anything else that you think is important that should be known or said about computers and/or the internet in general, and how it's used in education or specifically here in Selinsgrove?

PD Anything additional?

LK Anything additional, just anything like a concern about it. I like it, I don't like it.

PD I don't care for the amount of time that's spent on the Study Island for the preparations for PSSAs. I think that-- I don't care for that. Other than that, I don't know that I have anything that really stands out in terms of a concern or that I want to say.

LK Thank you.

PD You're welcome.
Appendix I

Teacher Interview Transcriptions

Teacher A

LK All right, what is your age?
TA 42.
LK What grade do you teach?
TA Ninth through 12th.
LK How long have you been teaching?
TA Seven--15, almost 16 years.
LK Do you live in the school district?
TA Yes.
LK Do you consider your class--I'm sorry, what subject do you teach?
TA Social Studies.
LK And do you consider your class to be one that requires the use of
computers or the internet, such as you would need in a computer
applications class?
TA Yes.
LK Why?
TA The kids do writing, a lot of writing assignments and I had them use word
processors to do the writing assignments. In addition, they also use some
of the other media pieces such as videos, video editing, and lastly, they
also are going to start using Moodle again and Moodle is going to be used
for--I've now moved to, again, another paperless classroom.
LK How would you describe access to computers and the Internet as it is at the
school?
TA It's good.
LK Okay. Would you describe access meaning students using computers when
they want to, or having students available when teachers want them to use
them?
TA Access is--because I've always had a cart in my room so I just would say
that access would be, students would be able to use them whenever they
need to.
LK  Okay. With that description of access, do you believe that students currently have good/bad access not just to your classroom but across the building or six to 12?

TA  It's better than average, but it's not by any stretch the access I have in my room. It could be improved.

LK  How would you describe student access in your opinion to computers and the Internet in most homes in Selinsgrove?

TA  I'm finding that all of that's becoming more prevalent. It used to be about 50% of the kids did or did not have a computer and internet access, and now the surveys I have been doing the last couple years I am finding it's about 75 to 80% of the kids that actually have access.

LK  What kind of access do you believe most students have at home, such as, is it high speed, is it dial-up, is it-- as far as that? And then following up on that, do you think most parents monitor kids' use or it's just--?

TA  I'm finding that some of the kids, when they're talking about access, they're actually talking about not only their home computer but also their phones. And depending whether they're on a 3 or 4G network with their phones, depends on their speeds, so they could range anything from dial-up on their home computer to 'I got 4G on my cell phone'. I've had a couple of kids that are in that situation, but I think most of them now are moving to high speed since everybody has cable. And they're seeing that cable now is becoming a very popular way for getting your internet as well so it's all part of the package you can get.

LK  How do students use the computers or the internet at school? What do they use them for?

TA  Generally research. And I forgot to answer the second part of that last question.

LK  That's all right.

TA  When it comes to-- I'm sorry, can you refresh my memory of the second part of that last question?

LK  The whole idea of their access at home and are parents watching over it or--

TA  Some parents aren't even allowing their kids to use it, so they're hyper-monitoring them. But from what the kids describe, it really just depends on the parent and parent philosophy when it comes especially to social media. I'm finding that that seems to be the stickler for a lot of parents is, 'Are my kids on Facebook? Is there anything happening with the things that have been happening in the news?'
LK  How valuable are computers and the Internet when it comes to student academic success?

TA  I think they're huge, if they're used properly as the tool that they're intended to be. A lot of people take a computer and say, 'Okay, this is going to make you better, it's going to make you smarter.' But unless there's good practice behind it, that's not the case, so if used correctly and in the right way, they're an extremely valuable tool for helping out with all that.

LK  Do you think most student use is student-directed or teacher-directed or a mix?

TA  It depends. I know I've seen some teachers do it where they give the kids specific directions and they send them to maybe a web quest and others where they'll use it, 'I want you to find something on,' and they'll give them the topic and then when you hit Google, you are talking millions upon millions of results and you see what they get. I think it depends. I know I've seen both, and I've done both as well in my classroom.

LK  How effectively do you use computers and the internet in the classroom to teach, mentor or communicate with not only your students but also parents in the last year?

TA  That's kind of a tough question because I'm not sure how people perceive that. I would hope that I would get good marks on something like that and I think I do a pretty good job, but I'm not certain.

LK  Are you the norm or are you the exception do you think?

TA  I think I'm becoming more the norm.

LK  Why becoming more the norm?

TA  Because when we first started with Classrooms for the Future in 2007, there wasn't a whole lot of access to computers and things of this sort, and people really weren't using the technology. And as time has gone on with that grant, and then since then, people had finally - after a few years - had started to see the need for it and now are starting to become more proficient at using the technology, and as they become more proficient, I am not such a great shake anymore.

LK  [chuckle] Could you describe in as much detail as you can, how you could use technology better to improve a student's learning experience and make it as good as it can be? And if you think you already doing a pretty good job, what are some areas that maybe you've seen others might be able to improve?

TA  Okay if I see that? Because there is lot of words there.
Yeah. How can you use technology better to improve students' success and learning?

Well, one of the things that I've been trying to do - and I don't know that it's been successful, but I had tried it this semester - was I'm trying to flip the classroom in a sense, not totally, but in a sense to flip it so that the kids can have any-time learning. It started out really well but I'm finding that unless the kids are struggling, they don't use it. And I'm also finding that even the kids that-- when it comes to the kids that struggle, some of their parents are hyper-- how do I want to describe it? But they really limit their access to it. I have two classes of 40-something that I've done this with, I found that five kids would use what I was doing online religiously. And the other ones were sparse. They might use it in class but then when they went home, nothing.

I would think that selling that to parents would probably be the one thing I could improve upon. Showing the parents that, Look this is more than just your kid getting on playing on the Internet, this is something they can use as a learning tool. I think that's where my energy and my focus needs to go in the future is, getting word out to parents, having them see it - because the parents that have seen it have loved it. And they're three of them. They just happened to be the three parents and their three kids happened to be some of the more frequent users of it. I think selling it to parents is going to my biggest challenge with anything technologically related at this point, because I've done a lot of it so it's a matter of, now, can I sell the parents, and then will the parents encourage the kids to use it as opposed to, it's just the kid that knows about it, Okay it's great, Mom I can use it.

Got you. Have you ever trained students on appropriate and ethical use of the internet?

Yes.

Who were they and how did you provide that training?

I do a lot of research myself on these things and I want to give the kids something that when they leave they know how to do research and what good research is and what's ethical to do online. I found some articles that I used a while ago that shows the top ten reasons why, for example, why you can't use Wikipedia, or you shouldn't use Wikipedia because there's errors, and who edits, and the limited number of editors to those pages.
I've also gone and we've talked about copyright. Kids are like, 'Well you know, I'm going to get this song, I want to use this song.' 'Well you've got to look at copyright.' With copyright you can use it one time and only one time for an educational purpose and you're okay. If you continue to show that, then you've got to contact the copyright owner otherwise you can get yourself in trouble for it. You just can't go throwing it out there, 'Oh here I'm going to put it on YouTube,' because somebody is going to say, 'No I don't like that,' and you have it ripped down or taken down.

I found resources for them for that. There was a great one that was provided on a university in Philadelphia that talked about fair use and what fair use was for the teachers and I shared that with the teaching staff. And then some of the same principles that I push on to the kids that-- if it's transformative for example, if you're taking the work and you're doing something with the work that wasn't originally done to the work. For example, a poster. You find a rock n' roll poster and you take a picture of the rock 'n' roll poster but the person who owns the poster said you couldn't do that because it's their poster. The guy who did that used the poster in a book to talk about the history of the Bay region, and Bay region concerts. And because it was used in a context that was not only educational, but was different from the original intention of the poster, he could sell it and make money from it because of the transformative nature.

And some of the things I try to put through to kids when we're doing projects like this is that when they're thinking about what they're doing, they need to think about it in terms of, Are you using it from a different purpose than what it was originally intended? Because if it is, then you can use it and not have to worry about copyright later on. However, when people do music it's - not only for music, it's also for videos and other things - so you've got to watch when you do a music video or something like that, that you're not using too much of something in terms of fair use.

Do you think many teachers deal with that ethical use, or do you think the expectation is that somebody else is teaching them about it?

Somebody else is teaching them about it. When I put that article out, it was interesting because some of the people that I put this out to, they kind of leaned back in their chair and their attitude was, 'Already doing it, already doing it.' It's like, 'You're really not and you're just kind of blowing it off.' And they just assumed that they were already doing it and that they were completely right on how they are using some media. In particular, we used videos in WAHGS and you've got to watch how you're using it.
TA The way we use them, we're okay, because it's different than what the intent was of the movie maker. So we can use it in that format, but you've still got to watch it, because if you're using it for something other than that, then you're towing a line. And if somebody ever says, or you have-- a student in the room whose father just happens to be a copyright holder. And says, 'Whoa, whoa, whoa, my daughter told me,' and that's happened, there's actually been things like that. I remember reading on the list serve about where that's happened to some people.

LK You're real involved in technology here in the building, so in addition to - like the computers that we already have, the Internet that's already accessible and you mentioned phones - what additional technology do you think would be beneficial to students' education? Or are other ways we could be using current technology better either at home or school? There's really two parts. The first one is: What other technology would be beneficial? And then the second one is: What could we do with current technology to maybe improve students' academic success?

TA I think what we have-- whatever we get, it's always going to be used for the same purpose. So I think to spend more money on a newer technology such as-- we got Kindles last year. We got the Kindles, it was all well and good but we can already do the same things using a laptop. It maybe might not have been the best purchase, until we find another purpose or how we can use that technology more meaningfully. I think whatever the newest, latest thing that's coming out, we always need to look at, we should look at with a grain of salt. Because if we can do the same thing with a current piece of technology and it's going to wind up being cheaper, we can get more units of it and use it effectively. That's going to be better than, 'Okay I'm going to go and get an iPad and play around with that and do whatever,' when it's doing the same thing that I can do on any other device in the building. It doesn't make sense to just go on with the latest and greatest, just to go with latest and greatest, when current technologies work great. It's really about the practice. If the practice sucks, it doesn't matter what you do with the technology.

LK Okay. Let me go back to that if the practice sucks. Do you think there are people who, as yourself, use the technology a lot and you're doing a lot of research on your own? Do you think that we have staff members who could be using the current technology better?

TA Yes.

LK And is that because they're not using it, because they're not using it very well or very often or--?
TA It's more of-- as a CFF coach, one of the things that I threw out there was working backwards. Here's what you want your purpose to be, here's what you want your end product to be. So from that, work backwards. What tools are you going to need to make that happen? And with that, then you can build a good plan. I don't think people do that. I just think they say, 'I want them to do this.' And what winds up happening is it becomes - and I've seen this, unfortunately - a lot of rudimentary, I'm going out online, copying and pasting. Copying, pasting. They're doing the project which is, I want to create a PowerPoint. Whoop-dee-doo-ting-dong-day, but they're just copying and pasting and putting in someone else's information. They're not really learning.

TA It really needs to be more the, how to use it in a meaningful way as opposed to just using the technology. Because some people think, 'I use technology, that's wonderful, I've done great, I've done well.' If the practice isn't there-- and you'll see the kids. The kids will be like, they're going back. They'll be messing around all period. They'll be doing something else, looking up NASCAR or new shoes or whatever. And it really needs to be focused - what you want the tool to do. What the end product's going to be and that you have a good driving question behind that.

TA Here's my driving question. If the driving question is big enough, they're going to spend a lot of time researching the question before they start putting it in to that piece. But if you give them something where it's really narrow in scope, they're going to open up PowerPoint right away, go out online, copy, paste, copy, paste, copy, paste. They'll be done in a period and you have three periods allotted for that. So, it really needs to be more the practice that we need to emphasize as a district on how people are using it and that it's used in a meaningful way. Do we have those good questions? Do we have the goal in mind? And then, one of the things that now we're doing with these things is, go back and look at it. Okay. I go back look at what I've done. Did I get out of it what I wanted out of it? And if I didn't, where do I do better, where do I tweak it, where can I make it more meaningful?
TA: It's a process and it just seems like if it doesn't go well the first time, it's abandoned. It might not of been good that time. I've have had many failures in technology, it's ridiculous. It doesn't stop me, I've learned from it. I've moved on. I've found like the essence of it, you've found 10,000 ways to not do something or yeah, Edison. But I discovered 10,000 ways to not do something and I did. And in doing that, I failed to put together more meaningful things. Did I still put together some things that are junk? Oh absolutely. But it's because I get different ideas I'm thinking, 'Okay, maybe this will reach them in a different way,' and then when its all said and done, the last thing I did was even better. Because sometimes-- like Glogster when it came out, this poster program, everybody was, 'Oh, Glogster, Glogster, Glogster'. Why would I want to use Glogster if I can take a piece of poster board and have them do the same exact thing. What is doing it online going to-- All it's going to do is put them online. It's going to bog down the network, people are going to get frustrated, they're going to be thinking, 'Oh this Glogster thing is stupid.'

TA: It doesn't make any sense. You can do it with paper and do it meaningfully, why do it online? People just think, because it's there, we should use it. Why use it if there's no meaning to it, if doesn't have any meaning? If it can be done here, why do it here? Good practice, good questions. You need a clear vision for what that end product needs to be and sometimes you find paper's the best way to do it.

LK: I would agree. What would be important for somebody to know about technology, computer, internet use in the school district that I haven't already touched on, or that you haven't touched on?

TA: Patience. It's a process, not for just the student, but for you as a teacher. It seems like people have a vision of what they think is supposed to happen, but they never check to see that the pieces are there to make it happen. I think planning goes into that too - patience and planning. You've got to be patient with it because it's technology. If it were perfect, [name] wouldn't have a job. Okay, if it was-- when it comes to the up pieces, you just got to keep working at it. Make it meaningful. Make it wonderful. Be patient with it and then everything else will fall into place, but you just got to be patient with it and people just don't plan enough to, I think, integrate technology well enough at times.

Teacher B

LK: What is your age?

TB: 53.

LK: What grade do you teach, or grades?

TB: Nine through 12.

LK: How long have you been teaching?
TB This is my 30th year.

LK And what is your subject area?

TB English.

LK Do you live in the school district?

TB Yes, I do.

LK Do you consider your classes to be ones that require the use of computers or the internet, such as you would need in a class like a computer applications class?

TB Yes.

LK Why?

TB We do a lot of research in the classroom. We incorporate the Moodle when we can, we haven't done that too much this year. We look up current events when we're talking about making connections to things that we read.

LK Okay. How would you describe access to computers and the internet at this school? For instance would you describe access meaning students using computers when they want to, or is access having computers available if teachers want them to use it?

TB If teachers want them to use it.

LK Okay. What is that access like? Good? Bad?

TB When they're working, it's very good. And when they're not, it's very frustrating.

LK Using your description of access, what access do you believe students currently have to computers and the internet in Selinsgrove. As in - you said when teachers want them to use it - is there the availability for kids to use them at other times, other than when the teachers tell them to?

TB Not in the classroom. But if they're in the library, free time, lunch, things like that.

LK How would you describe student access to the computer and Internet at their home? What do you expect it to be in Selinsgrove school district?

TB I expect that 85, 90% of them have access to a computer and the internet at home, but I'm always surprised when I find one or two students in the class who do not have computers.

LK What kind of access do you believe most students have at home? As in, is it a high speed access? Is it a dial-up access? Is it monitored by parents?
TB I think most of it’s high speed and I would like to say that about 50% of the kids tell me that their parents do monitor what they do.

LK How do students use computers or the internet here at school? You mentioned for your classes like to do Moodle and everything. Is that consistent across the board or--?

TB I wouldn’t say consistent across the board, it depends on the subject matter. I think probably more in places like English class, WAHG class, a science class. I'm not so sure that they really are required in other as much. We use ours almost on a daily basis.

LK Okay. How valuable are computers and the internet when it comes to student academic success?

TB I think very valuable, especially in the digital age. They’re much more friendly with the computer than they are with the textbook.

LK Good point. How effectively did you use computers and the internet in your classroom to teach, mentor or communicate with your students or their parent in the past year?

TB I would say almost all the time, because we always have our computers out. I'm emailing parents making connections there. I'm looking up some - I will tell you - good ideas. There are some wonderful education websites out there that I found that we work on all the time. Every vocabulary unit, we use something call Quizlet. The kids are the ones who help me put the words on there and then they test themselves. There's a lot going on, I think.

LK Do you think you could use technology better to improve a student’s learning experience to make it as good as it can be?

TB Yes.

LK And how would that be?

TB Not just the computer but I think the SMART Board is a wonderful tool. I think Kindles in the classroom, wonderful tools, with all the apps that are out there, I just think it connects them more to the world and to information.

LK Okay. Have you ever trained students on the appropriate and ethical use of the internet?

TB Yes.

LK Since you did, who did you provide this training to? All your classes, some of your classes, as needed?

TB I would say more my lower-level kids.

LK Why them?
TB Because they tend to be the ones to use websites and the computer for more inappropriate things than my other kids.

LK [chuckles] In addition to the computers and the internet, please describe any additional technology that you think would be beneficial to students' education or ways to make current technology use more effective at home or school.

TB Wow.

LK We can take it in parts. So the first one would be, are there additional technologies that you think would be beneficial?

TB I do. I wish that every kid had a Kindle. I think this would be beneficial to them.

LK And then to take that-- for it to be effective at school and home, should they be able to take it home?

TB Absolutely. I know that there are risks in letting kids take stuff home, but at the same time, I don't think their education should stop at 2:55. I think it should go on. And as long as it's an assignment that can be monitored, such as in Moodle or something like that, if it would be a computer thing, I think that it would be fine. I would like to see that.

LK What else should I know about the computer and internet access in the Selinsgrove area school district?

TB Not all computers work [laughter]. I don't know how else to put it.

LK I know what you mean [chuckle].

TB And it's a hit or miss thing, day to day.

LK So really our infrastructure needs to be better.

TB Yes. Absolutely.

LK And our hardware.

TB Yes.

LK Is there another teacher that you know of who teaches in the sixth through 12th grade who you think it would be good for me to talk to either because of their good knowledge of computers and technology or their lack of knowledge about computers and technology?
Good knowledge, I would say would be [name] and he's constantly sending us all kinds of links to things that he finds and he is so connected to that. I think probably, who lack of computer, I think there are classes in this building where the teachers do not require any computers. And I'm trying to think of an area, maybe something like music. I know language uses them as much as they can but they don't have the availability, they only have one cart for four teachers. And then there are just teachers who don't like to use technology at all. They're older and they're more comfortable with their books.

Okay. That's it.

That's it?

That's it.

Wow.

**Teacher C**

What is your age?

42.

What grade or grades do you teach?

Sixth through eighth Tech Ed.

How long have you been teaching?

I think this is 18 years.

Has that always been in Selinsgrove?

No. This is my fourth year at Selinsgrove.

Do you live in the school district?

Just outside of.

Okay. What subject or subjects do you teach, and what would that involve? The names of what it is--

The name is just sixth, seventh and eighth grade tech ed. Actually, to define it a little bit better - in sixth grade, we do robotics. In seventh grade, we do a little bit of graphic design, a little bit of web design, a little bit of computer animation and a little bit of digital video, so no technical name. That's what we do. And then in eighth grade, we do design and engineering, so it's an engineering project from the beginning to the end where we design a car and then actually produce it in our shop on a CNC machine.
I'm guessing I know the answer to this question, but I'm going to ask anyway. Do you consider your class to be one that requires the use of the computers or the internet?

Yes. [laughter]

How would you describe access to computers and the internet at this school for students?

I think it's fantastic. This is my third school district, and we're as good as anybody that I've ever seen.

Looking at the access, do you believe that students currently have effective access and use to computers when they want, or is it more having the access when teachers say, 'Now you can have access'? Or is it a mix?

I think it's a little bit of a mix. I think it depends who they have. If they have me in a semester, they pretty much have access every day. If they do not have me, there's no other person that strictly teaches technology in our building, so they wouldn't necessarily have access every day, but I believe they can go to the library in the mornings whenever they want if they need to look up something more-- anything from that perspective.

How would you describe, in your opinion, what students’ access to computers and the internet is in their home?

Well, I think we're in the 90 - I think 90% is conservative - maybe 95% of kids have access to it. Out of a class of 25, I occasionally have one student who may not have access, so--

And with that access, do you ever get a sense from the kids that it's high-speed, or do we still have kids with dial-up or--

I think most of it is high-speed, although I know there are some people that still have dial-up. It's beyond me, but I think-- [laughter] I think that that is more-- for our students, I think it's mostly high-speed. The dial-ups are people who are afraid of technology, and they have their dial-up works, and they're afraid to move on to something else, so.

Do you see or hear kids talking about having a smartphone and using their smartphone as their access?

Absolutely, yeah. And I think that most of the kids who have smartphones also have some sort of other device whether it be a tablet or a computer. I don't think it's just a smart device.

How do students use the computers or the Internet at school? Word processing, are they creating? Obviously in your room, they're creating but--
TC Yeah. For me, it's not for word processing. It's much more advanced topics, so they're doing anything from programming a robot that they design and build. They might be doing web design which requires them to go out and gather resources off of the internet. They might be doing graphic design. They might be doing engineering. And I actually, in my class, use my own website as an instructional tool, so I use it to differentiate instructions. So when I have kids that are learning at a faster or slower rate, they use my website as a resource to navigate their way through my eighth grade project.

LK Do you find that there are kids that when they come in they already can do a lot of this stuff, or are you spending a lot of time working from scratch with these kids in sixth grade?

TC Almost zero time navigating the internet. They're really good at that. They don't understand saving--they don't understand an internal network. They understand the internet, but they don't understand saving a file in a spot where I tell them. They just know how to save a file. It could be here. It could be who knows where. [chuckles] That's a struggle.

LK How valuable do you think computers and the internet are when it comes to student academic success in this district?

TC I think it's huge.

LK Why would that be?

TC It gives them access to learning and topics that they would have never had before. They're--for our engineering projects, they're doing—[name] and I were at a conference at Penn State a few months ago, and we were sitting with college juniors at Penn State whose heads were spinning when they found out that our kids [chuckles] that our eighth graders are doing engineering projects that they're doing in the college. It gives our kids access to learning that they would never be experiencing.

LK How effectively do you think--obviously you use computers and the internet to teach and to mentor kids. How often do you use that to communicate with parents, or is that not necessary because you don't see the kids [crosstalk]?

TC Fairly often, actually. I get emails from parents quite often asking about their child's grade because our grade book is hooked up to the internet as well, too, so when I type a grade in, the parent literally that second can see it, so I do occasionally get emails from parents who are concerned, and I occasionally get emails from parents who are overly concerned. So it's a double-edged [laughter] sword, I think. It's good, but it's also not so good sometimes.
LK  Now, you use a lot, and I know you talk to other teachers. Do you - and certainly this isn't like a 'name names' kind of thing - but sitting in your position and what you hear from kids and talking to other teachers, do you think there are teachers who use computers and the internet very effectively, and then others who, as you had mentioned earlier, not afraid of the technology, but use it less effectively?

TC  Oh, absolutely, yeah. There's no question. And I think that it's a fear of doing it incorrectly, or-- it's either that, or it's kind of stuck in 'this is what I do, and this is how I do it, and I'm not really interested in all this other cool stuff.'

LK  Do you see it as an age thing, or an interest thing, or a little bit of both?

TC  I don't see it as an age thing. I don't think it has anything to do with that. I think it's an interest thing. There are some more experienced teachers who don't use it, but, on the other hand, I think there's plenty of very experienced teachers who grasp that technology too so to kind of paint it into a corner as an age thing, I don't think that's right.

LK  Have you ever trained students on appropriate and ethical use of computers and the internet?

TC  We talk about it all the time. Absolutely, yeah. Netiquette we call it, and so, I talk about it in here. One of the things that I tell them is, I let them know that everything that they do on the computer, from the moment they log in to the moment they log out; is tracked, so if they're searching inappropriately, we're going to catch up with them. It may not be today and it may not be tomorrow, but somebody's going to find out what they were searching for. They need to know where they're at and doing that effectively in school - not that it's okay if they're doing it anywhere, but we don't have control over that, so we certainly shouldn't be searching for something that their mother's going to be embarrassed about, mortified. [laughter]

LK  In addition to computers and the internet, are there other technologies that you think we should have available that would benefit students in their education here in Selinsgrove?

TC  We are doing-- one of the best things that we do, and a lot of people outside of our little home don't see it - is the engineering software is amazing because it ties together a lot of really complex mathematical concepts which is great. It allows me to tie into a lot of things that they're doing in math classes or higher level math classes - geometry, trigonometry. So I think that's probably the biggest one, and we are doing it, and a lot of schools are not.

LK  Do the kids realize they're getting all those mathematical concepts, or do they view it as a separate--
TC They do. They do because I tell them. I make it a point to tell them that when we're drawing a sketch of a plane, I draw attention to 'What is a plane?', and a lot of the kids know and some of the kids don't know, and we'll talk about very basic things like parallel lines. It's easy for me to show parallel lines and they see it on their screen, so the concept of parallel lines makes it easier to draw everything together. That three dimensional world that they're working in is really higher level. It's cool to see them get that concept. [chuckle]

LK Do you think, with what we have here and what we use, is it that we need more technology, or do we need more training for the technology we have, for those staff members who maybe don't use it?

TC I can see it as maybe a little bit of both. I think definitely some training because I think there are some people that don't know how to use some of the technology that actually would, and I also believe that there's some people you could waste your time training them and they're still not going to use it. And then we have a lot of really great software that I think most schools don't have, but I think that there's always room to grow. We have some areas where we're lacking.

LK What would they be?

TC Digital video is an area where we're really lacking, where we're using just a really old piece of software, and that's one of those areas where if you utilize digital video, you can incorporate all of the different curricular areas. You can film a movie, essentially, and have your language arts people doing the writing end of it, and have your creative arts people doing the background art stuff with it. So, yeah, I think that that's a really large area, and it's something that I actually talked with [name] about as well, too. She said, "Where are we lacking?" I think that's huge. We should really be doing our own announcements in the morning and broadcasting them live. Of all the things that's - I took a step backwards. In the school that I came from, we were broadcasting a live announcement every morning - video announcement with green screen, and we'd go on site locations to fake places and it was really cool.[laughs] So, yeah, it was fun.

LK Is there something else I should know about technology use or technology in the Selinsgrove School District?
Boy, we miss [name]. [laughter] Yeah, I think you already know that. Yeah, he was awesome. I think, some schools are getting away from technology coordinators because they think that they're not needed, and I think that is completely false. You need somebody who's out there on the leading edge - on the bleeding edge sometimes - and willing and smart enough to take chances and gambles, and [name] was certainly that guy. I think over the next year, not taking away from what we-- those guys are great, but I think a year from now we're going to find us in a position where we're really missing him because we're on the forefront now. What happens when we wait a year? Waiting a year in technology is like ancient time. [chuckle]

Yeah. Absolutely.

It goes so fast if you're not on the forefront. And we're noticing it a little bit here. Where, if I had a problem - I got 30 computers - so if we have a problem, I need it fixed because if it happens first period, I've got nine other periods of kids coming in. And with [name], when he was here, just one other guy, it was boom, it was fixed within 10 or 15 minutes, and now sometimes it's in days and that's not a knock against--

Right. The guys that got hired. There's not enough of them.

There's not enough of them, and I think [name] worked 25 hours a day, so-

Pretty much.

Yeah, and burned himself out.

So, you had talked about other districts and you said, "We’re on the leading edge right now." When you say leading edge in this IU area, in our SUN area, or just in the…

I think state wide. I really do. I mean, I think, definitely in our IU area. I think it’s us and Lewisburg that are kind of neck and neck. I think there are some outlier schools that do some things better than we do, but, as a whole, the amount of technology that we have, and the amount of technology that we have available for our kids, and the amount of investment that we put in this technology-- I mean, we’re really there. We’re up there.

Do you think we’re at the point where our next step is one to one?

I don’t know about that. Like a computer for every kid?

Yeah, and the only reason I ask this, that's one of the things I've heard repeatedly.
Yeah. I don’t know that I agree with that, at all. So, if I poll our kids and say, “How many of you guys have an internet connected device?” 95% of them - probably more - have their hand up. Why are we going to buy something else that they already have. I know, the school where I came from, Central Columbia, hasn’t done that. That’s a huge investment, a huge taxpayer investment. And to me, we already have the infrastructure. We already have the machines. I think software is really it. If you can rotate your hardware on a basis, and then just give the kids access to all of the latest software, giving them a device that most of them already have anyway? So in my mind that doesn’t make any sense, but I don’t know.

All right. Thanks.

Teacher D

[chuckle] We’ll start with some questions about you and then I’ll ask questions about the computer and the internet. What is your age?

59.

What grade do you teach?

Ninth through 12th, high school.

How long have you been teaching?

17 years.

Do you live in the school district?

I do not.

What subject do you teach, or subjects?

Technology education.

Do you consider your class to be one that requires the use of computers or the internet such as you would need in a computer applications class?

Absolutely.

Why?

Well, research-wise, we use it for research. Some of our software programs are only computer-based.

Now, we’ll talk about the computer and the internet use at home and at school. How would you describe access to computers and the internet at school?

Above average.
LK: Would you describe access meaning students use the computers when they want to, or access meaning they're available if teachers want them to use it, or a combination thereof?

TD: I think it's a combination, but furthermore, as teachers need them to use it.

LK: Using your description of access, what access do you believe students currently have to computer and internet in Selinsgrove, within the school district itself? When you say above average, compared to what?

TD: I would say-- well, if I understand the question, I would say that there's probably less computer availability at home than they have here at school. I would believe we have more availability here at school then they have at home.

LK: What do you think their access to the computer and internet is at home for the most part? You can do that as a percentage. Like, do you think 70% of the kids have access to computers and internet? 90? What do you think their access would be like?

TD: I'd probably put it at about 75%. I don't have a lot of bases for that just from what I gather of kids when they tell me if they can use the computer or they can't use computers at home. That's just a percentage I'm grabbing, but I don't have any real bases and facts for that.

LK: Do you think every kid who has a computer at home has internet access at home?

TD: No, I'll bet they don't.

LK: What kind of internet access do you think those who have it would have? High-speed? Dial-up?

TD: Well, lately I've heard a big mix and it's getting better, but I think some people are still using some dial-up. I think some of the more affluent families are at DSL level or cable level.

LK: Thank you. How do students use computers or the internet at school? For papers? You mentioned research.

TD: Well I do. From my standpoint, I have them do some research on careers in engineering for example. My digital photo class needs it for the Photoshop course.

LK: Can you give a brief explanation of the Photoshop course, what all that involves?

TD: It involves, at times, using the internet to bring pictures in from a Google search or some kind of a search engine and/or taking digital pictures from their picture taking devices and installing those or uploading or downloading those pictures into their student folders to use for them to use Photoshop to manipulate later on.
LK How valuable do you think computers and the internet are when it comes to student overall academic success?

TD I think it's extremely valuable.

LK Why?

TD Well, I just... they're [laughter]-- without it, I think we're just not-- we won't be keeping up with the world if they cannot access the internet and use all the possibilities that the internet offers to us.

LK As we're increasing the number of services we have and iPods or iPads and so forth, do you think we're going to get to the point where students can pretty much have a computer, like almost a one-to-one computing so they can use that for everything, or do you think that one-to-one computing is just not something that we're going to get to for an extended period of time here in the district?

TD I'd like to believe we're going to get there. I'm currently taking a course on mobile devices at school and at home. The course is designed to encourage school districts and states and the country, in fact, to get on board and get mobile devices into every student's hand. I'd like to believe that we're getting there, but I don't see that happening in this district for a while. It's a lot of money.

LK Yeah, the cost. And then with that one-to-one, some districts have it where they come in, they get it like at ninth grade or whenever, and they just keep it and leave with it. What do you think about that versus just having one assigned to them for the year?

TD Could you say that again?

LK In some districts, they will give a kid a one-to-one, like a computer in ninth grade. And then when they graduate, they take it because at that point it's four years out. The technology has changed.

TD I would probably think it is probably best on a year-to-year basis. Come in at the beginning of the year, get your device, be assigned it or have it in a mobile cart that you can access every day when you want and/or take home when you want to on a sign out basis. There obviously have to be some security they have to address, but I think on a year-to-year basis because then perhaps the devices can be-- not that they can't be updated if they got them in ninth grade and kept them all the way through. I still like to see it on a year-to-year basis.

LK How effectively do you think you use computers and the Internet in the classroom to teach, to mentor or communicate with students in the last year? You personally. Do you think you use it pretty effectively with students but maybe not so much with parents or effectively both ways, or--?
TD I don't think I use it very effectively with parents much at all. I think I use it very effectively with students.

LK Can you describe, in as much detail as you can, how you could use technology better to improve a student's learning experience and make it as good as it can be? If there would be maybe something else that you would have that you don't have or--

TD Well, I'd like to - again, back to the every kid having a mobile device - I'd like to believe we could extend the classroom beyond these four, six, eight walls that we have here. That if they need to, they can take their device home, continue what we're doing from class, and then parents can actually see what we're doing, and interact with us that way. And there's a lot of programs out there that allow us to interact with parents anyway, but I think the fact that they could bring their device home and use it at home and then we could still communicate at home if we needed to - not that I really want to be called at 10:00 at night [laughter], but we could still do that if we had to.

LK Have you ever trained students on appropriate and ethical use of the internet?

TD No.

LK Do you think that at some time in their school career they get that training? And if so, where? [silence]

TD I think they're getting it, and I would think it would be started at the lower grades before they get to me.

LK I'm focusing primarily with interviewing on sixth through 12th. Do you think it happens before sixth grade, when they're first getting on to computers?

TD I think so and I would hope so. Because I think, the earlier the better. And then reinforcing it [laughter] every time they come to school. I guess that's what the acceptable use policy would also-- we could encounter with kids too. We could say, 'You still must read this and understand why we have this.'

LK In mentioning the acceptable use policy, do you think kids really read it or care what it says?

TD No, I don't think they do.

LK How about parents?

TD I think they care more, whether the--

LK Than the kid does? [chuckle]

TD Yeah.
LK In addition to computers and the internet, what additional technology do you think would be beneficial to students’ education or ways to make current technology use more effective at home or school? And you did mention taking one home to bridge that a little bit--

TD I would continue back-- I would go right back to that. More use of mobile devices that could have the programs that we have here that they could expand their classroom.

LK With mobile devices, I know in the photo dig. course, we got to the point where we were letting the kids use their phones, because they have a better camera in them. So we're talking mobile devices--

TD iPods.

LK Do you think laptops? Do you think iPads?

TD No, I don't think we need to go to the level of laptops. I think iPads, iPods - iPod touches, which are a little bigger, but iPad's for sure.

LK And what about the new-- we just bought, I think, 90 Surfaces for the high school which is that little computer. It's the touch. It does all that, but it has some more options than the iPad.

TD It downloads apps. [crosstalk] What are they called? I haven't even seen that. [chuckle]

LK A Surface is my new computer that's this big. I do not have a desktop anymore or anything, I just have this. That's my whole thing. My tower's gone. [laughter]

TD I've got to come see this. [laughter]

LK What else would you like to tell me about computer and internet access in the school district - and when I say in the school district, not just the school buildings, but the entire geographical region of the school district as well?

TD Because there's so many useful videos and movies out there, I would like to see the use of-- I don't know if it's what I want to say, the unlocking of YouTube, but easier availability of accessing YouTube videos, rather than- - I have this site and then I have to email Pete and the guys, and say, 'Unlock this so I can use it.' Sometimes I find something that I want to use right away and I'm blocked. I hate the fact that we're blocked. I understand the risks, but I think the benefits outweigh the risks to them getting to naughty sites, or bad sites, or sites where they shouldn't be.

LK [chuckle] You've mentioned YouTube, are there other frustrations with trying to access a particular site and having it blocked, or is it primarily the YouTube?
TD From my standpoint, a lot of the image sites. I like to go ahead and find some good images and some of the image sites are blocked - adult content or whatever.

LK Is there someone else who teaches grade six through 12, who you think would have an interesting or different perspective on computers and internet technology that I ought to be going to to say, 'Hey, can I talk to you about this?'

TD XXXXXXXX? Yeah, probably has a very good perspective on it. I'm not sure if that's h--

LK I'll have to look it up.

TD XX [crosstalk] I forget.

LK Anything else I should know about computers and internet technology?

TD Let's keep going forward. [laughter] Let's not stagnate.
Appendix J

Comparison of Student and Parent Usage of Computers for Selected Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Social Networking</td>
<td>S 18.42%</td>
<td>2.63%</td>
<td>9.21%</td>
<td>23.68%</td>
<td>46.05%</td>
<td>71</td>
<td>3.763</td>
<td>1.513</td>
</tr>
<tr>
<td></td>
<td>P 23.53%</td>
<td>1.96%</td>
<td>8.82%</td>
<td>17.65%</td>
<td>48.04%</td>
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<td>3.647</td>
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<td>Buy a Product</td>
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<td>2.53%</td>
<td>0%</td>
<td>79</td>
<td>1.8861</td>
<td>0.862</td>
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<tr>
<td></td>
<td>P 6.93%</td>
<td>24.75%</td>
<td>53.47%</td>
<td>14.85%</td>
<td>0%</td>
<td>101</td>
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<td>.7893</td>
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<td>0%</td>
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<td>8.82%</td>
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<td>Send/Receive Email</td>
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<td>21.79%</td>
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<td>75.49%</td>
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<td>4.549</td>
<td>1.558</td>
</tr>
<tr>
<td>Play Music</td>
<td>S 12.66%</td>
<td>0%</td>
<td>10.13%</td>
<td>15.19%</td>
<td>62.03%</td>
<td>79</td>
<td>4.139</td>
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<td>P 25.24%</td>
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<td>11.65%</td>
<td>25.24%</td>
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<td>3.129</td>
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</tr>
</tbody>
</table>

Note. S = Student percentage response, P = Parent percentage response
### Appendix K

**Comparison of Student and Parent Usage of Cell Phones for Selected Functions**

<table>
<thead>
<tr>
<th>Function</th>
<th>Never (1)</th>
<th>Once a Year (2)</th>
<th>Once a Month (3)</th>
<th>Once a Week (4)</th>
<th>Daily (5)</th>
<th>n</th>
<th>M</th>
<th>SD</th>
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<td>5.94%</td>
<td>43.56%</td>
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<td>0.98%</td>
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<td>Take a Picture</td>
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<td>3.970</td>
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<td>38.24%</td>
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<td>Download an App.</td>
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<td>16.67%</td>
<td>28.79%</td>
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<td>17.82%</td>
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<td>6.93%</td>
<td>101</td>
<td>2.059</td>
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<td>8.91%</td>
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<td>Function</td>
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<td>Once a Month (3)</td>
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<td>SD</td>
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Note. S = Student percentage response, P = Parent percentage response