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Investigating Student Gender and Grade Level Differences in Digital Citizenship Behavior

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COLLEGE OF EDUCATION

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2012

Abstract

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MA, University of Idaho, 1999

BA, California Polytechnic State University, San Luis Obispo, 1977

Doctoral Study Submitted in Partial Fulfillment
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Abstract

The rapid rise of technology, which has become embedded in all facets of 21st century society during the past decade, has fostered a corresponding rise in its misuse. Digital citizenship abuse, a relatively new phenomenon of this electronic age, is a rapidly growing global problem. Parents, schools, and society play roles in supporting appropriate online behavior. Schools must take the lead role to assess and address digital citizenship issues. This ex post facto study investigated the online actions of students in a medium-sized K-12 school district and explored possible causal relationships between online misbehavior and student grade and gender based on data collected from state and district surveys. Kohlberg's theory of moral development, Perkins and Berkowitz's social norms theory, and Bandura's social cognitive theory provided the study's theoretical base. Hypotheses were tested using independent-measures t values, a single-factor, independent-measures analysis of variance (ANOVA), and the chi-square test for independence. With respect to the four components of online student behavior, — personal safety, digital citizenship, parental involvement, and cyberbullying—analyses determined that there are significant differences between grade level and gender. As the grade level increased, personal safety risks, digital citizenship abuse, and cyberbullying increased, while parental involvement decreased. Males had significantly more personal safety and digital citizenship issues than females but no significant gender difference for parental involvement. Implications for positive social change include raising awareness of local digital citizenship issues with parents, staff, and students, and ultimately mitigating and preventing student online risky behavior.

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DEDICATION

This doctoral study is dedicated to my wife Anne for her never-ending support and encouragement during the seemingly endless nights and weekends on the computer. Thank you for challenging and inspiring me to be a better person.

This doctoral study is also dedicated to my beautiful daughters Katie Rose and Meghan. Thank you for your patience and understanding during this long process. I hope I modeled the importance of life-long education and inspire you to someday achieve your own doctorate.

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Section 1: Introduction to the Study

The rapid globalization of technology has raised awareness that American students must become responsible digital citizens to compete in the global economy. President Obama campaigned on the platform of improving teacher training to enable students to compete in the new knowledge economy, and in 2009 he signed an economic stimulus package that included monies to support this goal (Moses, 2009, "Stimulus Package," para. 1). The stimulus package also contained provisions to extend high-speed Internet to 90% of U.S. homes by 2020, with the idea that increased access would spur job creation (Sutter, 2010, para. 3). The infusion of technology into all segments of the home and learning environment is now recognized as a crucial component of "21st century learning," "the hottest catchphrase in education" (Podolski, 2008, "21st Century Learning," para. 1). The responsible use of digital tools will provide opportunities for American students to outcompete others for jobs in the new economy.

Technology has changed how curriculum is delivered in the classroom, but Ribble, Bailey, and Ross (2004) suggested that educators must not only emphasize effective use of technology but appropriate use as well (p. 8). There are myriad examples of inappropriate use of technology, ranging from plagiarism to *cyberbullying*. Ribble and Bailey (2007) supported using the term *digital citizenship* to cover this misuse of technology and defined it as "the norms of appropriate, responsible behavior with regard to technology use" (p. 10). The outcry for digital responsibility compelled the International Society for Technology in Education (ISTE; 2007b) to include digital

citizenship as one of six strands in its widely adopted 2007 National Educational Technology Standards for Students (NETS*S). The increased use of technology in the workplace is mirrored in the classroom in order to prepare American students for the new global economy.

Problem Statement

The site of this study was a K-12 public school district in a metropolitan region of California. The district recently completed a 2-year, $1.3 million technology upgrade for all 11 school campuses, providing 600 new computers to students and staff, upgrading data cabling infrastructure at 5 sites, installing over 50 wireless access points, and purchasing 3 wireless laptop carts. Thus, technology was embedded across the curriculum and considered an essential part of the educational program. As part of the technology upgrade, the newly adopted student Acceptable Use Policy (AUP) allowed staff and students access to collaborative and social media websites in order to enhance the curriculum. The AUP was presented to students in their classes during the first week of school.

The fact that the high school English department noted an increase in plagiarism and that two students inappropriately accessed teacher and student computers indicated technology abuse that had grown more serious in the district (high school assistant principal, personal communication, September 30, 2010). This abuse, coupled with the mandate by the Broadband Data Improvement Act (2008) to provide students Internet safety education, brought digital citizenship to the forefront in the district. To address this

growing issue, the district purchased an annual subscription from iSafe, a nonprofit foundation that provides a digital citizenship curriculum for students, staff, and the community.

Technology abuse affects the district's learning community of students, staff, and parents. This study provided increased understanding of digital citizenship issues facing the district and determined the breadth and depth of digital abuse by quantifying the online behaviors of fifth- to 11th-grade students, measuring the differences between gender and grade levels, researching causes and solutions to digital citizenship abuse, and presenting recommendations based on local and state survey results.

Nature of the Study

In this quantitative study, I investigated the online behavior of the students. District and state historical survey data were used to determine whether there was a causal relationship between the two independent variables, grade level (Grades 5, 7, 9, and 11) and gender of the student, and the dependent variable, online behavior (with respect to four areas: Personal Safety, Digital Citizenship, Parental Involvement, and Cyberbullying). The research design is covered in detail in Section 3.

Research Questions

Quantitative analyses of the district-supplied data sets were used to answer the following research questions:

1. Is there a relationship between gender and Personal Safety?
2. Is there a relationship between grade level and Personal Safety?

3. Is there a relationship between gender and Digital Citizenship?

4. Is there a relationship between grade level and Digital Citizenship?

5. Is there a relationship between gender and Parental Involvement?

6. Is there a relationship between grade level and Parental Involvement?

7. Is there a relationship between grade level and Cyberbullying?

Purpose of the Study

Misuse of technology by district students has galvanized staff to address this growing problem. The primary purpose of this study was to quantify the online issues of Personal Safety, Digital Citizenship, Parental Involvement, and Cyberbullying facing district students and to determine the district's best course of action to mitigate students' abuse of technology. Ribble and Bailey (2004) wrote, "Digital citizenship must become part of our school culture-not just a class or lesson but the way we do business in education" (p. 13). The secondary purposes of this study included raising awareness and providing strategies to students, their peers, parents, schools, and the community to address attitudes and behaviors related to the misuse of technology.

Theoretical Framework

Digital citizenship issues are a recent phenomenon with very little longitudinal research to provide guidance (Finkelhor, Wolak, & Mitchell, 2010; Jones, 2010). To examine them from a theoretical perspective, multiple elements of digital citizenship were considered based on the nine elements of Ribble and Bailey (2004) : "(a) digital access, (b) digital commerce, (c) digital communication, (d) digital literacy, (e) digital

etiquette, (f) digital law, (g) digital rights and responsibilities, (h) digital health and wellness, and (i) digital security" (p. 13). To meet the curricular requirements of the new Broadband Data Improvement Act (2008), this research focused on four: digital communication, digital etiquette, digital law, and digital rights and responsibilities.

Drug and alcohol prevention and intervention programs share similar approaches with Internet safety instruction: both strive to change behavior by reinforcing good decisions. For example, "these programs concentrate on "known risk [factors] and protective factors" (Jones, 2010, p. 3), just as Ribble and Bailey (2004, 2005, 2007) and others (ISTE, 2007b; Taranto, 2007) have proposed with Internet safety instruction. Successful drug prevention and intervention programs "are grounded in theory" using multiple strategies to change behavior in a positive direction (Jones, 2010, p. 3)

The diverse nature of digital citizenship elements requires a similarly diverse set of theories to address the online behaviors of students. Three theoretical perspectives guided this study in addressing the online behaviors of students in Grades 5 through 11: (a) the social norms theory, (b) the social cognitive theory, and (c) the moral development theory. One primary goal of a digital citizenship curriculum is to reinforce ethical online conduct and discourage risky conduct, which frequently requires a change of behavior. This change, behavior modification, replaces unacceptable behavior with a desired response and is a function of behavior theory (Miltenberger, 2012, p. 15). The social norms, social learning, and moral development theories informed the risky, unethical online behaviors of adolescents.

Social Norms Theory

According to Perkins and Berkowitz's (1986) social norms theory, a person's behavior is influenced by how others behave and think (Perkins, 2002, p. 164). People act in a manner that corresponds with what they perceive as normal behavior, by conforming to "group patterns and expectations" (Perkins, 2002, p. 164). According to Perkins (2002), the social norms theory explains instances where people erroneously believe "the attitudes and/or behaviors of peers and other community members to be different than their own when in fact they are not" (p. 1). In order to influence behavior, prevention programs focus on correcting these erroneous attitudes by providing accurate local survey results to correct the misconception (Botvin, 2000, p. 889). The social norms theory is used to explain a wide range of risky behaviors including sex, drugs, and alcohol (Berkowitz, 2004; Perkins, 2002; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007) and may have implications for mitigating risky online behavior (Jones, 2010; Willard, 2010), including cyberbullying (Nigam & Collier, 2010, p. 17).

Social Cognitive Theory

The social cognitive theory is attributed to Bandura's (1971a) expansion of the social learning theory, which explains and predicts a variety of behaviors based on peer interaction. According to Bandura (1971c), students learn from their peers through behavior modeling (p. 213). Peer modeling is recognized as a major factor in adopting new behaviors in prevention and intervention programs (Bandura, 1977; Patterson, 1969) and has a link to the global, connected, online world students live in today (Couros, 2009,

p. 235). This theory is associated with normative behavior where unethical or deviant behavior is justified because the behavior is considered normal among peers. Tokunaga (2010, p. 285) proposed that the social cognitive theory may help explain cyberbullying behaviors and provide the foundation for intervention and prevention models. Media and advertising are familiar examples of social cognitive theory in action. The television viewer may strive to emulate the observed behaviors by buying the product advertised. Modeling *21st century skills* is not much different. Teachers, parents, peers, and community members are all being observed by students and used as examples of normative behavior.

Moral Development Theory

Kohlberg's theory of moral development, an extension of Piaget's developmental psychology research (Crain, 1985, p. 118), posited that children progress through the stages of moral judgment by way of social experiences, not by maturation or the influence of parents or teachers (Kohlberg, 1971, p. 5). Kohlberg's continuum of moral development provides a potential theoretical basis for why children demonstrate risky behaviors online. Of Kohlberg's (1971) six stages, only Stage 2, "the instrumental relativist orientation," and Stage 3, "the interpersonal concordance," apply to the population in this study (p. 1).

Elementary-age children in Kohlberg's Stage 2 recognize that people have different thoughts and opinions (Kohlberg, 1971, p. 1). Children at this age have moved from punishment for breaking a rule to avoidance of punishment, but at an individual

level, without identifying with familial or societal values. At this stage, the focus is on the individual with the self-serving "what's in it for me" attitude (Kohlberg, 1973, p. 631).

Children typically move to Stage 3 during their middle school years and have a corresponding shift in thinking to the accepted societal values and norms. At this stage, interpersonal relationships with family and friends are key—a broadening but still narrow perspective of society (Kohlberg, 1973, p. 631). These interpersonal relationships are also the foundation of the social learning theory, commonly used in effective drug prevention programs (Jones, 2010, p. 3). At this stage, Kohlberg (1971) proposes that these young adults not think of "society as a whole" until their 20s and 30s (p. 4). Adolescents learn through social interaction and express that learning through imitation.

Digital citizenship encompasses a variety of topics, and thus multiple theories are required to inform the research. The social norms, social learning, and moral development theories form a base that can explain the major aspects of the misuse of technology and offer the theoretical grounding to develop intervention and prevention models that are practical. Their connection to the research will be explored in depth in Section 2.

Definition of Terms

21st century skills: Defined by ISTE (2007a) as the proficiencies required "to work, live, and contribute to the social and civic fabric of their communities" in the 21st century (para. 1).

Blog: "Websites where an individual or group creates a running log of entries that can be read by other users, such as in a journal" (Gray, Thomas, & Lewis, 2010, p. 2).

Chat: Defined by the Federal Bureau of Investigation (FBI, 2007) as "real-time text conversation between users in a chat room with no expectation of privacy" (Helpful Definitions section, para. 7)

Content Filter: A device "to block or allow Internet sites and content from being accessed and viewed by an individual, a group of individuals, or all the connected users" (Missouri Information Technology Services Division, 2008, Definition section, para. 2).

Cyberbullying: Defined by the California Department of Education (CDE, 2010), as a deliberate "recurring or repeated harm inflicted through electronic text" (What is cyber bullying? section, para. 1).

Digital citizenship: Defined by Ribble and Bailey (2007) as "the norms of appropriate, responsible behavior with regard to technology use" (p. 10).

E-Rate: A program run by the Federal Communications Commission (FCC; 2010) to provide discounted telecommunication services to eligible schools and libraries based on location and socioeconomic factors ("Universal Service," para. 1).

Instant Message (IM): Defined by Lipschultz and Musser (n.d.) as "a method of communication that enables users to share digitally-based information (text, audio, video) with each other over a network of computers (such as the Internet)" ("Definition," para. 1).

Internet: Defined by the National Telecommunications and Information Administration (NTIA, 2004) as "a worldwide system of interconnected networks allowing for data transmission between millions of computers" (Glossary section, para. 1).

Sexting: A combination of "sex" and "texting" and defined by the Pew Research Center as the "creating, sharing and forwarding of sexually suggestive nude or nearly nude images by minor teens" via text messaging (Lenhart, 2009, p. 3).

Social networking sites: "Online social networks for communities of people who share interests and activities or who are interested in exploring the interests and activities of others (e.g., Facebook, MySpace)" (Gray et al., 2010, p. 2).

Assumptions, Limitations, Scope, and Delimitations

Assumptions

In this study, I assumed students answered survey questions honestly. The theoretical framework of this study is based upon the social norms theory, the social cognitive theory, and Kohlberg's theory of moral development. I assumed that this research is best situated in these three theories; however, it is possible these theories are not the best fit for this research.

Limitations

Participation was voluntary in the local and state surveys on which this study is based; the results may have differed had all students participated. In addition, self-report surveys are subject to participant perceptions, are vulnerable to false responses, and as a

result, may not yield accurate results compared to more traditional data recording methods (Gosling, Vazire, Srivastava, & John, 2004; Morse, Gullekson, Morris, & Popovich, 2011). The self-reported quality of fifth-grade responses may not be the same as ninth- and 11th-grade responses because the participants may have been embarrassed to answer truthfully or they may have been concerned with their teacher's approval.

The research design is another limitation. The primary limitation of the ex post facto design is the lack of control over the independent variables, grade and gender. Since the data were obtained after the fact and from two different populations, the data may not accurately reflect current conditions. The survey samplings were not random and may result in conclusions about a population that are inaccurate, thus limiting the ability to generalize to other school settings.

Scope and Delimitations

This study was based on 2009–2010 and 2011–2012 data obtained from the school district and state for the 11 schools of a medium-sized district in a metropolitan region of California, with a culturally diverse student population of approximately 6,700. Only data from students in Grades 5, 7, 9, and 11 were part of this study. Cultural, socioeconomic, and regional factors may preclude generalization to any other public school in the United States.

According to Creswell (2003), delimitations constrict the range of the study (p. 148). This study will be limited to a one-time, detailed analysis of self-reported online behaviors of district and state student survey responses bounded by the 2009–2010 and

2011–2012 school years. The intent of this research was to determine the relationship between students' grade level, gender, and digital citizenship abuse. Results should be interpreted within this context only.

Significance of the Study

Local Problem Application

Understanding how students behave online has a significant impact on how the district implements the federally mandated Internet safety program involving students, staff, parents, and community. Specifically, the research findings are expected to provide school administration with the quantitative figures necessary to tailor a cybersafety program to a particular school setting and population. In addition, the ex post facto design will allow other interested districts to assess their students' online behavior. Sharing the survey data may result in an understanding of how to incorporate a digital citizenship curriculum at other schools.

Professional Application

Ribble (M. Ribble, personal communication, December 8, 2010), an author of multiple digital citizenship books, and Lenhart (A. Lenhart, personal communication, February 1, 2011), a lead researcher with the Pew Research Center, commented on the lack of local data to assess digital citizenship challenges. This research was expected to provide local data to professional development trainers, district administrators, school administration, and technology mentors in a California metropolitan region to facilitate the integration of digital citizenship skills into the K-12 school curriculum. This study is

expected to help to (a) fill the research gap and (b) identify strengths and weaknesses in current professional development programs focusing on the integration of digital skills.

Social Change

      The rapidly changing nature of communication technologies puts global youth in circumstances that could not have been anticipated 10 or 20 years ago (Jenkins, 2006, p. 16). The learning community must provide guidance and strategies to students, parents, schools, and society to address digital citizenship. I hope that supporting the pillars of digital citizenship will support district, state, national, and global efforts to promote online safety and awareness, now and in future generations. Through community education and outreach, the study findings have the potential to bring about social change by fostering a positive, ethical attitude toward using online technology Few studies have assessed digital citizenship at a local level. Local data is the catalyst for change; it starts the conversation and develops comprehension. Research has identified digital citizenship as a global issue; the solutions will have a global impact.

Summary

      Students need the tools and instruction to maneuver safely on the Internet to become productive members of the global online society. Schools must take responsibility to develop digital citizenship in all students through a coordinated effort with parents and community. This ex post facto study investigated the online actions of students in a medium-sized, California K-12 school district and explored possible causal relationships between online misbehavior and student grade and gender based on data

collected from district and state surveys. Hypotheses were tested using independent-measures t values; a single-factor, independent-measures analysis of variance (ANOVA), and the chi-square test for independence.

Section 2 of this study examines the details of this digital shift with a thorough review of current and relevant literature. Section 3 discusses the methodology and procedures of this quantitative study. Section 4 provides the data analysis of the survey results while Section 5 summarizes the findings and presents recommendations.

Section 2: Literature Review

This study investigated the online actions of K-12 students and explored possible causal relationships between online misbehavior and student grade and gender based on ex post facto data collected from state and district surveys. Section 2 examines the rapid digital shift to Internet resources and its associated risks for youth with a thorough review of current and relevant literature. This section details search strategies, analyzes three major digital citizenship studies, compares citizenship with digital citizenship, examines the political, legal, and moral responsibilities of digital citizenship, review the theoretical perspective, and evaluates the research methodology.

The Internet is a disruptive force, affecting global society (Manardo, 2000, p. 27). It started as a U.S. Department of Defense (DoD) project in the 1960s to interconnect a network of command and control computers to ensure communication in the event of a nuclear war with the former Soviet Union (Clift, 2008, "Internet Origins," para. 3). The network soon added universities, research centers, and other government agencies. Information was exchanged with a variety of applications, such as e-mail, file transfer, and news groups (Powsner & Roderer, 1994, p. 419). The research-based Internet grew rapidly, resulting in the lifting of restrictions on commercial use in 1991, opening the interconnected network to the world. In a relatively short period of time, "the Internet has revolutionized the computer and communications world like nothing before" (Leiner et al., Introduction section, para. 1). Proficient use of Internet tools is considered an essential skill for the 21st century.

This rapid advance of technology has touched virtually all aspects of daily life. Society has benefited from this technology in a myriad of ways, including the rapid dissemination of information and culture (Bandura, 2001, p. 17). The messaging services available on the Internet today are particularly important to the global youth (Subrahmanyam, Smahel, & Greenfield, 2006, p. 396) as technology "erodes the boundaries of long-established cultural communities" (Fukuyama, 1999, p. 82). *Social networking sites* such as Facebook and Twitter, aided by the ubiquitous cell phone, have revolutionized communication as demonstrated by the unrest in the Middle East. *Blogs* and *instant messages* (IM) allow a rapid, worldwide distribution of thoughts and ideas. Digital users can access the Internet and generate their own content from virtually anywhere, allowing users to control how they are portrayed. The complete integration of technology into day-to-day life, with education and schooling at the core, led Drucker (2007) to call this transformational time the "knowledge society" (p. 233).

Not all agree with Drucker's one-sided portrayal of the knowledge society. Hargreaves (2003) argued, "The knowledge society is a Trojan horse: It seems to bear gifts, but brings trouble" (p. 49). Multiple examples support Hargreaves's argument of troubles caused by advancing communicative technologies. Juvonen and Gross (2008) cited surveys that indicated a rapid increase in school-related cyberbully incidents (p. 497). Researchers noted the increasing prevalence of online addictive behaviors, especially involving excessive gaming (Block, 2008; Zur, 2011). Increased access to the Internet has increased youth exposure to pornography at an earlier age, with the average

age of first time access now 11 years old (Perrin et al., 2008, p. 13). Brown and L'Engle (2009) indicated adolescent viewing of sexually explicit media leads to "permissive sexual norms" and an increase in sexual harassment and sexual behaviors (p. 139). The Internet, with all its benefits, has also opened the door to a multitude of societal ills (Lamb, 2010; Pruitt-Mentle, 2008; Thornburgh & Lin, 2002).

The benefit of the Internet and its associated technology is evident in the teaching and learning process in schools (Johnson, Smith, Levine, & Haywood, 2010; Pruitt-Mentle, 2008; Thornburgh & Lin, 2002). Unfortunately, the education system is not immune to the trouble Hargreaves (2003) associated with the knowledge society. The misuse of technology in schools echoes the growing global problem and results in restrictive, makeshift measures to restrict the abuse. There are myriad examples of inappropriate use of technology, ranging from plagiarism to cyberbullying. Although Ribble and Bailey (2007) defined digital citizenship as "the norms of appropriate, responsible behavior with regard to technology use" (p. 10), they recognized the negative side to digital citizenship through the misuse of technology. The concept of digital citizenship extends the roles and responsibilities associated with good citizenship to the online world. However, Richardson (2009) claimed schools' use of restrictive web *content filters* and acceptable use policies do not address the real issues of technology abuse and disregard the reality of students' online behavior (p. 28). In addition, the proliferation of mobile Internet access has made it very difficult to restrict a child's use of online resources. Howard and Davies (2009) argued that "Students don't need threats;

students need pedagogy" (p. 67). Ribble et al. (2004) agreed, claiming that educators must not only emphasize effective use of technology but appropriate use as well (p. 8). The problems of Internet abuse are evident in schools and must be addressed through instruction and practice.

At the local level, Lopez (2009) outlined the abuse of communication technologies by middle school students in a metropolitan region of California. Utilizing a self-report survey instrument, Lopez noted 45% of the middle school students sampled believed there was a cyberbully problem at school (p. 55), 28% continued an online fight on campus (p. 60), and 34% had a conflict start at school and continue online (p. 64). Lopez's study revealed a portion of the middle school students "may be suffering the psychological effects of cyberbullying" (p. 92). Lopez's research also indicated that administration and staff are not prepared to deal with the misuse of communication technology by students, requiring training to identify bully behaviors and solutions. Lopez posited the misuse of mobile devices "is the greatest electronic threat to a school's administration" (p. 92), requiring action by all members of the learning community. Technology abuse at the local school level mirrors the growing national trend of technology misuse.

Search Strategies

The literature searches were focused on the online behavior of K-12 students and used the EBSCO databases, an online integrated service providing access to reference databases, online journals, and books. The research study focused the investigation of

research to two database groups, (a) behavioral studies and psychology and (b) education.

The behavioral studies and psychology databases include PsycINFO, the American

Psychological Association's (APA) resource for scholarly articles containing nearly 3

million citations. The education databases include Education Research Complete, and

Academic Search Complete.

Search selections were limited to focus the results using EBSCO's search options.

These options included (a) peer-reviewed articles in English, published between 2006 and

2011 (expanded or contracted depending on the return results), (c) in English, and (d) in

full text. The broad search terms were derived from the research questions and related

terminology with additional terms added as the literature was reviewed. The search terms

used for the initial search were:

- *digital citizen** (all text);

- *digital safety* (all text);

- *online safety* (all text);

- *Internet safety* (all text); and

- *digital citizen** survey (all text) AND education (subject terms).

Review of Related Research

Some researchers have illustrated the growing misuse of technology and provided

recommendations for intervention and prevention (Livingstone, Haddon, Gorzig, &

Olafsson, 2011; Nigam & Collier, 2010; Schrock & Boyd, 2008). Embedded within these

recommendations is digital citizenship, a notion that addresses the responsible use of

digital tools (Ohler, 2009, p. 12). This literature review will provide an overview of

intervention and prevention recommendations and the associated behavioral learning

theories from Perkins and Berkowitz, Bandura, and Kohlberg. This section will focus on

Internet access in the 21st century; youth online behavior; citizenship; digital citizenship;

political, legal, and moral responsibilities; and behavioral learning theories. Research

contributes to the understanding of how these pieces fit together.

Internet Access in the 21st Century

The modern global workforce requires a new set of competencies that must be

included in the U.S. educational standards to keep pace with the new knowledge

economy. President Clinton, in his 1996 State of the Union address, declared, "Every

classroom in America must be connected to the information superhighway, with

computers and good software, and well-trained teachers" ("Our second challenge," para.

1). At the core of this requirement is Internet access, which provided impetus for the

Telecommunications Act of 1996. A section of the Telecommunications Act addressed

the concern of Internet access to K-12 classrooms through *E-rate*, a program run by the

Federal Communications Commission (FCC). The goal of E-rate is to provide discounted

phone and Internet service to poor and rural schools and libraries to promote

connectivity. In 1994, 3% of U.S. schools had classroom Internet connectivity, a number

that had increased to 27% by 1997 (U.S. Department of Education, 2003, p. 4). The first

year of E-rate funding in 1998 saw classroom connectivity jump to 51% (U.S.

Department of Education, National, 2003, p. 4). E-rate has been an unqualified success

with over 95% of classrooms now connected to the Internet (Nagel, 2010, p. 2). High speed Internet access is considered critical for the 21st century learner and beyond. According to the Communications Workers of America (2010), "students with little exposure to digital technologies translate to adults with limited career opportunities" ("Current Challenges," para. 1). FCC Chairman Julius Genachowski called high-speed Internet access "indispensable for the 21st century, the foundation for our economy, the foundation for our democracy in the digital age" (as quoted by Schaffhauser, 2010, p. 1). The Internet and the digital tools it supports provide the underpinnings of 21st century learning for global youth.

Even though 78% of American homes had Internet access in 2011 (Internet World Stats, 2011), access is not enough. Gary Locke (2010), U.S. Secretary of Commerce, stated, "In a globalized 21st century economy, when you don't have regular access to high-speed Internet, you don't have access to all the educational, business and employment opportunities it provides" ("Secretary Locke announces," para. 2). One of the goals of President Obama's 2009 American Recovery and Reinvestment Act was a 90% penetration rate of high speed Internet in U.S. homes by 2020, with the belief that increased access will spur the economy and create jobs (Sutter, 2010, para. 3).

Youth Online Behavior

Internet access is nearing a ubiquitous service. Associated with this increased access is an increase in risky and ethically challenged online behavior (Nigam & Collier, 2010, p. 4). Three large-scale studies detailed the online behaviors of youth and the

associated risks. In the first study, the federally funded Online Safety and Technology

Working Group's (OSTWG) *Youth Safety on a Living Internet* (Nigam & Collier, 2010),

Internet safety education, child protection technology, child pornography reporting, and

data retention are detailed. The Internet Safety Technical Task Force's (ISTTF; Schrock

& Boyd, 2008) report, *Enhancing Child Safety & Online Technologies*, focused on youth

risk using social media, analyzing peer-reviewed data from multiple studies. The third

study, *Risks and Safety on the Internet*, funded by the European Union (EU) and

produced by The London School of Economics (LSE; Livingstone et al., 2011), detailed

the online use and risks of 9–16 year-olds in 25 EU countries. These major, quantitative

studies identified risky online behavior as a global concern, requiring a multifaceted,

holistic resolution.

Youth Safety on a Living Internet

The Broadband Data Improvement Act of 2008 directed the NTIA to create a

working group to examine and assess online safety practices to protect children. The

resulting OSTWG comprised "business community, public interest groups, and other

appropriate groups and Federal agencies" (Nigam & Collier, 2010, p. 1) and charged with

the task of presenting recommendations on how the U.S. can protect its youth from online

harm while empowering them to be responsible digital citizens. The group's report to the

U.S. Congress, is a compilation of peer-reviewed research and expert testimony regarding

online youth safety. The report was subdivided into four distinctive parts of online safety:

(a) Internet safety education, (b) parental controls and child protection technology, (c)

child pornography reporting, and (d) data retention. The report summarized findings from each group and presented recommendations.

Nigam and Collier (2010) introduced the Internet safety education section with statistics to bolster their case for education reform. The 2010 Pew Internet & American Life Project noted 73% of American youth accessed social networking sites (Lenhart, Purcell, Smith, & Zickuhr, 2010, p. 2) while a 2010 Nielsen study found the same age group averaging 3,146 text messages a month (Entner, 2010, para. 2). The pervasive use of mobile devices and social networking sites has enabled youth to be dynamic contributors to the online community; not all of it appropriate. Citing a 2008 Centers for Disease Control study, Nigam and Collier (2010) noted a "statistically significant number of American youth" are cyberbullied, reporting 9% to 35% of American youth are victims of "electronic aggression" (p. 12). Nigam and Collier also raised concerns about data security and how youth portrayed themselves online in social communities, noting youth can be easily tricked to giving up confidential data and often are not aware of the ramifications of posted media (p. 16). Nigam and Collier downplayed predator danger, indicating the probability of "being physically assaulted by an adult who they first met online is extremely low" (p. 12). The authors also argued the prevalence of *sexting* is overhyped, with only 4% of teen cell users actually having sexted according to the 2010 Pew Internet & American Life Project (Lenhart, 2009, p. 2). This is in contrast to an AP-MTV (2009) poll that indicates 24% of 14–17 year-olds have been involved in sexting (p. 2). The report recognized the rapid changes in technology and the importance of

educating youth and parents to mitigate the misuse of online resources, identifying "digital citizenship as a national priority" that must be promoted by the whole learning community (Nigam & Collier, 2010, p. 31). Nigam and Collier clearly summarized the online risks for American youth.

The parental controls and child protection subsection noted the various options available to parents to control content access for their children. Unfortunately, no research was cited in this section and the only input was from leading field experts. In addition, committee members were not allowed to solicit input from outside parties, limiting the content and value of this section. The four recommendations presented by the group included: (a) "engage in ongoing awareness-building efforts, (b) promote greater transparency, (c) include parental technology and options in new offerings, and (d) enable and promote 'community policing'" (Nigam & Collier, 2010, p. 67). Research supports OSTWG's recommendation of parental and community resources to keep children safe online (Nigam & Collier, 2010; Pruitt-Mentle, 2008; Strasburger, Jordan, & Donnerstein, 2010).

The child pornography subsection is directed to information service providers and their reporting requirements of child pornography storage and transmission under the PROTECT Our Children Act of 2008, section 2258A and 2258B of title 18, United States Code (Nigam & Collier, 2010, p. 87). The intent was to support data networks free of child pornography by reporting offenses to a CyberTipline staffed 24 hours per day. The law was intended to report offending adults; however, the rise of sexting has ensnared

minors sending sexual images to each other, a child porn gray area (Nigam & Collier, 2010, p. 98). As in the previous parental controls and child protection subsection, no research and very little data were cited, only expert testimony. Six recommendations were presented that could be summarized in to two main groups: (a) education and communication with law enforcement on the security mandates required under the PROTECT Our Children Act and (b) establishing a wellness program to protect compliance staff from psychological harm from viewing child pornography (Nigam & Collier, 2010, p. 89). The PROTECT Our Children Act reinforces the view that telecommunication companies share the responsibility for protecting youth online.

The fourth and final OSTWG subsection concerned data retention from the law enforcement, business, and consumer privacy perspectives for the specific purpose of probing child exploitation (Nigam & Collier, 2010, p. 100). As with the two previous subsections, the subcommittee presented a narrative on balancing the needs of each group without accompanying research data. The PROTECT Our Children Act requires Internet service providers (ISP) to retain identifying data from all users needed by law enforcement to find and prosecute offending individuals. While the data retention benefits law enforcement, the storage, retrieval, and privacy of the massive amounts of data are borne by the service provider. Consumers from their perspective are concerned about free speech and privacy when every website visited and transaction completed is recorded and retained by an ISP. Certainly there needs to be a balance, but the OSTWG

data retention subcommittee could not arrive at a consensus position (Nigam & Collier, 2010, p. 116).

The strength of the OSTWG report is the focused review of risk prevention through a theoretical lens for selected online behaviors. The report noted the futile nature of "scare tactics" in prevention and the importance of a research-based approach to behavioral change (Nigam & Collier, 2010, p. 16). The report highlighted the positive effect of the social norms method and peer modeling for mitigating online misbehavior (p. 17 & p. 19). Perkins and Berkowitz's social norms theory (1986) established how a person's behavior influences how others behave and think (Perkins, 2002, p. 164). The social norms theory, originally addressing college binge drinking, has proven to be effective on bully and cyberbully behaviors (Nigam & Collier, 2010, p. 17). Peer modeling, supported by Bandura's (1971b) social learning theory, explains and predicts how students learn from their peers through behavior modeling (p. 213). Nigam and Collier cited the effectiveness of Finland's school-based "peer support" program in "reducing youth risk" while increasing "social responsibility" and posited this prevention model is a "likely solution to cyberbullying" (Nigam & Collier, 2010, p.19). The authors suggested these theories provide the basic understanding required for effective intervention and prevention programs for online risky behaviors (p. 19).

The authors suggested 12 Internet safety education recommendations for intervention and prevention programs:

(a) keep up with research and base education on it, (b) coordinate federal

government educational efforts, (c) target messaging and treatment, (d)

promote digital citizenship as a national priority, (e) promote media

literacy and computer security as a national priority, (f) create a digital

literacy corps for schools and communities, (g) include evaluation as part

of all federally funded online safety education projects, (h) establish

industry best practices, (i) encourage full, safe use of social media in

schools, (j) avoid scare tactics in favor of the norms approach, (k) develop

more effective resources for parents, (l) respect young people and get them

involved. (Nigam & Collier, 2010, pp. 30–33)

This comprehensive list of recommendations provides an informed framework for

Internet safety education in the United States.

As a high level, four-section report, a few intervention specifics were noted in the

first Internet safety education section. The remaining three sections spotlighted external

controls such as data retention and child pornography reporting by ISPs, and browser and

content filter controls for parents. Overall, this report offers a multi-faceted outline for

Internet safety education and provides two solutions with theoretical grounding to

establish intervention and prevention programs for online misbehavior.

Risks and Safety on the Internet: The Perspective of European Children

In the second study, the London School of Economics presented a survey of 9–16

year-olds and their parents in 25 European countries, at the Safer Internet Forum in the

fall of 2010. The purpose of the report was to understand European children's online practices to identify risky behaviors that increased the risk of harm. The research informed education programs and policy makers promoting safe Internet use for age appropriate behaviors (Livingstone et al., 2011, p. 12). The qualitative project design hypothesized certain online activities increased the risk of harm, including pornography, cyberbullying, sexting, and meeting online contacts (Livingstone et al., 2011, p. 15). During face-to-face interviews, researchers recorded student survey information during the 2010 spring and summer, measuring the independent variables, age, country, and gender of the student, and the dependent variable student online behavior. One parent was interviewed as part of the process with results matched to the student questions. The 9–10-year-old children were asked approximately 40 questions while the 11–16 year-olds were asked approximately 80 questions. The random stratified survey sampled 25,142 children who used the Internet, approximately 1,000 per country, leading to a confidence level of 95% and a margin of error of 5% for all samples (Livingstone et al., 2011, p. 15). This large-scale study provided a detailed report of EU youth online behaviors and identified risks faced by children.

The survey explored five online activities identified as high risk behavior: (a) pornography, (b) bullying, (c) sexting, (d) meeting online contacts offline, and (e) other risks including potentially harmful user-generated content and misuse of personal data (Livingstone et al., 2011, p. 7). Internet usage was recorded as part of the study to

determine the correlation between increased time and opportunities on the Internet with the increased chance of "risky encounters" (Livingstone & Helsper, 2010, p. 319).

Few studies have identified the risks associated with children exposed to sexually explicit material because of the ethics involved with the population age and subject matter (Brown & L'Engle, 2009; Thornburgh & Lin, 2002). However, Brown and L'Engle (2009) indicated early exposure to pornography "predicts less progressive gender role attitudes and more permissive sexual norms" for both genders, with males responsible for increased sexual harassment (p. 129). Empirical studies with "violent media content and children," often associated with pornography, have shown positive correlation to "desensitization, increases in hostility, and imitation and inhibition" (Thornburgh & Lin, 2002, p. 149). Livingstone et al. (2011) found boys were more likely to see online sexual images than girls (16% vs. 12%) overall. Older teenagers, 15–16 year-olds, saw more sexual images (25%) than younger teenagers 13–14 years old (16%). Only 5% of EU 9–10-year-old children viewed a sexual image during the preceding year. This compares to 42% of U.S. youth that reported wanted or unwanted exposure to pornography (Schrock & Boyd, 2008, p. 29), a significant difference. As one would expect, younger children were bothered more than older children by online sexual images, 56% of 9–10 year-olds vs. 24% of 15–16 year-olds (Livingstone et al., 2011, p. 57). Livingstone et al. noted a wide variation by country in children's access to pornography and the perceived harm they felt (p. 50). Livingstone et al. found children bothered by pornographic images coped in one of three ways: (a) did nothing; (b) told a

friend or parent; or (c) took matters into their own hands by deleting the message,

changing their content filter settings, blocking the sender, or staying off the Internet (p.

60). Having coping strategies to deal with unwanted exposure to pornography is healthy

for children (Livingstone et al., 2011, p. 60).

      The second risk identified by Livingstone et al. (2011) was bullying, including

both face-to-face and online bullying, also known as cyberbullying. Livingstone et al.

broadened their cyberbullying definition to include hurtful or nasty things occurring by

cell phone, texts, e-mail, or social networking sites. The overall results indicated face-to-

face bullying is more prevalent (13%) than online bullying (6%) or bullying by cell

phone (3%) (Livingstone et al., 2011, p. 62). This compares to a recent U.S. survey

(Nigam & Collier, 2010) that indicated 19% of American teens had been cyberbullied,

more than double the average EU rate (p. 13). The research (Livingstone et al., 2011)

indicated very little gender differences with online bullying; girls are slightly more prone

to being cyberbullied than boys (7% vs. 5%) (p. 62). Age is also a factor with older

teenagers (7% of 15–16 year-olds) more likely to be cyberbullied than younger children

(3% of 9–10 year-olds) (Livingstone et al., 2011, p. 66). Social networking sites and IMs

are the most common medium to cyberbully European children compared to e-mail,

gaming sites, or *chat* rooms (Livingstone et al., 2011, p. 63).

      Even though only 6% of the surveyed children were cyberbullied, Livingstone et

al. (2011) found 85% of those children were upset with the experience on some level,

with children from lower SES homes nearly twice as likely to be upset as children from

high SES homes (p. 69). Gender also played a role in the level of being upset, with girls

(37%) more likely than boys (23%) to be "very upset" at being cyberbullied (Livingstone

et al., 2011, p. 69). Livingstone et al. also suggested a correlation between offline

bullying and cyberbullying, noting countries with a higher face-to-face bully rate also had

a corresponding higher cyberbully rate (p. 62). Livingstone et al. noted coping strategies

likely determined the long-term effects of cyberbullying (p. 70). The majority of

cyberbullied children (77%) talked to somebody about the experience including 42% of

parents but only 14% of siblings and 7% of teachers (Livingstone et al., 2011, p. 70). As

with pornography, children blocked or deleted messages, changed content filter or

contact settings, or stopped using the Internet for a period of time, while some (13%) did

nothing (Livingstone et al., 2011, p. 71). Livingstone et al. concluded online experiences

could have significant offline consequences (p. 71).

The third high-risk behavior, rooted in the proliferation of cell phones, is sexting,

a recent practice of exchanging sexual laden messages containing words and/or pictures.

What may start as a flirtatious gesture can quickly turn to a perpetrator-victim activity if

the message is posted or sent to others (Livingstone et al., 2011, p. 73). As with any

content posted online, it is impossible to delete or change. According to Livingstone et al.

(2011), receiving a sexual message is highly correlated with age but not gender or SES.

Older teens (22% of 15–16 year-olds) received a significant number of these messages

more than younger children (7% of 11–12 year-olds and 14% of 13–14 year-olds) with

relatively few children sending these messages (3% of 11–16 year-olds) (p. 73). The 22%

sexting rate among EU students is approximately 50% higher than their American

counterparts at 15% (Nigam & Collier, 2010, p. 13). As with other results from the EU

online survey, sexual messaging varied by nation (Livingstone et al., 2011, p. 77). Of the

children that received a sexual message, 93% reported being upset to some degree, and as

with pornography, the youth most bothered were "girls, younger children, and less

advantaged children" (Livingstone et al., 2011, p. 81). EU children responded in a similar

fashion to pornography and cyberbullying with nearly 40% trying to fix the problem

proactively. The social support sought by children receiving sexual messages, however,

mirrored the support received after receiving pornography (53%) with only 60% talking

to somebody about the experience. Parental support was sought only 30% of the time,

with siblings at 14% and teachers at only 2% (Livingstone et al., 2011, p. 70). As the age

of first-time Internet and cell phone use drops to 7–9 years old, the chance for a risky

encounter at a younger age will also increase (Livingstone et al., 2011, p. 24).

The biggest parental concern for children's safety is the risk of a face-to-face

meeting with someone they had only met online leading to abuse or harm (Livingstone et

al., 2011, p. 85). With ubiquitous cellular connections, youth are in constant

communication, most of which occurs without parental influence or control. Livingstone

et al. (2011) reported 9% of children met someone offline whom they first met online

with the 15–16 year-olds meeting face-to-face 16% of the time (p. 92). This is

approximately the same as American youth with 10%–16% meeting face-to-face

(Schrock & Boyd, 2008, p. 14). There is relatively little difference between EU girls (8%)

and boys (9%) meeting with someone they met online (Livingstone et al., 2011, p. 85).

The majority of the time, the youth met with someone their own age (63%), but 8% of the

time they met an adult (aged 20 or older) (Livingstone et al., 2011, p. 93). Livingstone et

al. reported, in 11% of the meetings, the children "were bothered at what happened' (p.

92) with 24% of this group reporting being physically, sexually, or mentally hurt,

representing 1% of the total population (p. 94). Of the children that met someone offline,

53% took someone with them, but 30% did not tell anyone of the contact (Livingstone et

al., 2011, p. 93). Of the youth bothered by an offline meeting, only 62% talked to

somebody about the experience including 28% parents, 11% siblings, and 6% teachers

(Livingstone et al., 2011, p. 95). Offline encounters are the riskiest and potentially most

harmful of any online peril.

Livingstone et al. (2011) identified "harmful user generated content" and misuse

of personal data as risks to children in an online environment (p. 97). Possible harmful

content included sites sponsored by individuals and groups promoting values and

activities not appropriate for children, such as hate, violence, drugs, and suicide

(Livingstone et al., 2011, p. 97). Twenty-one percent of European children surveyed had

seen a potentially harmful website recently (Livingstone et al., 2011, p. 99). The misuse

of personal data is another growing policy issue, especially for children (Livingstone et

al., 2011, p. 101). Livingstone et al. noted 9% of surveyed children recently had a misuse

of their personal data (p. 101). Risks to children will evolve as the role of the Internet

develops.

LSE's survey presented a very detailed picture of online interactions experienced by European youth from 25 countries. The results varied widely by country indicating societal norms and values influence youth behavior. The report (Livingstone et al., 2011) investigated five online activities deemed risky for potential harm and utilized the data to establish five key policy recommendations: (a) parental awareness, (b) focus on younger users, (c) industry support for Internet safety, (d) digital citizenship, and (e) positive content (pp. 145–147). The report presented a clear picture of online youth risks in the EU but offered no theoretical basis and little detail for prevention and intervention of risky Internet behaviors.

Enhancing Child Safety and Online Technologies

In the third study, the ISTTF's report (Schrock & Boyd, 2008) focused on an analysis of current, quantitative, peer-reviewed, national research identifying online risky behavior by U.S. youth aged 7–17 years old. The ISTFF report is similar to LSE's EU study in the way online risks were quantified. The results of the ISTTF research was presented to the Multi-State Working Group on Social Networking, including State Attorney Generals from all 50 States, to update them on the evolving hazards U.S. youth face online. Schrock and Boyd identified three major online risk categories for youth: (a) harassment, (b) solicitation, and (c) exposure to problematic content (p. 6) and detailed six factors that increase the chance of youth being exposed to these risk categories (p. 39). The report indicated online risks have an offline connection, suggesting personality traits may determine the actual Internet hazards (Schrock & Boyd, 2008, p. 39).

The harassment category included any form of online harassment, including cyberbullying, terms that are "frequently used interchangeably" (Schrock & Boyd, 2008, p. 22). Patchin and Hinduja (2006) found nearly 30% of youth respondents reported being cyberbullied (p. 162) with 32% reporting it bothered them at school (p. 161). Li (2007) reported 54% of seventh-grade students were physically bullied versus approximately 25% being cyberbullied (p. 1782). As with the EU online survey, physical bullying occurs more frequently than cyberbullying although the bully rates, both online and offline, are significantly higher in the U.S. About 76% of cyberbully victims in the U.S. were negatively affected by the harassment directed towards them, similar to the EU's 85% rate. According to Smith et al. (2008), online harassment is more prevalent outside of school than inside (p. 376). This is a potential concern because Nansel, Overpeck, Haynie, Ruan, and Scheidt (2003) reported students bullied away from school were nearly four times more likely to carry a weapon to school (p. 352). Cyberbullied youth also exhibited an increased likelihood of lower grades, decreased attentiveness, truancy, and were more likely to cyberbully other students (Beran & Li, 2007, p. 23). Schrock and Boyd (2008) reported "gender differences are inconclusive," but noted girls were more likely to be harassed than boys (p. 25). Both gender and age results for cyberbullying mirror the EU results and indicate online bullying is a growing problem.

Schrock and Boyd (2008) asserted sexual solicitation by predators for offline encounters is a parent's greatest concern (p. 14). Wolak, Mitchell, and Finkelhor (2006) reported the majority of solicitations (81%) were reported by youth 14–17 years old (p.

16) with the majority of solicitors identified as other youth (43%) or young adults 18–25

years old (30%) with only 9% coming from adults older than 25 (p. 25). According to

Wolak et al. (2006), 77% of solicitations occur through IM or *chat* (p. 25) with social

networking sites, such as Facebook and MySpace, not generally demonstrating an

increase in solicitation risk (Wolak, Finkelhor, Mitchell, & Ybarra, 2008; Ybarra &

Mitchell, 2008). Schrock and Boyd reported 9%–16% of U.S. youth (p. 17) have met

someone offline that they first met online, mirroring the 9% rate from the EU survey

(Livingstone et al., 2011, p. 92). In the small percentage of encounters that involved sex,

a majority of the perpetrators had talked about sex before the encounter, indicating the

victims knew the solicitor was sexually interested in them (Wolak, Finkelhor, Mitchell, et

al., 2008, p. 113). Though offline encounters by predators are parents greatest concern,

research indicated aggressive solicitation is relatively low, ranging from 1%–15% and

dependent on risky online behavior (Wolak, Finkelhor, & Mitchell, 2008, p. 341).

According to Wolak, Finkelhor, Mitchell, et al. (2008), most victims of aggressive

solicitation were 12–17 years old (99%) (p. 115) and female (p. 118). Engaging in online

risky behaviors increases the chances of aggressive solicitation.

   The third major risk category identified by Schrock and Boyd (2008) was

exposure to problematic content including pornography, violent music, video, and image

content. Exposure to violent media has not been extensively studied, but existing research

(Brown & L'Engle, 2009; Olson et al., 2007; Thornburgh & Lin, 2002; Whitty, 2008)

indicated an increase in hostility and inhibition because of viewing violent content.

Wolak et al. (2006) reported that the Internet increases children's risk of exposure to pornography (p. 9). Whitty (2008) added the anonymity and disinhibition of the online world allows people to seek material "they would not have otherwise sought out," including pornography and other violent material (p. 1839). Wolak et al.'s (2006) research indicated pornography exposure is relatively frequent with 34% of minors reporting unwanted exposure (p. 36). The 34% exposure rate for U.S. youth is nearly 50% higher than the 23% exposure rate of EU youth (Livingstone et al., 2011, p. 49). The variation could be attributed to the definition of pornography. The EU Kids Online survey defined pornography as "showing people naked or people having sex" (Livingstone et al., 2011, p. 49) while Wolak et al. (2006) did not define pornography. In addition, multiple studies indicated males are exposed to pornography at a higher rate than females with more males actively seeking exposure than females (Brown & L'Engle, 2009; Livingstone et al., 2011; Thornburgh & Lin, 2002; Wolak et al., 2006).

Rideout (2007) reported youth access to violent music, video, and images on the Internet resulted in 46% of parents being "very concerned" about what their children have seen online (p. 3). Video games are the most common medium for accessing violent content, with 99% of minors participating in a video game and 49% having played "at least one M (mature)-rated title" in the previous six months (Olsen et al., 2007, p. 79). Efforts to restrict violent video games were rejected by the U.S. Supreme Court when it struck down a California law banning the selling of "violent" video games to children "because it abridges the First Amendment rights of young people" (*Brown v.*

Entertainment Merchants Assn., 2011, p. 18). Access to violent content on the Internet is an ongoing parental concern.

Other harmful content includes hate speech and self-harm sites. Hate speech is defined as online content "designed to threaten certain groups publicly and act as propaganda for offline organizations" (Schrock & Boyd, 2008, p. 32) and is particularly troubling by adolescents' tendency to be swayed by the hurtful messages (Ybarra et al., 2008, p. 933). Research has indicated self-harm sites are a concern because adolescents who engage in self-harm are prone to risky online behavior (Mitchell & Ybarra, 2007, p. 396). The Mayo Clinic (2010) defined self-harm and self-injury as "the act of deliberately harming your own body, such as cutting or burning yourself" (para. 1). Inappropriate content on the Internet is a growing concern for parents with many believing risky offline behavior is a result of easy access to problematic online content (Rideout, 2007, p. 3).

Schrock and Boyd (2008) reported three common online risk categories: (a) harassment, (b) solicitation, and (c) exposure to problematic content and suggested a correlation with offline risks (p. 6). Similar to LSE's EU survey, Schrock and Boyd's (2008) ISTTF report quantified hazards American youth face online as a foundation for intervention and prevention programs. Shrock and Boyd (2008) argued any intervention program "should be measured as to their actual effectiveness in addressing risks . . . instead of in terms of adult perception of their effectiveness at solving perceived risks" (p. 6). Unfortunately, behavioral theory and intervention practices were not part of the project scope. Schrock and Boyd's (2008) research, however, did present a detailed

picture of the online risks faced by American youth through a comprehensive review of all available studies.

Citizenship

To comprehend the notion of citizenship in the digital world, one must understand the significance of citizenship in the physical world. Citizenship is rooted in ancient Greek and Roman culture where Aristotle argued citizens had a responsibility to their community when he emphatically declared, "To take no part in the running of the community affairs is to be either a beast or a god" (Aristotle, as cited by Singla, n.d.). Sherrod, Flanagan, and Youniss (2002) defined citizenship as the ability to "move beyond one's individual self-interest and to be committed to the well-being of some larger group of which one is a member" (p. 265). Both examples illustrate the importance of community to a citizen.

Parents, too, play a critical role in teaching citizenship. Patrick (1991) opined, "Parents and guardians are the child's first and most influential teachers of civic values and attitudes" ("Done At Home," para. 1). The lessons learned at home about volunteering and civic responsibility build the foundation of citizenship later in life. Children observe how adults behave and use that model to shape their own actions. In addition to the family, schools also promote civic attitudes and appropriate values in children (Kymlicka & Norman, 1994; Talbot, 2003). The Supreme Court argued in *Brown v. Board of Education* (1954) that education "is the very foundation of good citizenship" (para. 493). Beard and Beard stated, "Public education must prepare pupils

for citizenship in the Republic" (as cited in *Bethel School District v. Fraser*, 1986). These three pillars, (a) community, (b) parents, and (c) schools, support the teaching of citizenship to youth.

Digital Citizenship

Digital citizenship, a subset of citizenship, supports responsible actions when using technology. Digital citizenship was defined by Ribble and Bailey (2007) as "the norms of appropriate, responsible behavior with regard to technology use" (p. 10). Youth are using technology on a daily basis; "now, school leaders and teachers need to provide them with resources for using them appropriately" (Ribble & Bailey, 2007, p. 14). For teachers, "the challenge of keeping up with students as they create and publish in ever-increasing numbers are daunting" (Richardson, 2009, p. 26). Regardless, schools must prepare students for their role in the global economy. Threatening students for violating an Acceptable Use Policy (AUP) does not prepare students for their online environment; "students need pedagogy" (Howard & Davies, 2009, p. 67). Just as citizenship prepares one to participate in society, digital citizenship prepares one to be a functioning member of the global online society.

The ISTE technology standards reflect the evolving skills required to function in the digital society. ISTE revised their NETS*S from 2000 to reflect the changing demographics and globalization of technology. The 2007 NETS*S moved away from the basic application skills of the 2000 NETS*S to the skills required "to work, live, and contribute to the social and civic fabric of their communities" in the global society (ISTE,

2007a, para. 1). These new standards emphasize digital tools in a constructivist framework. The ISTE (2007b) skills focus on six key areas: (a) creativity and innovation; (b) communication and collaboration; (c) research and information fluency; (d) critical thinking, problem solving, and decision making; (e) digital citizenship; and (f) technology operations and concepts (p. 1). The outcry for digital responsibility compelled ISTE (2007b) to include digital citizenship as one of six strands in their 2007 NETS*S, the recognized technology standards adopted by all U.S. states and internationally (para. 5).

Recognizing that teachers and administrators need to be positive role models while infusing technology into the curriculum, ISTE (2008) revised the NETS for Teachers (NETS*T) technology skills in 2008 and NETS for Administrators (NETS*A) in 2009. The new technology skill set for instructors dovetailed with the 2007 NETS*S and reinforced the critical nature of digital citizenship by including it as one of five performance indicators for teachers, stating teachers must "promote and model digital citizenship and responsibility" (ISTE, 2008, para. 4). Likewise, NETS*A includes digital citizenship as one of five performance indicators for administrators, emphasizing the significance of leadership in promoting technology integration in schools (ISTE, 2009, para. 5). ISTE's inclusion of digital citizenship in their student, teacher, and administrator standards reiterate the importance of online ethical and responsible behavior as a 21st century skill in today's global society.

The Partnership for 21st Century Skills (P21; 2007), a collaborative group of business, education, and government entities, detailed its vision for student success with the Framework for 21st Century Learning report. A comparison of educational practices and workplace requirements focused the research. As with ISTE's NETS, the P21 revised its standards in 2007 to reflect the advancement of technology in the workplace. The framework details four outcomes students need to succeed in the global workforce: (a) learning and innovation; (b) information, media and technology; and (c) life and career skills, all supported by (d) a thematic 21st century focus across all core subjects (2007a, p. 1). A key component of P21's information, media, and technology skills are the application of ethical and legal issues when accessing content, a critical component of digital citizenship. The ISTE NETS and P21 framework bolster the critical nature of digital citizenship skills advocated by Ribble and Bailey.

The same three pillars that support citizenship also support the teaching of digital citizenship. Research has indicated the importance of community (Nigam & Collier, 2010; Pruitt-Mentle, 2008; Strasburger et al., 2010), parents (Livingstone et al., 2011; Mesch, 2009; Nigam & Collier, 2010; Pruitt-Mentle, 2008; Schrock & Boyd, 2008; Siegle, 2010; Strasburger et al., 2010; Wolak et al., 2006), and schools (Livingstone et al., 2011; Nigam & Collier, 2010; Pruitt-Mentle, 2008; Siegle, 2010; Strasburger et al., 2010; Wolak et al., 2006) in the promotion of responsible online behavior. For youth to develop effective and ethical online strategies necessary for the 21st century, the learning community must support the pillars of digital citizenship.

Political, Legal, and Moral Responsibilities

Digital citizenship issues, a relatively new phenomenon of the electronic society, is a growing global problem. Countries around the world are answering the call. The European Parliament passed the new Safer Internet Program, IP/08/1571, effective January 1, 2009, to protect children using web services. This program "includes awareness-raising activities with parents about how their children can stay safe on the Internet" (Moyle, 2009, p. 6). In the same timeframe, the United States passed the Broadband Data Improvement Act of 2008, amending the Communications Act of 1934 to require K-12 schools with Internet access to educate students "about appropriate online behavior, including interacting with other individuals on social networking websites and in chat rooms and cyberbullying awareness and response" (SEC. 215 section, para. 1). Local education agencies are tasked with finding specific curriculum that fits the needs of its clientele. In response to this mandate, all district students in a metropolitan region of California are treated with the iSafe (2009) digital citizenship curriculum. The digital citizenship survey results of this study will dovetail with the implementation of the new Internet safety curriculum to determine the areas requiring intervention and prevention and establish normative online behavior.

There is a disconnect, however, between the new Internet safety requirements and the reality of schools. A 2007 National School Boards Association study noted over 80% of schools blocked the very technologies students used on a daily basis to communicate (Richardson, 2007, p. 68). Ignoring the reality of American students living in an online

world is no longer an option (Richardson, 2009, p. 28). Hargreaves (2003) stated, "If

people are unprepared for the knowledge economy, they will be excluded from it—

lacking the basic necessities that enable communities to survive and succeed" (p. 72).

Historically, schools provided the moral training for American society. Horace Mann and

John Dewey both believed schools, and in particular teachers, provided the moral

instruction necessary for students to be upstanding members of society (Spring, 2008, p.

145, 282). Yet in this fast-paced knowledge society, schools have shirked their moral

responsibility to protect and prepare American students for the future. "Young people are

finding themselves in situations that no one would have anticipated a decade or two ago"

(Jenkins, 2006, p. 16). Without moral guidance in schools, students are looking to the

online community, their peers, to set ethical norms. According to Weissbourd (2009),

"schools need to clearly articulate their moral goals and expectations for both parents and

students" (p. 30). Schools must take the leadership role for ethical instruction of digital

citizenship skills in the curriculum (Ilomäki, Kantosalo, & Lakkala, 2011, p. 5).

Theoretical Perspective

Human behavior theories help explain actions and consequently suggest ways to

change those actions. Theories are created "to solve a problem or to find an explanation

that would account for some repeated occurrence" (Hayden, 2009, p. 2). The rapid

infusion of the Internet into the social fabric, however, has allowed few studies of online

misuse and abuse (Finkelhor et al., 2010; Jones, 2010). Consequently, this study will

draw on three theoretical perspectives that have relevance to the online world: (a) the

social norms theory, (b) the social cognitive theory, and (c) the moral development theory. These theories will help the learning community understand online behaviors of students in Grades 5, 7, 9, and 11 and offer educational intervention ideas to change risky behaviors.

Social Norms Theory

Social norms are accepted behaviors within a society or group that rely on the power of peer pressure to maintain them. This theory "is influenced by incorrect perceptions of how other members of our social groups think and act" (Berkowitz, 2004, p. 5). The "group" for this study includes high school students who "often seek guidance from their social environment (e.g., peers)" (Eastin, 2005, p. 65). This guidance or social influence from their peer group is the strongest of all peer pressures, including family and culture (Berkowitz, 2004; Lamb, 2010). Perkins and Berkowitz's social norms theory (SNT, 1986) supports the concept of social influence on beliefs and addresses an array of health issues including binge drinking, smoking, eating disorders, and bystander behavior. SNT demonstrates the power of misperception when people behave in a way to match a supposed group norm (Berkowitz, 2003; Perkins, Craig, & Perkins, 2011).

Youth spend considerable time at school in a social environment, forming a social network of friends or cliques with common interests. This social network of school peers influences individual values and behavior, supporting responsible or irresponsible actions. These group values and behaviors become the group norm and predict how the group members behave as they try to fit their perceived peer expectations. Research has

indicated youth typically overestimate inappropriate misbehavior (Berkowitz, 2003;

Botvin, 2000; Perkins et al., 2011; Willard, 2004), contributing to the continuation of an

accepted norm where the majority only needs "to believe that the majority believes it"

(Berkowitz, 2003, p. 261). Correcting these misconceptions can break the cycle and is the

primary focus of prevention and intervention programs (Berkowitz, 2003; Botvin, 2000;

Perkins et al., 2011).

Social networking sites such as Facebook, MySpace, and Google+ also create a

social environment where "friends" can share information about themselves, connecting

with peers having similar interests. Just as in the physical world, youth establish a group

of friends in these online social environments with behaviors and norms varying by group

(Willard, 2004, p. 9). Anonymity, however, accentuates the misuse of technology,

highlighted by growing cyberbully and ethical abuse issues (Beran & Li, 2007; Lamb,

2010; Li, 2007; Ribble, Bailey, & Ross, 2004; Siegle, 2010; Wagner, 2008). Group

norms can encourage the misuse and abuse of technology (Willard, 2006, p. 2);

fortunately, the reverse is usually true (Willard, 2010, p. 61). Promoting positive norms

with a risk prevention program grounded in the SNT shows promise for mitigating online

risky behavior (Nigam & Collier, 2010; Perkins et al., 2011; Willard, 2010; Wolak et al.,

2006). Research has indicated providing students with information from local survey

results will mitigate the misconception and correct erroneous attitudes (Botvin, 2000;

Perkins et al., 2011). The SNT supports the use of a local survey in this study as an

intervention and prevention technique.

Social Cognitive Theory

Human behavior is guided by multiple factors. The social cognitive theory (SCT) provides the structure for identifying these factors and the role they play in affecting behavior (Bandura, 2004; Fertman, Primack, & Primack, 2009). The SCT is similar to the social norms theory in that both require a social environment to explain actions while providing pointers to change those actions. The SCT is a development of Bandura's social learning theory in which he argued individuals learn "through observation, imitation, and modeling" (Bandura, 1971b). Further research led Bandura, Adams, and Beyer (1977) to note the importance of self-efficacy in task achievement; defining self-efficacy as the "conviction that one can successfully execute the behavior required to produce the outcomes" (p. 126). The SCT reflects the combination of behavioral and cognitive theories in a social environment.

Three factors support the SCT, personal, behavioral, and environmental conditions. Bandura (2001) stated personal factors are internal standards that govern everyday behavior and include "cognitive, affective, and biological events" (p. 266). He asserted any outside influence does not directly affect actions but instead is filtered through a cognitive process that considers multiple factors, such as morality and values, before an action is decided (Bandura, 2001, p. 267). According to Bandura (2004), self-efficacy, the belief that one can achieve "desired effects by their actions," is the key to a successful outcome (p. 144). Behavioral conditions consider one's personal and observed actions and the positive or negative results of those actions (Bandura, 1969, 2001). If self

or peer action resulted in a negative consequence, one is much less likely to repeat the behavior. Because of these observations and resultant change of action, modeling is considered a powerful tool for learning new behaviors (Bandura et al., 1977; Bandura, 2001; Eastin, 2005; Patterson, 1969). Environmental conditions are associated with perceived normative behavior and can have an affirming or harmful influence on actions (Bandura, 2001, p. 276). The influence of a peer group, the strongest of all peer pressures, weighs heavily on youth as they seek approval for their actions from their group (Bandura, 2004; Berkowitz, 2004; Eastin, 2005). The three supporting factors of the SCT causal model determine the final behavior outcome.

Similar to the SNT, the SCT supports the promotion of healthy habits and is the theoretical base for behavior change in substance abuse intervention and prevention programs (Bandura et al., 1977; Bandura, 2004; Fertman et al., 2009; Patterson, 1969). Bandura (2004) added the SCT informs, enables, guides, and motivates "people to adapt habits that promote health and reduce those that impair it" (p. 146). The personal, behavioral, and environmental factors of the SCT model all exist in the virtual world. Comparable to the SNT, the SCT also informs online behaviors in social networking sites (Couros, 2009; Lin, 2010; Stefanone, Lackaff, & Rosen, 2010). Stefanone et al. (2010) applied the SCT to explain and analyze "user behavior on social networking sites" (p. 521). Social networking sites share similarities with virtual learning environments, a relatively new arena in the education sector. The move to online education opens an array of learning opportunities with access to "the best libraries, museums, laboratories, and

instructors at their fingertips, unrestricted by time and place" and places "a premium on

personal efficacy" (Bandura, 2001, p. 11). The SCT model provides the foundational

knowledge to improve self-efficacy, permitting youth to compete in the 21st century

workforce while providing guidance for intervention and prevention of risky online

behaviors.

Moral Development Theory

Moral development is dependent on both physical and cognitive conditions. The

prefrontal cortex (PFC) of the brain controls moral behavior but is not fully developed

until early adulthood, resulting in immature cognitive processing until the PFC reaches

maturation (Narvaez & Vaydich, 2008; National Institute of Mental Health, 2010;

Willard, 2006). Likewise, moral development matures over time but as a cognitive

process. Kohlberg's theory of moral development, rooted in Piaget's developmental

psychology research, informs this process and provides a continuum of six sequential

stages, grouped in three levels that are influenced by social experiences (Kohlberg,

1963/2008, 1971; Kohlberg & Hersh, 1977). The combination of a developing moral

character with an immature PFC leads to a period of adolescent risky behavior, both

offline and online.

Kohlberg posited children move from Stage 1, obedience to authority, to Stage 2,

instrumental relativist, during elementary school. During this stage, children understand

there are multiple sides to an issue but choices are driven by self-interest (Kohlberg,

1971, 1973). Stages 3 and 4 are grouped into the "conventional level" where the social

environment influences behavior. Typically, children move to Stage 3, interpersonal concordance, during their middle school years. Interpersonal relationships with family and friends are critical at this point, influencing adolescents to conform to social norms set by their peers (Berkowitz, 2004; Lamb, 2010; Willard, 2004). During this stage, youth internalize and establish their moral identity. Kohlberg (1971) claimed the majority of young adults do not move to Stage 4, the "law and order" stage where society sets the rules, until their 20s and 30s (p. 4). Inconsistent and risky behaviors by adolescents typify immature PFC and cognitive development.

Recent studies (Nigam & Collier, 2010; Schrock & Boyd, 2008) illustrated adolescent risky behavior has moved from the physical to the virtual world. The anonymity of the Internet only serves to enhance disinhibition, defined by Joinson (2007) as "any behavior that is characterized by an apparent reduction in concern for self-preservation and the judgment of others" (p. 75). Sexting, cyberbullying, and inappropriate content are all examples of emerging trends enhanced by disinhibition (Nigam & Collier, 2010, p. 4). Bandura (1990) opined, "Conduct is regulated through moral standards" (p. 102), suggesting the lack of moral standards leads to risky behavior. Adolescents need support from their families and schools during these tumultuous years to establish boundaries of appropriate behavior (Lamb, 2010; Willard, 2002). Schrock and Boyd (2008) claimed, "A positive home environment inoculates youth against a host of dangers" (p. 44). Willard (2004) asserted positive student-teacher relationships supports moral development and social expectations (p. 3). Family and school support

help guide students through the turbulent adolescent years, supporting Kohlberg's moral development continuum with guided experiences, and shows promise as a way to mitigate online risky behavior.

The SNT, SCT, and moral development theories have several common threads. All three of the theories rely on social interaction with their peers at a time when peer groups are the most influential (Berkowitz, 2004; Lamb, 2010). Nurturing positive relationships, another common thread between the theories, often results in positive behavior and is considered "an essential component of any school safety plan" (Willard, 2004, p. 3). These theories are applicable in the physical and virtual worlds, where online behaviors mirror offline behaviors. In contrast, the moral development theory is closely tied to brain development whereas the SNT and SCT are not. In addition, moral development follows a continuum that follows exact steps while the SNT and SCT demonstrate some scale of moral influence but not along a defined path. Finally, the SCT and moral development theory are cognitive in nature while the SNT is a behavioral theory. The SNT, SCT, and moral development theories are all tightly connected to adolescents and the relationships they have with their peers. These theories will provide the foundational knowledge for intervention and prevention of youth online risky behaviors.

Critical Analysis

Digital citizenship has been identified as a critical 21st century skill, providing online consumers and producers the skills necessary to navigate the digital world.

Mankind has recently entered the second millennium and is already facing the challenges of the digital workplace. The rapid pace of technology advancements does not allow schools the benefit of longitudinal studies. While many organizations have offered their ideas to mitigate risky online behavior, very little research has addressed successful implementation. Without proven studies, educational institutions are reluctant to use scarce resources experimenting with untested ideas, especially during the current global financial crisis. Before incorporating digital citizenship skills into an existing curriculum, one must quantify "the actual threats that youth face and what puts them at risk" (Shrock & Boyd, 2008, p. 6). This literature review analyzed three recent research projects to understand the risks youth face online today.

The OSTWG report (Nigam & Collier, 2010), ISTTF report (Shrock & Boyd, 2008), and the EU Kids Online Survey report (Livingstone et al., 2011) have multiple similarities. All were large, peer-reviewed studies funded by government to determine the extent of online risks faced by youth to drive government policy. The reports sought fact-based results, not those driven by panic, such as fear of predators. The research also established "normative behavior" for the population researched, though that was not a stated goal for any of the studies. In addition, the research clearly indicated offline risks carryover to the online world; establishing implications for intervention and prevention models. The survey results unmistakably indicated high-risk, online behavior is a growing worldwide problem that needs addressing.

Of the three surveys detailing online risks for youth, only the OSTWG (Nigam &
Collier, 2010) report offered detailed, multi-dimensional recommendations to implement
a new Internet safety education program. The report was the only one to propose detailed
youth interventions for parents, schools, and communities based on established theories.
OSTWG's interventions were grounded in the theoretical research of social norms and
social learning behaviors, recognized theories for offline risky behavior. The report
identified six areas of concern for online, risky behavior: (a) predator danger, (b)
cyberbullying, (c) sexting, (d) inappropriate content, (e) other risks, and (f) security risks
and identity theft (pp. 11–16). These areas of concern encompassed all five of the EU
Kids Online Survey (Livingstone et al., 2011) risks, and all three of the threats identified
by ISTTF (Shrock & Boyd, 2008). Nigam and Collier's OSTWG report was a
comprehensive study establishing risks faced by youth, intervention recommendations,
and behavior theory to support youth interventions.

Shrock and Boyd's (2008) ISTTF report identified three areas of online risky
behavior, (a) solicitation, (b) harassment, and (c) exposure to harmful content (self-harm,
hate, pornography, and violence). Surprisingly, the ISTTF report was the only one not to
include sexting, possibly because this report was released in late 2008, and sexting was
not a concern at the time. Considering how fast technology changes, it is disconcerting
some of the data referenced by Shrock and Boyd was published as far back as 2000.
ISTTF's stated goal was to understand threats, and unfortunately, not to provide
solutions. The ISTTF did, however, recognize the correlation between offline and online

risky behavior. Shrock and Boyd's report provided the foundational springboard for the OSTWG and EU Kids Online Survey.

Livingstone et al.'s (2011) EU kids online survey provided a detailed report of online risks in 25 European countries by surveying over 25,000 youth. Data from the study indicated online risks were not distributed equally across the population and, as demonstrated by the survey, had a cultural and societal influence as well. The two U.S. surveys did not take into account the location of the respondents or the societal values from the area, resulting in the probability of skewed data for local regions. Livingstone et al.'s survey was also the only research to include parental input, allowing the researchers to correlate online youth risk to parental involvement. Livingstone et al.'s research informed EU policymakers and provided guidance and recommendations for implementing Internet safety priorities at a high level.

Review of Method

Recent research has substantiated the growing problems from the misuse of technology. This study was guided by these research findings, suggesting "possible questions or hypotheses that need to be addressed" (Creswell, 2003, p. 46) and quantified. These broad themes of misuse were analyzed with the tenets of selected behavioral learning theories to suggest possible intervention and prevention techniques. The research questions developed through this method guided the study to determine if there was a relationship between grade level and gender and the misuse of technology based on survey data collected from a student population. Analyzing data from an

instrument completed by the participants in the population is a key guideline of the postpositivist paradigm, a strategy linked to the quantitative method (Creswell, 2003, p. 13). For this study, the quantitative approach was the best research strategy to determine the causal-comparative relationship between grade level and gender and the misuse of technology.

Review of Differing Methodologies

Alternative methodologies were considered for this study but ultimately rejected. The five strategies usually associated with the qualitative approach, (a) ethnography, (b) grounded theory, (c) case study, (d) phenomenology, and (e) narrative research, would not provide the information to answer the research questions on their own. Creswell (2003) stated, "One of the key elements of collecting data is to observe participants' behaviors" (p. 21). Observation of online behaviors would be difficult to measure accurately. Though Murphy and O'Brien (2006) claimed, "Postpositivist paradigms silence too many voices" (p. 92), the possible embarrassment of the younger participants in this study could also bias the results because of their reluctance to participate truthfully in a one-on-one situation. The mixed methods approach, a combination of both quantitative and qualitative methods, was considered for this study but ultimately rejected because of the same concerns involving skewed data from younger participants. The qualitative and mixed method approaches were not the best option for this study.

Conclusion

This section examined the details of the digital shift with its associated risks for youth with a thorough review of current and relevant literature. The misuse of technology in this electronic society is a rapidly growing global problem as evidenced by the OSTWG, ISTTF, and EU kids online survey research. Governments informed of the online risks faced by youth must encourage digital citizenship through policy and continuing research. The learning community of parents, schools, and the local community must band together to support youth during their turbulent adolescent years. Local data are needed to tailor the curricular needs of each school to the risky behaviors exhibited by local youth. Digital citizenship is a global problem but the results are achieved locally.

Section 3 discusses the methodology and procedures of this quantitative study. Section 4 provides the data analysis of the survey results while Section 5 summarizes the findings and presents recommendations.

Section 3: Research Methodology

The purpose of this study was to investigate selected online behaviors of students in Grades 5, 7, 9, and 11 using district- and state-supplied data from a medium-sized, K-12 school district in a metropolitan region of California. The goal was to explore the relationship between (a) online behavior and grade and (b) online behavior and gender and make inferences about these relationships to the larger student population of the 11 district schools. The results of this study were expected to inform the school district of potential digital citizenship issues and to make it possible for the district to tailor the federally mandated Internet safety education curriculum to a particular grade-level population.

An ex post facto, causal-comparative study best fit the analysis of historic district data. District-supplied data sets from local and state surveys were analyzed to inform seven questions:

1. Is there a relationship between gender and Personal Safety?

2. Is there a relationship between grade level and Personal Safety?

3. Is there a relationship between gender and Digital Citizenship?

4. Is there a relationship between grade level and Digital Citizenship?

5. Is there a relationship between gender and Parental Involvement?

6. Is there a relationship between grade level and Parental Involvement?

7. Is there a relationship between grade level and Cyberbullying awareness?

Statistical Analysis System (SAS) software was used to determine the relationship between grade level, gender, and online behaviors. Results of this study will raise awareness in the district learning community and provide strategies to students, their peers, parents, schools, and the community to address online behaviors related to the misuse of technology. Institutional Review Board (IRB) approval (Walden IRB approval no. 03-15-12-0130103), cooperation agreement to analyze district provided de-identified data sets, and a statistician nondisclosure agreement (see Appendix A) were requested and granted before beginning the study.

This section details and justifies the methodology; it delineates the research design and approach, setting and sample, instrumentation and materials, data collection and analysis, and protection of participants' rights.

Research Design and Approach

Description

In this study, I investigated the online behavior of district students in a metropolitan district in California by comparing the independent variables, grade level and gender of the student, with the dependent variable, student online behavior as measured by the California Healthy Kids Survey (CHKS) and the district's student Internet use survey. The independent variables, student grade level and gender, were generally defined as students in Grades 5, 7, 9, and 11 in a metropolitan district in California, and either male or female. The dependent variable, student online behavior,

was broken out into four types: (a) Personal Safety, (b) Digital Citizenship, (c) Parental Involvement, and (d) Cyberbullying.

Justification and Logic for Design

I was interested in analyzing archived student data that represented online behavior to determine if online safety and ethical issues exist in the district. The secondary analysis of archived data was convenient and readily available for me to obtain. The research design that best fit this numeric description of archived student data was the ex post facto nonexperimental approach, a method using statistical data after the fact. According to Creswell (2003), a quantitative inquiry calls for the postpositivist paradigm or, "a comprehensive belief system that guides research and practice in a field where the researcher collects data on instruments based on measures completed by the participants" (p. 13). Creswell opined that the philosophical underpinning of the postpositivist paradigm is the deterministic inquiry strategy where "causes probably determine effects or outcomes" (p. 7). This study used the postpositivist paradigm to determine if grade level and gender had any relationship to online behavior.

Ex post facto research, one of the "four basic quantitative research designs" (Rocco, Hatcher, & Creswell, 2011, p. 202), was used to determine the differences between variables to report the current state of digital citizenship in the district. The district-supplied data sets were generated from local and state surveys. Surveys provide a quantifiable method to describe "trends, attitudes, or opinions of a population" (Creswell, 2003, p. 153).

The ex post facto research design was the best approach for the study research because of the interest in collecting sensitive statistical data to determine online behaviors from a protected population. District and state data have been previously collected for online behaviors, negating the need to re-survey the minor population. Because the data have already been collected, the independent variables cannot be manipulated, excluding the use of any experimental design. Cohen, Manion, and Morrison (2007) posited ex post facto research is a good method when "the more rigorous experimental approach is not possible" (p. 268). The qualitative research design was also not a good fit for the study because the active role of a researcher removes the anonymity of the student response and may sway the result (Creswell, 2007, p. 15). In addition, qualitative study participants often "reveal sensitive information that may make them vulnerable" (Hatch, 2002, p. 63), a critical consideration when dealing with a susceptible K-12 population and online behavior.

Setting and Sample

Approximately 2,000 Grade 5, 7, 9, and 11 students attended the 11 district schools located in a metropolitan region of California. I studied the relationships between gender and grade level with online behaviors from existing district and CHKS data sets that intersect for every other grade level from fifth through 11th grade. Because of the sensitive nature of these data and the potential risk of harm to minors (e.g., a student who may be required to re-think again about a past experience of being bullied over the

Internet when answering a cyberbullying survey question), collecting new data when
existing data are available was not prudent.

The district archived data represented two separate populations: fifth-, seventh-,
ninth-, and 11th-grade students from the 2009–2010 and 2011–2012 school years.
District cyberbully data are collected every 2 years and were last collected in 2010 using
the CHKS, "the largest statewide survey of resiliency, protective factors, and risk
behaviors in the nation" (WestEd, 2012a, "California Healthy Kids Survey," para. 1).
Data are available for all Grade 5, 7, 9, and 11 classes from all 11 district schools during
the third trimester of 2010. Gender data were not available for the 2010 CHKS data set.
Personal Safety, Digital Citizenship, and Parental Involvement data were collected on a
district survey in early 2012 to focus Internet safety education as mandated by the
Broadband Data Improvement Act (2008).

Sample Size

I conducted two different analyses to verify adequate sample size. The objective
of the first analysis (Raosoft) was to ensure the sample was representative of the
population from which it was drawn. I conducted the second analysis, a priori power
analysis (G*Power), to ensure the sample size was adequate to detect an effect given the
inferential statistical analyses I used to answer the research questions.

First, I determined that the size of the sample was adequate using the Raosoft
(2004) online sample calculator configured for a confidence level of 95% and a margin of
error of 5% for all grade level samples. With a districtwide population of approximately

532 students in fifth grade, the required sample size is 224 students. Dividing the sample

size among seven schools resulted in 32 students at each elementary site or two classes at

each fifth-grade level. The approximate district seventh-grade middle school population

was 516 students, requiring a sample size of 221 students divided between the two

middle schools. The 111 seventh-grade students at each site required four classes to be

surveyed. The ninth-grade class was approximately 400 students requiring 197 students

be surveyed. The 11th-grade class was approximately 361 students requiring 187 students

be surveyed. The approximately 35 students per high school class resulted in six classes

that need to be surveyed at each of the two grade levels. The total sample size required to

ensure that the sample was representative of the population from which it was drawn was

829 students.

Second, to determine the sample size adequate to detect a statistical effect, I used

G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). For the two-tail t test, I used the

following parameters: $d = 0.50$ (medium effect), $\alpha = .05$, power $= .95$. The required

sample size is 210. For the one-way ANOVA with four groups, I used the following

parameters: $f^2 = .25$ (medium effect), $\alpha = .05$, power $= .95$. The required sample size is

280. A sample size of 1,067, which meets the requirements of representativeness of the

population, also adequately met the requirements of the a priori power analysis.

Instrumentation and Materials

The district digital citizenship data were collected via a 20-question, self-

administered, web-based survey (see Appendix B) developed by the district educational

services division to help meet the demands of the Broadband Data Improvement Act

(2008). Four questions collected demographic data: (a) device to access the Internet, (b)

gender, (c) grade, and (d) school. The remaining 16 questions measured Internet safety

concepts (see Table 1).

Table 1

Summary of Survey Scales

Name of scale	Number of items	Description	Item number
Personal Safety	5	Measures knowledge of misuse of personal data and possible predator actions	1–5
Digital Citizenship	8	Measures knowledge of risky and/or inappropriate behavior	6–13
Parental Involvement	3	Measures level of parental involvement in supervising online activities	14–16

The summative scale method was used to calculate the actual value of the scales

by adding the raw scores of the survey items included in a scale. This approach is

acceptable for investigative research (Comrey & Lee, 1992; Tabachnick & Fidell, 2007).

To mitigate reliability issues, when 20% or less of a scale's data were missing (i.e., no

more than one survey item in the Personal Safety or Digital Citizenship scales), the

"person mean substitution method" (Downey & King, 1998, p. 175) or "case mean

substitution" method (El-Masri & Fox-Wasylyshyn, 2005, p. 165) was used. Because the

Parental Involvement scale only included two items, if any of the items were missing

from a participant response, the scale value was treated as missing and not calculated.

The CHKS is mandated by the California state legislature and was developed for the California Department of Education (CDE) by WestEd, "a Joint Powers Agency, authorized by a California Joint Powers Agreement and governed by public entities in Arizona, California, Nevada, and Utah" (WestEd, 2012a, "Agency Overview," para. 11). Only data from two questions were used from the CHKS, grade level and the response to the cyberbully question. The cyberbully question from the fifth-grade CHKS was Question 25, "Do other kids at school spread mean rumors or lies about you on the internet (i.e. Facebook™, MySpace™, email [sic], instant message)?" (WestEd, 2012b). Four possible responses were used to collect the data: (a) no, never; (b) yes, some of the time; (c) yes, most of the time; and (d) yes, all of the time. The cyberbully question from the middle and high school CHKS core module was the same: "During the past 12 months, how many times did other students spread mean rumors or lies about you on the Internet (i.e. Facebook™, MySpace™, email [sic], instant message)?" (WestEd, 2012c). This question corresponded to Question 103 on the middle school survey and Question 120 on the high school survey. Four possible responses were used to collect the data: (a) 0 times, (never); (b) 1 time; (c) 2–3 times; and (d) 4 or more times.

Concepts measured. Four major Internet safety concepts were measured by the district and CHKS survey: Personal Safety, Digital Citizenship, Parental Involvement, and Cyberbullying. The concepts were selected because of their requirement to be included in the K-12 curriculum as required by the Broadband Data Improvement Act

(2008). Table 1 displays a summary of the scales from the district survey. Additionally, one survey question from the CHKS served as the variable for Cyberbullying.

Instrument Reliability and Validity

The district instrument validity was established through content and construct tests by a group of local and national experts. The group checked content validity to ensure the survey questions actually measured the behaviors of students using technology and "that all relevant topics have been included" (Fink, 2006, p. 40). The expert group established construct validity by ensuring the questions provide meaningful data (Creswell, 2003, p. 157).

A scale reliability analysis assessed the internal consistency of the survey's three scales. Table 1 displays a summary of the scales. SAS' scale reliability analysis using the Cronbach's alpha option yields equivalent results to the Kuder-Richardson formula 20 (KR-20), recommended as the test of reliability when items in a scale are dichotomous (DeVillis, 2003, p. 28). The reliability index score (Cronbach's alpha = .70 or more) was used to determine which scales have internal consistency. If Cronbach's alpha is less than .70, items that negatively impacted the internal consistency of a scale were deleted from the scale until an acceptable level of internal consistency was achieved. As a last resort, scales that never achieved an acceptable level of reliability would have been eliminated from further analysis.

Raw Data Availability

All de-identified computer files associated with the surveys were downloaded to my password-protected computer from the CHKS website and an e-mail attachment from the deputy superintendent. A backup copy was saved on a CD-ROM and will be maintained in a locked file cabinet in my school office, which I will retain for 5 years. The original data on my school computer was deleted after data download and archiving. De-identified data was sent to the statistician for analysis after a non-disclosure agreement was signed and returned. Raw data will not be available to others.

Data Description

The data are derived from 21 questions (see Appendix C). Four of the district's survey questions collected demographic data (grade level, gender, school site, and method of home Internet access) for data disaggregation. Five questions measured Personal Safety as it pertains to sharing personal information, eight questions measured Digital Citizenship, and three questions measured Parental Involvement in their child's Internet access. The CHKS measured positive responses to being cyberbullied by grade only.

Data Collection and Analysis

Data Collection

The District collected all data used for this research study with two surveys, the CHKS and a district-created online survey (see Appendix B). De-identified data were presented to me after the fact.

Variable Scale

The district's 20-question, self-administered, Web-based survey (see Appendix B) used nominal scaled responses for 19 questions and ordinal data for one question. According to Gravetter and Wallnau (2008), "a nominal scale involves classifying individuals into categories that have different names but that are not related to each other in any systematic way" (p. 19). Four questions collected participant demographic data: (a) participant school, (b) participant grade level, (c) gender, and (d) a multiple response question to record how the participant accessed the Internet from home. Sixteen fixed-response, nominal-scaled yes-or-no responses collected answers regarding online behavior. For questions the participant could not answer or did not want to answer, an optional "don't know/decline to respond" response was available.

The CHKS self-administered, paper-based survey included three separate modules for the elementary, middle, and high school populations. Only one question on each of the modules pertained to cyberbullying. The elementary module used a fixed-response, nominal-scaled yes-or-no response for how often a student was cyberbullied on Question 25 while the middle school Question 103 and high school Question 120 used a nominal scaled response for how often a student was cyberbullied. A nominal scaled response recorded grade level for all three CHKS modules.

Data Analysis Plan

The Internet survey data were saved in tab-delimited format for import into the SAS format for analysis. This study measured the online behavior of district students by

comparing the independent variables, the grade level of the student and gender, with the

dependent variable, online behavior, as measured by an Internet survey. The proper tests

to analyze the quantitative, cross-sectional survey data were the *t* statistic for independent

measures and a single factor, independent measures ANOVA. The CHKS measured the

frequency of Cyberbullying by grade level. The proper method to test a relationship

between variables measuring frequency is the chi-square test for independence. The

rationale for choosing this independent measures test was the interest in measuring

differences in online behavior between gender and grade levels. The grade level was

considered a quasi-independent variable because the district survey used a

"nonmanipulated variable to designate groups" (Gravetter & Wallnau, 2008, p. 336).

The appropriate test for evaluating differences between two population means

when the population mean is unknown is the independent measures *t* test. The *t* test for

this study evaluated mean differences of online behavior between male and female

students. The advantage of the independent measures *t* test design was the ability to

compare two independent samples without knowledge of the samples (Gravetter &

Wallnau, 2008, p. 258).

To evaluate differences in means between more than two populations, a single

factor, independent measures ANOVA testing procedure must be used. This study used

ANOVA to test the differences of a particular online behavior across four grade levels.

The benefit of using ANOVA is the ability to analyze two or more variables (Gravetter &

Wallnau, 2008, p. 336) or grade levels in this study. A two-tailed test at an alpha level of 0.05 was used to test significance of both the *t* and ANOVA procedures.

The CHKS data for Cyberbullying recorded frequency. Because the fifth-grade response options did not match the seventh through 11th responses, the data was collapsed to two responses, "not cyberbullied" and "was cyberbullied". Any Response Option A on the three school modules (elementary, middle, and high school) corresponded to "not cyberbullied". Any response in Options B, C, or D corresponded to "was cyberbullied". To test a relationship between variables measuring frequency, the chi-square test for independence can be used (Gravetter & Wallnau, 2008, p. 483). I used the chi-square test for independence to test the relationship between being bullied and grade level to test if grade level makes a difference in being cyberbullied. The chi-square table was a 2 (not bullied/was bullied) x 4 (grade level) matrix. Because the matrix is larger than 2 x 2, Cramer's *V* was used to measure the effect size. Cohen's guideline for interpreting Cramer's *V* was used to determine the size of the effect of grade level on being cyberbullied (Gravetter & Wallnau, 2008, p. 493).

Research Questions and Hypotheses

The self-administered online survey results informed the following research questions and tested the hypotheses against each survey subgroup.

Question 1. *Is there a relationship between gender and Personal Safety?* The independent variable was the students' gender. The dependent variable was the sum of the five items selected as "Yes" from the survey identified as Personal Safety issues. The null

hypothesis stated there is no relationship between students' gender and Personal Safety. The alternative hypothesis stated there is a relationship between students' gender and Personal Safety.

Question 2. *Is there a relationship between grade level and Personal Safety?* The independent variable was the students' grade level. The dependent variable was the sum of the five items selected as "Yes" from the survey identified as Personal Safety issues. The null hypothesis stated there is no relationship between students' grade level and Personal Safety. The alternative hypothesis stated there is a relationship between students' grade level and Personal Safety.

Question 3. *Is there a relationship between gender and Digital Citizenship?* The independent variable was the students' gender. The dependent variable was the sum of the eight items selected as "Yes" from the survey identified as Digital Citizenship. The null hypothesis stated there is no relationship between students' gender and digital citizenship. The alternative hypothesis stated there is a relationship between students' gender and digital citizenship.

Question 4. *Is there a relationship between grade level and Digital Citizenship?* The independent variable was the students' grade level. The dependent variable was the sum of the eight items selected as "Yes" from the survey identified as Digital Citizenship. The null hypothesis stated there is no relationship between students' grade level and Digital Citizenship. The alternative hypothesis stated there is a relationship between students' grade level and Digital Citizenship.

Question 5. *Is there a relationship between gender and Parental Involvement?* The independent variable was the students' gender. The dependent variable was the sum of the three items selected as "Yes" from the survey identified as Parental Involvement. The null hypothesis stated there is no relationship between students' gender and parental involvement. The alternative hypothesis stated there is a relationship between students' gender and parental involvement.

Question 6. *Is there a relationship between grade level and Parental Involvement?* The independent variable was the students' grade level. The dependent variable was the sum of the three items selected as "Yes" from the survey identified as Parental Involvement. The null hypothesis stated there is no relationship between students' grade level and Parental Involvement. The alternative hypothesis stated there is a relationship between students' grade level and Parental Involvement.

Question 7. *Is there a relationship between grade level and Cyberbullying?* The independent variable was the students' grade level. The dependent variable was the sum of the 'was cyberbullied' grade level responses from the elementary, middle, and high school CHKS. The null hypothesis stated there is no relationship between students' grade level and Cyberbullying. The alternative hypothesis stated there is a relationship between students' grade level and Cyberbullying.

Protection of Participants' Rights
Participants' Rights

All data provided to me was de-identified and presented ex post facto. No personal information was available to me on the district survey or CHKS. IRB approval

and permission to conduct research from the district deputy superintendent were requested and granted before beginning the study. I was not able to identify individual participants with the de-identified survey demographic data. No students or teachers were interviewed or observed.

Role of the Researcher

I am a district level technology director in a California metropolitan district that served as the setting for the study. I have mentored and trained teachers in technology use since 1989 and in the local metropolitan region since 2001. In my current role, I have limited student and teacher contact. At the conclusion of this study, I will disseminate the aggregate survey results to district and site administration.

<div align="center">

Summary

</div>

Ex post facto data from two district-approved instruments were presented to me for analysis. The survey results were analyzed with the t statistic for independent measures, a single factor, independent measures ANOVA, and a chi-square test for independence to determine if there is a relationship between gender and grade level to online behaviors.

Section 4 provides the data analysis of each survey question from the student surveys; Section 5 summarizes the findings and presents recommendations based on the survey results.

Section 4: Results

The purpose of this study was to investigate selected online behaviors of students in Grades 5, 7, 9, and 11 using district- and state-supplied data from a medium-sized, K-12 school district in a metropolitan region of California. The goal was to explore the relationship between (a) online behavior and grade and (b) online behavior and gender and make inferences about these relationships to the larger student population of the 11 district schools.

Section 4 provides the analyses of the state and district historical survey data using an ex post facto, causal-comparative design, to help answer the seven research questions presented in Section 1 and the null hypotheses presented in Section 3. The analyses provided increased understanding of digital citizenship issues facing the district.

Research Tools and Demographics

The ex post facto data included demographic data identifying the student sample size, gender, and grade. The 2010 CHKS included 932 participants, 49% male and 51% female. The fifth-grade population of 134 students consisted of 44% males and 56% females. The seventh grade had a population of 323 students, 50% males and 50% females; the ninth grade had a population of 249 students, 46% males and 54% females; and the 11th grade had a population of 226 students, 50% males and 50% females.

The 2012 school district Internet Use Survey included 934 participants. Results from 15 students were excluded from analysis because their responses to all 16 items of the three subscales was "Don't know/decline to respond." This reduced the population to

919 students, 51% (466) males and 49% females (453). The fifth-grade population of 325

students consisted of 49% (158) males and 51% females (167). The seventh grade had a

population of 179 students, 45% (81) males and 55% (98) females; the ninth grade had a

population of 196 students, 49% (96) males and 51% (100) females; and the 11th grade

had a population of 219 students, 60% (131) males and 40% (88) females.

Findings

The district findings consisted of two parts: descriptive statistics to quantitatively

describe the data sets and inferential statistics for each research question to draw

conclusions about the larger population. Descriptive statistics were used to quantitatively

describe the data sets while inferential statistics were used to draw conclusions about the

larger population.. Before any analysis was done, each item marked "Yes" was recoded

as 1, "No" as 0, and "Don't know/decline to respond" as blank. For descriptive statistics,

items for each subscale were aggregated to a score that represents each subscale. For

example, the average of Questions 1 to 5 was used to represent Personal Safety risks; the

average of Questions 6 to 13 represent Digital Citizenship abuse; and the average of

Questions 14 to 16 represent Parental Involvement. The descriptive statistics were then

broken down into two subgroups, gender and grade level.

Reliability Analysis

The Kuder-Richardson Coefficient of reliability (KR-20) was used to measure the

reliability of the district survey subscales. KR-20 values range from 0 to 1 with higher

values denoting a stronger association between subscale questions. The standardized KR-

20's were .75 for Personal Safety, .67 for Digital Citizenship, and .65 for Parental Involvement.

Item 12 in the subscale Digital Citizenship, "Somebody shared my personal information on the Internet that made me feel uncomfortable," was deleted because of the negative impact the question had on the Digital Citizenship subscale KR-20 value. Prior to deletion, the subscale score of .67 was less than the .70 minimum score acceptable for internal consistency among questions. After deleting item 12 from the Digital Citizenship subscale, the KR-20 value increased to .73, an acceptable value.

Question 15 in the subscale Parental Involvement, having parents that talked to their children about being safe on the Internet, was removed from the subscale because of its negative impact on internal consistency. The correlation between Question 15 and the total was .35, indicating a small correlation but not positively strong enough to help the overall reliability. Before deletion, the alpha score was .65. Deleting Question 15 improved the overall alpha score to .71, an acceptable level.

Descriptive Statistics

The means and standard deviations for the subscales are displayed in Table 2. Students averaged approximately 0.64 Personal Safety risks on the five questions in the Personal Safety subscale ($M = 0.65$, $SD = 1.14$), 1.27 positive responses for the seven Digital Citizenship abuse questions ($M = 1.27$, $SD = 1.39$), and 0.87 on the two Parental Involvement questions ($M = 0.87$, $SD = 0.87$).

Table 2

Summary of Survey Subscales

Variable	N^a	*M*	*SD*
Personal Safety	846	0.65	1.14
Digital Citizenship	853	1.27	1.39
Parental Involvement	776	0.87	0.87

[a]*N* varies because multiple responses of "Don't know/decline to respond" on district survey subscales were excluded data from analysis.

The means and standard deviations for the subscales broken down by gender are displayed in Table 3. Males generally exhibited more Personal Safety risks (*M* = 0.79, *SD* = 1.21) than females (*M* = 0.51, *SD* = 1.04). Males also exhibited more Digital Citizenship abuse (*M* = 1.37, *SD* = 1.21) than females (*M* = 1.17, *SD* = 1.32). The results indicated parents of females provided more online supervision (*M* = 0.94, *SD* = 0.88) versus males (*M* = 0.81, *SD* = 0.87).

Table 3

Summary of Subscales by Gender

Gender	Variable	N^a	*M*	*SD*
Female	Personal Safety	424	0.51	1.04
	Digital Citizenship	423	1.17	1.32
	Parental Involvement	384	0.94	0.88
Male	Personal Safety	422	0.79	1.21
	Digital Citizenship	430	1.37	1.45
	Parental Involvement	392	0.81	0.87

[a]*N* varies because multiple responses of "Don't know/decline to respond" on district survey subscales were excluded data from analysis.

The means and standard deviations for the subscales broken down by grade level are displayed in Table 4. Parental Involvement was greatest in fifth grade (*M* = 1.56, *SD*

= 0.68), decreasing as the students moved to 11th grade ($M = 0.28$, $SD = 0.55$).

Conversely, Personal Safety issues increased as students moved from fifth grade ($M =$ 0.40, $SD = 0.73$) to 11th grade ($M = 0.99$, $SD = 1.42$). Digital Citizenship abuse mirrored Personal Safety, increasing from fifth grade ($M = 0.52$, $SD = 0.77$) to 11th grade ($M =$ 1.79, $SD = 1.47$).

Table 4

Summary of Subscales by Grade

Grade	Variable	N	M	SD
5	Personal Safety	311	0.40	0.73
	Digital Citizenship	303	0.52	0.77
	Parental Involvement	259	1.56	0.68
7	Personal Safety	162	0.53	1.13
	Digital Citizenship	168	1.51	1.62
	Parental Involvement	147	0.84	0.85
9	Personal Safety	183	0.82	1.27
	Digital Citizenship	176	1.72	1.33
	Parental Involvement	172	0.55	0.74
11	Personal Safety	190	0.99	1.42
	Digital Citizenship	206	1.79	1.47
	Parental Involvement	198	0.28	0.55

Inferential Statistics

The results of the question-by-question analyses are summarized below.

Question 1. The first research question asked if there is a relationship between gender and Personal Safety. The independent variable is the students' gender. The dependent variable is the Personal Safety scale. The null hypothesis states there is no

relationship between students' gender and Personal Safety. The alternative hypothesis

states there is a relationship between students' gender and Personal Safety.

The bar graph of Personal Safety by gender is plotted in Figure 1. Personal Safety

issues for females had an average of 0.51 with males averaging of 0.79.
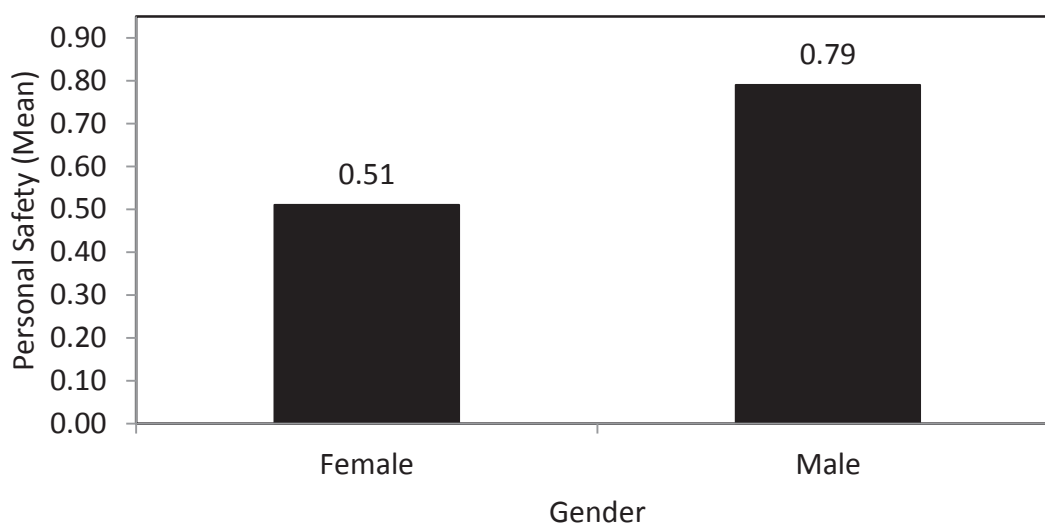
Figure 1. Summary of Personal Safety issues by gender.

The result of a *t* test indicates there was a significant difference by gender—

$t(823.65) = -3.51$, $p < .001$, with males reporting more Personal Safety issues than

females. The findings reject the null hypothesis. Students' gender had a significant effect

on Personal Safety with males exhibiting riskier online behavior than females.

Question 2. The second research question asked if there is a relationship between

grade level and Personal Safety. The independent variable is the students' grade level.

The dependent variable is the Personal Safety scale. The null hypothesis states there is no

relationship between students' grade level and Personal Safety. The alternative hypothesis states there is a relationship between students' grade level and Personal Safety.

The bar graph of Personal Safety by grade level is plotted in Figure 2, indicating an increasing trend with Personal Safety issues as the grade level increases.
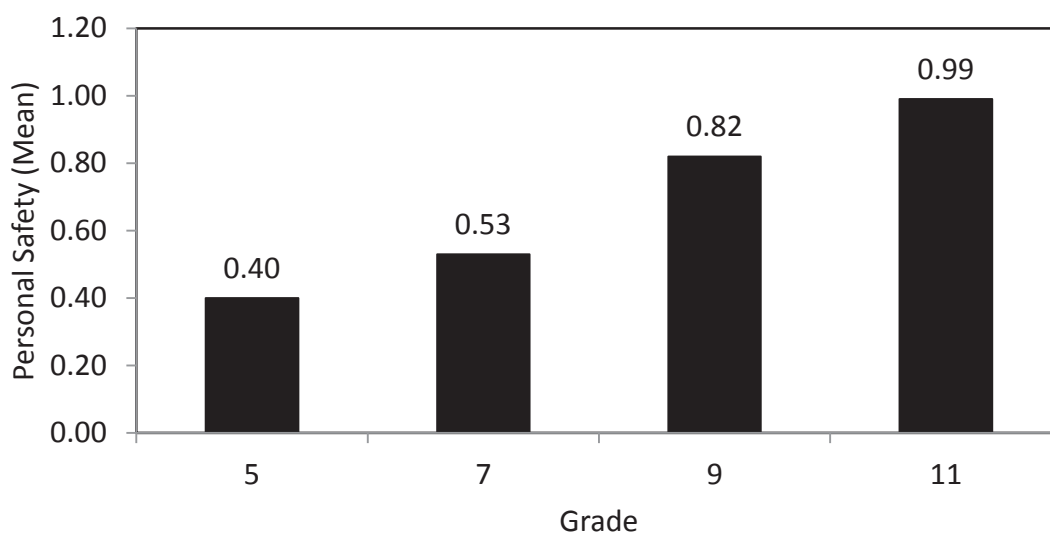
Figure 2. Summary of Personal Safety issues by grade.

The one-way ANOVA showed the effect of grade level is significantly different on Personal Safety—$F(3,842) = 13.10$, $p < .001$. Post hoc analysis using the Bonferroni adjustment, a statistical correction method, indicated Personal Safety scores were significantly lower for fifth graders than ninth graders ($p < .001$) and 11th graders ($p < .001$). However, Personal Safety scores for seventh graders were not significantly different than fifth graders ($p = 1.00$). Personal Safety scores for seventh graders were significantly lower than 11th graders ($p < .001$). The findings reject the null hypothesis indicating the students' grade had a significant effect on Personal Safety with fifth-grade

students demonstrating significantly less Personal Safety issues than ninth or 11th graders.

Question 3. The third research question asked if there is a relationship between gender and Digital Citizenship. The independent variable is the students' gender. The dependent variable is the Digital Citizenship scale. The null hypothesis states there is no relationship between students' gender and Digital Citizenship. The alternative hypothesis states there is a relationship between students' gender and Digital Citizenship.

The bar graph of Digital Citizenship abuse by gender is plotted in Figure 3. Males scored higher on Digital Citizenship abuse ($M = 1.37$, $SD = 1.45$) than females ($M = 1.17$, $SD = 1.32$), and the difference was statistically significant—$t(851) = -2.04$, $p < .05$. The findings reject the null hypothesis. The students' gender had a significant effect on Digital Citizenship with males demonstrating more Digital Citizenship abuse than females.
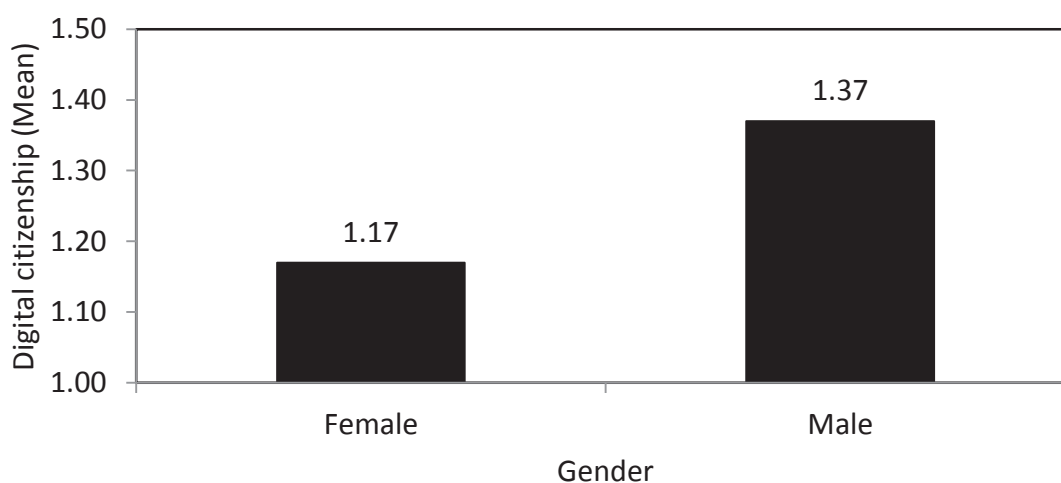
Figure 3. Summary of Digital Citizenship abuse by gender.

Question 4. The fourth research question asked if there is a relationship between grade level and Digital Citizenship. The independent variable is the students' grade level. The dependent variable is the Digital Citizenship scale. The null hypothesis states there is no relationship between students' grade level and Digital Citizenship. The alternative hypothesis states there is a relationship between students' grade level and Digital Citizenship.

The bar graph of Digital Citizenship abuse by grade level, plotted in Figure 4, indicates a large difference in Digital Citizenship abuse between Grade 5 and Grades 7, 9, and 11.
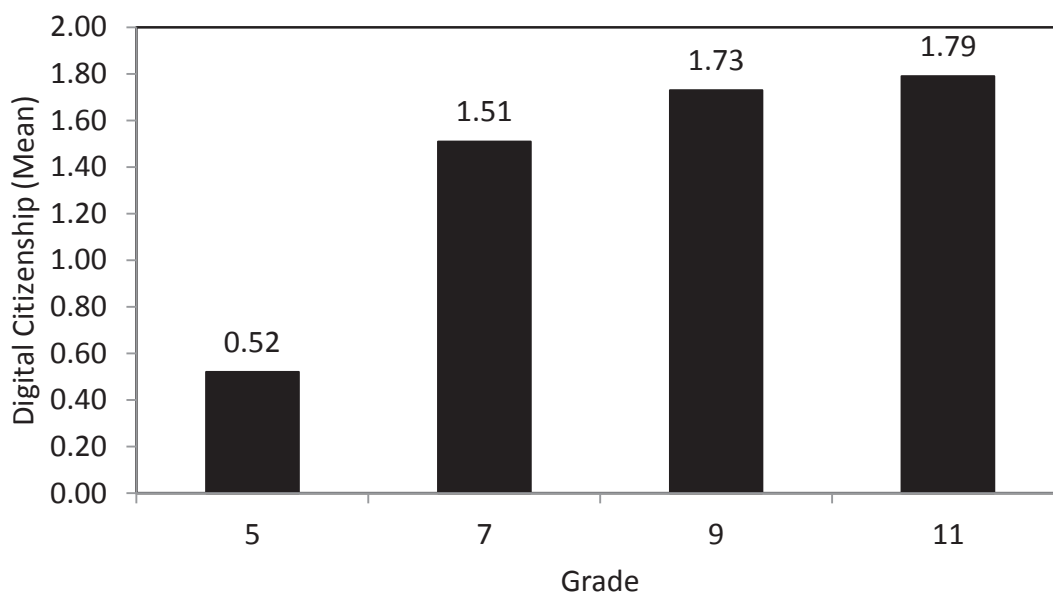
Figure 4. Summary of Digital Citizenship abuse by grade.

The one-way ANOVA showed the effect of grade level is significantly different on Digital Citizenship—$F(3,849) = 56.25$, $p < 0.001$. Post hoc analyses using the

Bonferroni adjustment for significance indicated that scores for Digital Citizenship abuse for seventh, ninth, and 11th graders are significantly higher than those for fifth graders (p < .001). Digital Citizenship abuse for ninth graders, however, is not significantly different from seventh (p = .70) and 11th graders (p = 1.00). Fifth graders have the lowest Digital Citizenship abuse scores among all grades (p < .001). The findings reject the null hypothesis. Students' grade level had a significant effect on Digital Citizenship abuse with fifth-grade students demonstrating less Digital Citizenship abuse than students in Grades 7, 9, and 11.

Question 5. The fifth research question asked if there is a relationship between gender and Parental Involvement. The independent variable is the students' gender. The dependent variable is the Parental Involvement scale. The null hypothesis states there is no relationship between students' gender and Parental Involvement. The alternative hypothesis states there is a relationship between students' gender and Parental Involvement.

The bar graph of Parental Involvement by gender is plotted in Figure 5, indicating Parental Involvement for females is higher than males.
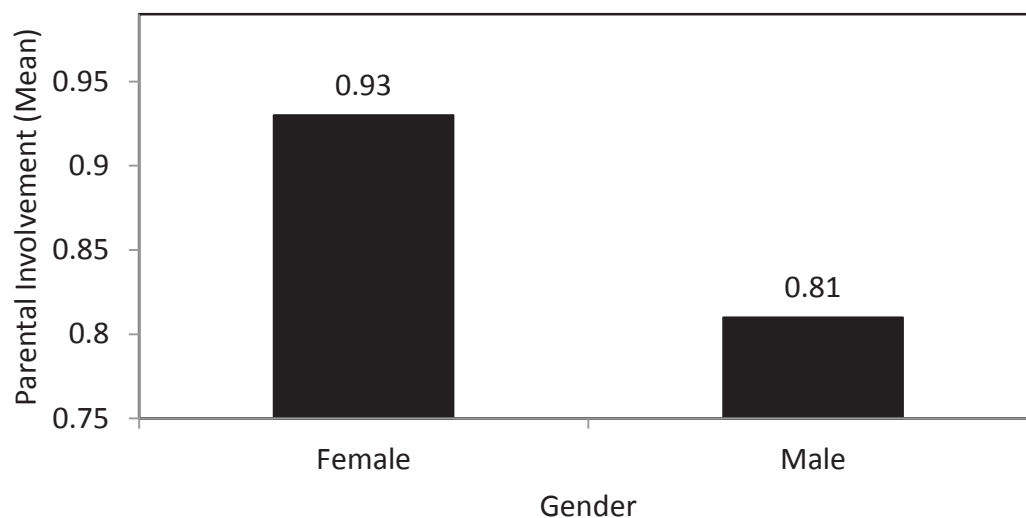
Figure 5. Summary of Parental Involvement by gender.

An independent sample *t* test indicated that Parental Involvement was not significantly greater for females (*M* = 0.94, *SD* = 0.88) than for males (*M* = 0.81, *SD* = 0.87)—*t*(887) = 2.34, *p* > 0.05. The findings support the null hypothesis. The students' gender had no significant effect on Parental Involvement with parents mitigating online issues essentially the same with females and males.

Question 6. The sixth research question asked if there is a relationship between grade level and Parental Involvement. The independent variable is the students' grade level. The dependent variable is the Parental Involvement scale. The null hypothesis states there is no relationship between students' grade level and Parental Involvement. The alternative hypothesis states there is a relationship between students' grade level and Parental Involvement.

The bar graph of Parental Involvement by grade is plotted in Figure 6, demonstrating considerable Parental Involvement while students are young and decreasing as students increased in grade. The results of a one-way ANOVA showed that the effect of grade was significant on Parental Involvement—$F(3,772) = 142.51$, $p < .001$. A test for trend using the post hoc analysis showed that there is a decreasing trend ($p < .001$) as grade level increased. The findings reject the null hypothesis. The students' grade had a significant effect on Parental Involvement with parents more involved mitigating online issues with their younger children than their older children.
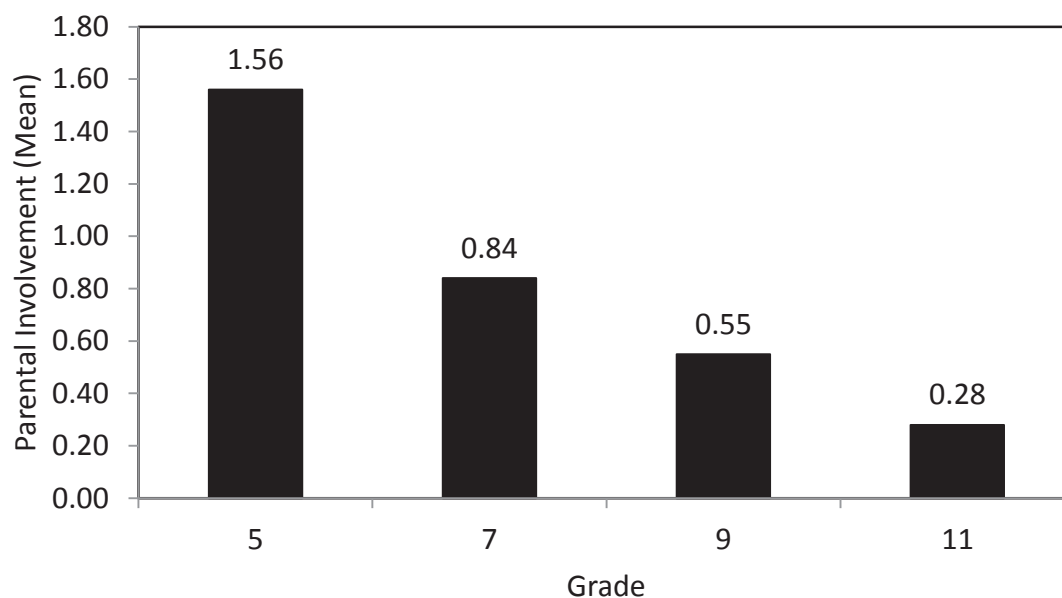
Figure 6. Summary of Parental Involvement by grade.

Question 7. The seventh-research question asked if there is a relationship between grade level and Cyberbullying. The variables of interest are the students' grade level and Cyberbullying. The Cyberbullying variable is the sum of the "was cyberbullied" grade

level responses from the CHKS on Question 25 from the fifth-grade survey, Question 103 from the seventh-grade survey, and Question 120 from the ninth- and 11th-grade survey. The null hypothesis states there is no relationship between students' grade level and Cyberbullying. The alternative hypothesis states there is a relationship between students' grade level and Cyberbullying.

A matrix of Cyberbullying by grade is displayed in Table 5, indicating Cyberbullying increases by grade with a large jump occurring between fifth and seventh grade. The percentage of students suffering from Cyberbullying increased from 7.46% of fifth graders, 17.96% of seventh graders, 18.88% of ninth graders, to 19.03% of 11th graders.

Table 5

Percentage of Cyberbullied Students by Grade

Grade	N	Cyberbullied
5	134	7.46%
7	323	17.96%
9	249	18.88%
11	226	19.03%

The percentage of Cyberbullying did differ significantly by grade—$X^2(3) = 10.15$, $p < .05$. The Cramer's V of .10 indicates a small association between grade and Cyberbullying. The findings reject the null hypothesis. The students' grade level had a significant effect on Cyberbullying with older students engaging in significantly more cyberbully behaviors than younger children.

Summary

This study addressed the growing seriousness of technology abuse in the district by quantifying the online behavior of students in Grades 5, 7, 9, and 11 with historical state and district survey data. The statistician used SAS software to determine the relationship between the independent variables, grade level and gender of the student, and the dependent variable, the four scales of student online behavior.

The relationship between the independent variable gender and the dependent variable student online behavior, comprised of three scales: (a) Personal Safety, (b) Digital Citizenship, and (c) Parental Involvement, were analyzed with the independent t test. The relationship between the independent variable grade level and the dependent variable student online behavior, comprised of three scales: (a) Personal Safety, (b) Digital Citizenship, and (c) Parental Involvement, were analyzed with a single factor ANOVA. The relationship between the independent variable grade level and the dependent variable Cyberbullying were analyzed with the chi-square test for independence. Cramer's V, with Cohen's guiding parameters, determined the size of the effect of grade level on Cyberbullying. Data set analyses determined the relationship between grade level and gender, and online behavior.

Personal Safety issues had a significant correlation between gender and grade level. Females had significantly less Personal Safety issues than males, while younger students had significantly less Personal Safety issues than older students. The findings reject the null hypotheses for both gender and grade level variables.

Digital Citizenship abuse with males was slightly higher than females. The difference, however, was statistically significant. The student grade level had a significant impact on Digital Citizenship with abuse nearly tripling from Grades 5 to 7. The differences between Grades 7 and 11 were not statistically significant.

Though females had slightly higher Parental Involvement than males, analysis of Parental Involvement and gender indicated females did not receive significantly more oversight from parents than males. The effect of grade on Parental Involvement indicated a significant decreasing trend from Grades 5 through 11.

Cyberbullying was not compared by gender, but there was a small but significant relationship between grade and Cyberbullying. There was very little difference between Cyberbullying in Grades 7, 9, and 11, but there was a significant difference between Grade 5 and the upper grades.

The analyses indicated the district has significant issues with online Personal Safety issues, Digital Citizenship abuse, Parental Involvement, and Cyberbullying. In general, online behavior is riskier as the students move through high school. Coupled with the increase in risky behavior is the decreasing involvement of parents as their child progressed through school. Males exhibited more Personal Safety issues and Digital Citizenship abuse than females. These findings mirror research (Livingstone et al., 2011; Pujazon-Zazik & Park, 2010; Wolak et al., 2006) indicating risk increases with age, males exhibit riskier online behavior, and Parental Involvement wanes with grade. The implications of these risky behaviors will be discussed in the next section.

This section examined the misuse of technology in the district through the ex post facto data analyses of local and state survey data. Analyses of local data are needed to make informed choices regarding prevention and mitigation of risky behaviors exhibited by district students. The analyses indicated the student's grade was a significant factor in online behavior while gender correlation indicated a smaller association. The results suggest the district has a significant online behavior problem.

In Section 5, I present an overview of the results, the interpretation of findings, implications for social change, recommendations for action, recommendations for further study, and a conclusion.

Section 5: Summary, Conclusion, and Recommendations

Introduction

Use of the Internet by youth has increased dramatically in recent years, changing how adolescents interact with one another. Social media interaction is now a common practice (Lenhart et al., 2011; O'Keeffe & Clarke-Pearson, 2011) with 95% of American teens, aged 12–17, online and 80% using social media (Lenhart et al., 2011, p. 2). It is critical for parents, schools, and the community to understand the online world youth live in today to help them make informed, healthy, and responsible choices.

The purpose of this study was to quantify the online issues of Personal Safety, Digital Citizenship, Parental Involvement, and Cyberbullying facing district students and to determine the next steps to mitigate risky online behavior. Local and state historical survey data were analyzed to explore the relationship between the grade level and gender of the student and the four types of student online behavior. The data analyses were comprised of descriptive and inferential statistics for each research question to quantitatively describe the data sets and draw conclusions about the larger district population. The local ($N = 919$) and state data ($N = 932$) sets were analyzed with the t statistic for independent measures; a single-factor, independent-measures ANOVA; and a chi-square test for independence.

The results of the study indicated that district students engaged in technology abuse and risky online behaviors. The four online behavior types all indicated an increase in risk factors as the student grade increased. There was a significant increase in risk

factors as a student moved from Grade 5 to Grade 7. Females generally took fewer online

risks and had fewer Digital Citizenship issues when compared to males. Parents were

more protective of their fifth-grade students with decreasing parental protection as a

student increased in age. Parental involvement by gender was not significant; students

indicated that parents mitigated online issues with their sons and daughters at

approximately the same rate. Other than Parental Involvement by gender, the results

indicated significant differences between gender and grade level for the four types of

online behaviors measured (see Table 6).

Table 6

Summary of Findings by Variable

Variable		
Independent	Dependent	Findings
Gender	Personal Safety	Significant
Grade level	Personal Safety	Significant
Gender	Digital Citizenship	Significant
Grade level	Digital Citizenship	Significant
Gender	Parental Involvement	Not significant
Grade level	Parental Involvement	Significant
Grade level	Cyberbullying	Significant

Interpretation of Findings

This study sought to answer seven research questions examining the relationship

between grade level and gender and four online risk factors. Local and state data sets

were analyzed with SAS software to test the null hypotheses and to answer the research

questions. The CHKS sample consisted of 134 fifth graders, 323 seventh graders, 249

ninth graders, and 226 11th graders. Gender data were not available from the CHKS. The

district data consisted of 325 fifth graders, 179 seventh graders, 196 ninth graders, and 219 eleventh graders. The district data represented 453 (49.3%) females and 466 (50.7%) males.

Question 1. *Is there a relationship between gender and Personal Safety?* The independent-measures t test analysis indicated males ($M = 0.79$, $SD = 1.21$) take significantly more online Personal Safety risks than do females ($M = 0.51$, $SD = 1.04$)— $t(823.65) = -3.51$, $p < .001$. The online behaviors associated with Personal Safety include chatting with or sending pictures of oneself to strangers, meeting a stranger they first met online, keeping Internet friends a secret, and sharing personal information such as an address or phone number with strangers.

These results agreed with Wilson and Daly (1985) who opined risky behavior in the physical world is an "attribute of masculine psychology" (p. 61). Recent studies (Baumgartner, Valkenburg, & Peter, 2010; Lamb, 2010; Nigam & Collier, 2010; Schrock & Boyd, 2008) indicated risky behavior has moved from the physical to the digital world, corroborating the district findings. Risky sexual online behavior, part of this subgroup, is significantly greater for adolescent males than females (Baumgartner et al., 2010, p. 444). Adolescent males are also more likely than females to have public profiles on social networking service (SNS) websites (Livingston et al., 2011; Schrock & Boyd, 2008).

A possible explanation for the lower Personal Safety risk factors for females is the increased parental concern for online safety. Lenhart et al. (2011) noted parents are more likely to talk to their daughters about digital safety than their sons (p. 68). According to

Fleming, Greentree, Cocotti-Muller, Elias, and Morrison (2006), there is a significant difference in online safety behaviors practiced by children who have had Internet safety discussions with their parents (p. 149). The lower Personal Safety risk factors for females could be related to increased Internet safety discussions with parents.

Question 2. *Is there a relationship between grade level and Personal Safety*? The one-way ANOVA indicated the effect of grade level on Personal Safety issues was significant—$F(3,842) = 13.10$, $p < 0.001$—with an increasing trend of Personal Safety risks as the grade increased. Research has confirmed youth take more Personal Safety risks as age increases (Baumgartner et al., 2010; Lenhart et al., 2011; Livingstone et al., 2011; Schrock & Boyd, 2008). Livingstone et al. (2011) found Internet use increased steadily from late elementary through high school (p. 25) which is also associated with increased risk and harm (Livingston et al., 2011; Wolak et al., 2006). Pujazon-Zazik and Park (2010) claimed youth in their mid teens frequently believe they will live forever, leading to "risk-taking behavior, increased sexual activity, and sexual experimentation" (p. 78).

The relationship of age on Personal Safety risks can possibly be explained by moral judgment, the ability to choose between safe and unsafe practices. Moral judgment is related to brain development (Lamb, 2010; Narvaez, 2001) and is dependent on physical and cognitive conditions. The prefrontal cortex (PFC), which is not fully developed until the early 20s, controls moral behavior and results in risky responses until the PFC matures (Narvaez & Vaydich, 2008; National Institute of Mental Health, 2010;

Willard, 2006). Moral development also matures as a cognitive process and is influenced

by social experiences as explained by Kohlberg's theory of moral development

(Kohlberg, 1963/2008, 1971; Kohlberg & Hersh, 1977). The middle and high school

years are a time of adolescent risky behavior as indicated by the significant difference on

Personal Safety issues as the grade increases.

Question 3. *Is there a relationship between gender and Digital Citizenship?* The

independent-measures *t* test analysis indicated Digital Citizenship abuse by males ($M =$

1.37, $SD = 1.45$) was significantly greater than females ($M = 1.17$, $SD = 1.32$)—$t(851) = -$

2.04, $p < .05$. The online behaviors associated with Digital Citizenship abuse included

forwarding private e-mails, sending messages from another account, setting a SNS profile

to public, posting private information without permission, using a password that was not

their own, and plagiarism. Question 12 in this category was removed from the group

because of its negative impact on internal consistency. The risk factors associated with

Digital Citizenship are not physically dangerous when compared to the interactive

activities associated with personal safety, but still have the potential to emotionally affect

adolescents (Hinduja & Patchin, 2007, p. 107).

Digital citizenship abuse is a growing and serious problem. Lamb (2010) argued

"the insecurities and rebellious nature of young people are accentuated online . . . . even

participating in libelous and fraudulent activities" (p. 64). The risk factors that apply to

males' Personal Safety risks activities also have a carryover to their Digital Citizenship

behaviors and could be related to the lack of parent intervention. Nigam and Collier

(2010) reported parenting styles have a strong relationship to SNS behaviors (p. 17).

Livingstone et al. (2011) concluded adolescent European females are more concerned

about keeping SNS profile information private than European males (p. 38). There was a

significant difference between gender and Digital Citizenship with district results

indicating males abuse Digital Citizenship at a higher rate than females.

Question 4. *Is there a relationship between grade level and Digital Citizenship?*

The one-way ANOVA indicated that grade had a significant effect on Digital

Citizenship—$F(3,849) = 56.25$, $p < 0.001$—with a large increase in abuse in the middle

school years when compared to the fifth grade. After middle school, however, Digital

Citizenship abuse stabilized with no significant difference between Grades 7, 9, and 11.

The data analysis clearly indicated the critical time period for Digital Citizenship abuse

for district students starts in the middle school grades.

Similar to Personal Safety risks, Digital Citizenship abuse can possibly be

explained by the lack of moral development in youth. Adolescents move to Stage 3 of

their moral development during their middle school years, "shifting from dependence on

parents to more independent behavior" (Pujazon-Zazik & Park, 2010, p. 78). During this

phase, the social environment influenced by family and friend relationships is critical to

creating moral identity. The lack of a clear moral compass during the teenage years can

lead to unpredictable and risky behaviors and is evidenced by the data analysis results.

Question 5. *Is there a relationship between gender and Parental Involvement?*

The online behaviors associated with Parental Involvement included parents knowing

their child's password and keeping track of the websites he or she visit. Question 15

regarding online Internet safety education by parents was removed from the group

because of its negative impact on internal consistency, leaving only two questions in the

Parental Involvement scale. An independent-measures t test indicated Parental

Involvement was not significantly greater for females ($M = 0.94$, $SD = 0.88$) than for

males ($M = 0.81$, $SD = 0.87$)—$t(774) = 1.94$, $p < .05$.

Parents' biggest concern is having their child meet with someone they had only

met online leading to abuse or harm (Livingstone et al., 2011, p. 85). According to Wolak

et al. (2006), the majority of sexual solicitations are committed by males (p. 17) targeting

female adolescents (p. 16). Parents are well aware of this risk and may compensate by

emphasizing Internet safety to a greater degree to females versus males. Because this

research did not gather data on Internet safety education provided to children by their

parents, it is possible these results do not accurately reflect the intervention of parents by

gender. Livingstone et al. (2011) found the majority of parents actively mediate their

child's Internet use with more parents talking to their daughters than their sons (p. 104).

Though females had greater Parental Involvement than males, the difference was not

significant.

Question 6. *Is there a relationship between grade level and Parental*

Involvement? The results of a one-way ANOVA demonstrated the effect of grade was

significant on Parental Involvement—$F(3,772) = 142.51$, $p < 0.001$. Parental

Involvement was greatest in Grade 5 with a decreasing trend through Grade 11. Though

parental involvement is considered a "key protective factor" in mitigating risky online behavior (Pujazon-Zazik & Park, 2010, p. 83), research has indicated adolescents receive decreasing online support as they become older (Lenhart et al., 2011; Livingstone et al., 2011), just as the online risk factors increase (Lenhart et al., 2011; Livingstone et al., 2011; Nigam & Collier, 2010; Schrock & Boyd, 2008; Wolak et al., 2006). The local district survey results parallel the research with parental involvement decreasing as age increases.

Pujazon-Zazik and Park (2010) claimed students move away from reliance on parents to self-reliance during the early teen years (p. 78) as part of their moral development progression. This progression is possibly related to the decreasing support given by parents. As peer relationships increase in importance, there is an increasing chance of risky online activities as youth look to their peers for appropriate behavior, learning "through observation, imitation, and modeling" (Bandura, 1971b). Decreasing parental involvement appears to be related to a natural progression of adolescents moving towards self-reliance and can be explained by the social norms theory (SNT), social cognitive theory (SCT), and moral development theories where social interaction with peer groups are the most influential (Berkowitz, 2004; Lamb, 2010).

Question 7. *Is there a relationship between grade level and Cyberbullying?* The chi-square test for independence tested the relationship between being bullied and grade level using data collected with the CHKS taken by students in 2010. The results indicated a significant difference in Cyberbullying by grade—$X^2(3) = 10.147$,

p < .05—with a Cramer's *V* of .10 indicating a small relationship between grade level and Cyberbullying. The percentage of district youth reported being cyberbullied jumped from 7.46% in Grade 5 to 17.96% in Grade 7 and continued to increase more slowly until capping at 19.03% in Grade 11. Schrock and Boyd's (2008) findings are aligned with district results and suggest "a strong correlation between age and likelihood of victimization" (p. 24). The district percentages are higher than the national averages of 2% in Grade 5, 5% in Grade 7, 14% in Grade 9, and 19% in Grade 11 reported by Wolak et al. (2006, p. 43). District cyberbullying percentages, however, were much higher than European youth at the same age. Livingstone et al. (2011) reported the comparable aged European fifth graders cyberbullied at 2%, seventh graders at 5%, ninth graders at 7%, and 11th graders at 10% (p. 63). District cyberbullying percentages were approximately triple the comparable-aged European fifth and seventh graders, 2.5 times greater than ninth graders, and nearly double the 11th graders. Wagner (2008) noted, "bullying is a growing problem worldwide but especially in North America, according to the 2006 *United Nations World Report on Violence Against Children*" (p. 14). There is a significant difference between grade level and Cyberbullying with district results indicating a much higher cyberbully rate at the elementary and middle school levels than the national average.

As with the other age-related research questions, there is a significant difference between Grade 5 and Grade 7 in rates of digital abuse and could possibly be explained by the SNT, SCT and moral development theories. Nigam and Collier (2010) concluded

"social norm education and peer mentoring programs" are valuable in reducing

cyberbully rates (p. 19). Social norms and peer modeling involves all students and would

require a whole school approach for intervention and mitigation. Cyberbullying is a

significant issue across all grade levels in the district, requiring a coordinated,

districtwide intervention effort.

Practical Applications

The data analysis clearly indicates two key points: (a) risky online behavior

escalates rapidly after Grade 5 regardless of gender, and (b) parental mediation of

adolescent Internet use drops significantly after Grade 5. This information has practical

applications for a Digital Citizenship intervention and prevention program by focusing

limited resources at the middle school level. Once students reach high school, the risky

behavior and Digital Citizenship abuse continues to increase, but at a much slower rate,

indicating the middle school years are a key time for intervention.

Research has identified parents as a key factor in limiting adolescent online risks

(Livingstone et al., 2011; Nigam & Collier, 2010; Pruitt-Mentle, 2008; Pujazon-Zazik &

Park, 2010; Schrock & Boyd, 2008; Siegle, 2010; Strasburger et al., 2010; Wolak et al.,

2006). Unfortunately, this study indicates parent support drops significantly just when

parent mediation is needed most by the child. Parent mediation needs to be strongly

encouraged during a child's middle and high school years through school and community

workshops, websites, newsletter articles, and other informational sources. The middle

school prevention focus and significant decline in parent mediation of online behavior provide a practical application for this research study.

Implications for Social Change

The online world adolescents experience is constantly changing. Youth are encountering difficult situations that would not have been expected even 10 years ago (Jenkins, 2006, p. 16). Chai, Bagchi-Sen, Morrell, Rao, and Upadhyaya (2009) argued, "The rapid development of information technology (IT) can make even the most aware users vulnerable" (p. 167). To maneuver in these new circumstances, youth are seeking guidance and strategies from parents, teachers, and friends (Chai et al., 2009; Lenhart et al., 2011). Unfortunately, little research has provided guidance to mitigate digital abuse (Finkelhor et al., 2010; Jones, 2010) with even fewer studies at the local level. The results of this study provides the school district with accurate and timely local information needed to inform parents, staff, and students of unsafe practices at the local level. The demographic data allows the district to focus digital abuse prevention and intervention at a particular gender, grade level, and school. The empirical evidence from this study can raise awareness for all stakeholders and provide evidence of the true, normative behavior required to change perception. Informed decisions require accurate data, allowing the district to modify practices and curriculum to match the needs of its students at the appropriate grade level.

The study findings have the potential to effect positive social change by supporting district, state, national, and global efforts to promote online safety and

awareness, influencing future generations. The analyses of the district Internet Use Survey and CHKS results indicated the district has a significant problem with digital abuse across all grade levels and gender. Determining the next steps could provide a path for other districts to follow. Mitigating digital citizenship abuse has the potential to reduce adolescent risky behavior while preparing them to be ethical and responsible members of the global online society. This study has identified digital citizenship abuse as a local problem; the resolution can have a global impact.

Recommendation for Action

The results of this study indicated the district is facing a significant digital abuse problem that crosses gender and age boundaries. The following recommendations suggest possible intervention and prevention practices to mitigate digital abuse by district students.

Raise Awareness of Local Digital Citizenship Issues

The learning community must be aware of local digital citizenship issues facing district students (Chibbaro, 2007, p. 66). It is recommended the district biennially survey students to address local areas of digital abuse (Siegle, 2010; Willard, 2006, 2007). Data from the district Internet Use Survey and CHKS must be analyzed and presented to students, parents, staff, and the community to raise awareness of online issues facing local youth (Chai et al., 2009; Lenhart et al., 2011). Assemblies, in-class discussion, school generated Public Service Announcements, poster contests, newspaper articles, and other media can be used to promote and model appropriate online behavior (Siegle, 2010,

p. 16). Multiple Internet safety nights should be presented to inform parents and community members of local online issues. I recommend a school- or county-sponsored website be established for disseminating information to the community. School presentations during a staff meeting would inform teachers of local problems. The first step in solving digital citizenship issues is recognizing there is a problem and acknowledging the areas of concern.

Establish a Community of Practice

I recommend the district establish a community of practice focusing on digital citizenship. A community of practice can be defined as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott, & Snyder, 2002, p. 4). To enable a systemic change in online behavior requires comprehensive planning and education for the whole learning community. Communities of practice show promise as a method to support this systemic change by connecting people to build a collective knowledge of digital citizenship. Moreover, the sharing and reflective application of communities of practice yield specialized knowledge that can focus on digital citizenship and the preparation of our students to be responsible in their online behavior. Communities of practice create an environment where stakeholders gain knowledge of the organization while reflecting on their own actions. This knowledge of an organization within a community of practice has been shown to increase the collective

capacity of the organization to affect positive change in the learning environment
(Hawley & Rollie, 2007, p. 54).

The community of practice must be comprised of key stakeholders who share a
concern for online risky behavior by youth. This group should include an administrator,
counselor, teacher, media specialist, technology director, parents, students, and local law
enforcement. According to Wenger et al. (2002), "the primary purpose of communities of
practice is to develop knowledge" (p. 41). This community knowledge can utilize local
survey data to raise awareness of online risky behavior; provide student, staff, parent, and
community members with resources to mitigate local areas of concern; establish policies
and practices; and evaluate and assess local efforts (Willard, 2007, p. 11). Digital
citizenship must be promoted as a district priority.

Assessment and Evaluation

I recommend the district synchronize the assessment of cyberbully behaviors and
Internet use by having the fifth-, seventh-, ninth-, and 11th-grade students take the CHKS
and the district Internet Use Survey in the same timeframe. The CHKS is administered
biennially in the spring with results available late summer. The CHKS data analyzed for
this study were obtained in spring 2010. The district Internet Use Survey was given to
students in winter 2012. Collecting data in the same timeframe will increase the
reliability of the results by increasing the probability the sample population take both
surveys.

The CHKS can provide a wealth of data for district use. Currently the district

cannot analyze the data by gender, grade, ethnicity, or school because the district does

not request school-level reports that include these data. Disaggregated reports would be

useful to compare sites to determine intervention priorities and compare results to other

districts and state and national norms. It is recommended the district pay the nominal

CHKS fee to have access to disaggregated data for data-driven decision making to

improve school health generally and for the enhancement of the Internet safety

curriculum specifically.

Prevention and Intervention Programs

I recommend that the district couple theory and research to prevention and

intervention programs to be effective (Bond & Carmola Hauf, 2004, p. 202). The SNT,

SCT, and moral development theories provide an effective research-based foundation for

long-term modification of online behavior in adolescents. The three theories rely on peer

social interaction when peer groups are most influential in adolescent behavior

(Berkowitz, 2004; Lamb, 2010). Digital citizenship is a broad topic that requires multiple

theories to address the wide range of digital abuse.

Nurturing positive behavior and resetting perceived online norms to true norms

established by local assessment promote the SNT. Peer modeling is the foundation for the

SCT and is recognized as a key aspect in changing behavior in prevention and

intervention programs (Bandura, 1977; Patterson, 1969). Kohlberg's theory of moral

development indicates children develop moral judgment by social experiences and not by

maturation or influence from parents or teachers (Kohlberg, 1971, p. 5). The guided

application of social media in schools promotes social experiences to develop moral

judgment. An effective Internet safety program that provides prevention and intervention

methods requires multiple strategies to achieve curriculum objectives.

I recommend the district employ these three theoretical perspectives by

supporting the following practices:

- A regularly scheduled needs assessment of online activities should be

   administered to focus prevention and intervention and target high risk

   behavior. The local data should also be applied to correcting perceived

   misconceptions of online norms through positive messages and modeling that

   "marginalize improper behavior" (Nigam & Collier, 2010, p. 33).

- Students, staff, and parents must be educated to model appropriate online

   behavior through assemblies, peer modeling, class discussion, guest speakers,

   and other medium. Modeling is a key component of the SCT.

- The safe use of social media used by students at home should be promoted in

   classrooms. The guided practice of appropriate online behavior will help

   develop moral judgment through peer and teacher modeling while also

   establishing normative behavior.

- The district should promote a caring and supportive school environment that

   nurtures school connectedness, a belief by students that their school genuinely

   cares about their well being (McNeely, Nonnemaker, & Blum, 2002; Willard,

2004). Research has indicated a positive home and school environment decreases risky behaviors and supports moral development (McNeely et al., 2002; Willard, 2004).

- I recommend the district retain the research-based iSafe Internet safety curriculum for prevention and intervention or purchase a similar research-based comprehensive curriculum.

Policies and Procedures

The online world is rapidly changing. The Internet safety community of practice group and the safe schools committee must keep up with the fluid digital environment by reviewing district Internet and acceptable use policies and processes annually. The bully reporting process, disciplinary action, and counseling support must be clearly defined and communicated to students, staff, and parents (Chibbaro, 2007, p. 66). Policies and procedures should promote a positive school climate and open communication (Siegle, 2010, p. 16).

Continue to Study Research

Digital citizenship abuse is a relatively new area of concern with very few long-term studies to provide direction (Finkelhor et al., 2010; Jones, 2010). I recommend the district continue to study current research to seek multiple strategies grounded in theory to provide the most effective prevention and intervention models available. I further recommend the district provide leadership by sharing its digital citizenship successes and

disappointments with neighboring districts to further the advancement of student online safety.

Recommendations for Further Study

The following five questions are areas for further study:

1. Is there a relationship between school connectedness and online behavior? The CHKS disaggregated data should be purchased by the district to determine the relationship between Cyberbullying and gender, school, and school connectedness. School connectedness factors are analyzed through the CHKS to help districts improve school climate. This detail would allow researchers to target specific schools and groups for cyberbully intervention and prevention programs. Bond et al. (2007) suggest school connectedness is "a key area for building protective factors for positive educational outcomes and lower rates of health-risk behaviors" (p. 357.e9) including bullying (p. 357.e18). Simple school connectedness techniques could be quickly implemented school wide for relatively low cost to mitigate the effects of bully behavior.

2. Is there a relationship between parental intervention and student online behavior? Parents are considered a key factor in mitigating their child's risky behavior in the physical world (Pujazon-Zazik & Park, 2010, p. 83). The key factors that are critical to parents moderating their child's risky behavior need

to be further researched to discover connections to mitigating risky online behavior.

3. Does the safe use of social media in schools mitigate risky online behavior? Researchers (Lemke, Coughlin, Garcia, Reifsneider, & Baas, 2009; Nigam & Collier, 2010) have recommended incorporating SNS into the curriculum to mirror the proper use of SNS at home. The rationale is that the guided practice in the classroom would translate to less abuse and risky behavior outside of school. While this recommendation by Lemke et al. (2009) and Nigam and Collier (2010) would seem to have merit in light of the results of this study, there has been no empirical research on the effect of incorporating a SNS curriculum in schools. With the majority of students participating in SNS, this research could be critical in reducing risky online behavior.

4. Does the use of an Internet safety curriculum change the online behavior and attitude of students? The FCC is now requiring schools to instruct students on cyberbully awareness and appropriate behavior on social networking sites and in chat rooms (BDI, 2008). To implement this new requirement, schools will be purchasing Internet safety curriculum. Unfortunately, information alone does not always equate to appropriate behavior. A glaring example was the D.A.R.E. drug abuse prevention program of the 1970s where multiple studies have shown it to be unproductive (Jones & Finkelhor, 2011, p. 1). Further

research is needed to identify research-based curriculum that has been shown

to be effective in preventing online risky behaviors.

5. Is there a relationship between Digital Citizenship professional development

for staff and the mitigation of risky online behaviors by students? Research

has indicated schools are a critical component in preventing and mitigating

online risky behavior and abuse (Livingstone et al., 2011; Nigam & Collier,

2010; Pruitt-Mentle, 2008; Siegle, 2010; Strasburger et al., 2010; Wolak et al.,

2006). Livingstone et al. (2011) reported over 80% of European youth

surveyed revealed their teachers talked to them about online activities.

Additional research is needed to determine the key components of an effective

digital citizenship staff training program to mitigate risky online behaviors by

students.

Conclusion

The primary purpose of this study was to quantify the online issues of Personal

Safety, Digital Citizenship, Parental Involvement, and Cyberbullying facing district

students in Grades 5, 7, 9, and 11 and measuring the differences between gender and

grade levels. Secondary goals for this study included raising stakeholder awareness of the

significant online behavioral issues practiced by district students and recommending

district actions to mitigate students' abuse of technology through a theoretical lens. Three

major studies (Livingstone et al., 2011; Nigam & Collier, 2010; Schrock & Boyd, 2008)

detailed the misuse of technology by adolescents and identified digital citizenship as a rapidly growing global problem.

The analyses of local and state data determined there are significant differences between grade level and gender of the student and the four types of student online behavior: (a) Personal Safety; (b) Digital Citizenship; (c) Parental Involvement; and (d) Cyberbullying. The student's grade level had a greater impact on online behavior than gender with a significant difference between Grade 5 and Grade 7 and risky behavior increasing while Parental Involvement decreased. The difference in grade level is aligned with the students' progression along Kohlberg's moral development continuum (Kohlberg, 1963/2008, 1971; Kohlberg & Hersh, 1977) and the growing importance of peers in making decisions (Berkowitz, 2004; Lamb, 2010). Gender differences were not as pronounced as grade level differences. Males demonstrated significantly greater Personal Safety risks and higher rates of Digital Citizenship abuse than females. Parents mediated online behavior at a higher rate with females than males, but the difference was not significant. This study determined district students engaged in statistically significant technology abuse and risky online behaviors across gender and grade boundaries. Research has identified digital citizenship as a global issue (Livingstone et al., 2011; Nigam & Collier, 2010; Schrock & Boyd, 2008); the local solutions outlined in this study could have a global impact.

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Appendix A: Non-Disclosure Agreement

Print Name of Signer: _____

During the course of my activity in collecting data for this research: *Investigating Student Gender and Grade Level Differences in Digital Citizenship Behavior*, I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Non-Disclosure Agreement, I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

By signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: _____ **Date:** _____

Appendix B: Student Internet Use Survey

You have been selected to complete a survey to find out what students think about Internet behavior. All responses are confidential so no one will be able to see how you answered the questions. Check each true statement with a Yes, even if it is true only once. If there is a question that you cannot answer or do not want to answer, select "Don't know/decline to respond" and go to the next question. Completing this survey is voluntary.

1. I think it is okay to chat online with someone I don't know.

Yes   No   Don't know/decline to respond

2. I think it is safe to send a picture or video of myself to someone I don't know.

Yes   No   Don't know/decline to respond

3. I think it is okay to meet with someone that I first met online.

Yes   No   Don't know/decline to respond

4. I think it is safe to keep an Internet friendship a secret.

Yes   No   Don't know/decline to respond

5. I think it is safe to share personal information on the Internet such as my name, address, school, or phone number.

Yes   No   Don't know/decline to respond

6. I think it is okay to forward a copy of a private e-mail or conversation to other people.

Yes   No   Don't know/decline to respond

7. I think it is okay to send an Instant Message (IM) or e-mail from an account that is not mine.

Yes   No   Don't know/decline to respond

8. I have my own social networking site, such as FaceBook or MySpace.

Yes   No   Don't know/decline to respond

9. I think it is safe to set my social networking site profile to "public" so everyone can see my information.

 Yes   No   Don't know/decline to respond

10. I think it is okay to post information or pictures of someone on the Internet without his or her permission.

Yes   No   Don't know/decline to respond

11. I think it is okay to use someone else's password or give it to others if I found it accidentally.

Yes   No   Don't know/decline to respond

12. Somebody shared my personal information on the Internet that made me feel uncomfortable.

Yes   No   Don't know/decline to respond

13. I think it is okay to copy information from the Internet and use it as my own.

Yes   No   Don't know/decline to respond

14. My parents know my online passwords.

Yes   No   Don't know/decline to respond

15. My parents have talked to me about being safe on the Internet.

Yes   No   Don't know/decline to respond

16. My parents keep track of the websites I visit.

Yes   No   Don't know/decline to respond

17. Which device(s) do you use at home to access the Internet? Please mark ALL that apply.

    a. My own computer in my room
    b. A shared family computer
    c. A shared laptop that is not allowed in my bedroom.

    d. A shared laptop that is allowed in my bedroom.
    e. A mobile phone.
    f. A Smart phone (iPhone, Blackberry, Droid, etc.)
    g. A game console (PlayStation, Xbox, Wii, etc.)
    h. A mobile device (iPad, iTouch, Xoom, Galaxy, etc.)
    i. No Internet access from home.

18. Please mark your gender.

Female   Male

19. Please mark your grade.

a. 3   b. 5   c. 7   d. 9   e. 11

20. Please enter your school initials given to you by your teacher.

Appendix C: Data Description

	Data description		
Name of subgroup	Number of items/ categories	Description of subgroup	Type of variable
Demographics: Gender	1 Item F = Female; M = Male	Indicates the sex of the participant as female or male.	Independent
Demographics: Grade level	1 Item 5 = fifth grade; 7 = seventh grade; 9 = ninth grade; 11 = 11th grade	Grade level recorded as a single or double-digit whole number, indicating the student's current grade level.	Independent
Demographics: School	1 Item	School is the current school of attendance.	Independent

<table>
<tr><td colspan="4" align="center">Data description</td></tr>
<tr>
<th>Name of subgroup</th>
<th>Number of items/ categories</th>
<th>Description of subgroup</th>
<th>Type of variable</th>
</tr>
<tr>
<td>Demographics: Home Internet access</td>
<td>1 Item
a = My own computer in my room; b = Shared family computer; c = Shared laptop that is not allowed in my bedroom; d = Shared laptop that is allowed in my bedroom; e = Mobile phone; f = Smart phone; g = Game console; h = Mobile device ; i = No Internet access from home.</td>
<td>Internet access from home is a multiple response option for accessing the Internet from home.</td>
<td>Independent</td>
</tr>
<tr>
<td>Personal Safety</td>
<td>5 Items
No = 0; Yes = 1;
Don't know/decline to respond = " "</td>
<td>Measures knowledge of possible predator actions and misuse of personal data</td>
<td>Dependent</td>
</tr>
<tr>
<td>Digital Citizenship</td>
<td>8 Items
No = 0; Yes = 1;
Don't know/decline to respond = " "</td>
<td>Measures knowledge of risky and/or inappropriate behavior</td>
<td>Dependent</td>
</tr>
<tr>
<td>Parental Involvement</td>
<td>3 Items
No = 0; Yes = 1;
Don't know/decline to respond = " "</td>
<td>Measures level of parental involvement in supervising online activities</td>
<td>Dependent</td>
</tr>
<tr>
<td>Cyberbullying</td>
<td>1 Item
No, never = 0; Yes, any number of times = 1</td>
<td>Measures positive response to being cyberbullied</td>
<td>Dependent</td>
</tr>
</table>

CURRICULUM VITAE

Robert T. Lyons

EDUCATION:

Administrative Services Credential	University of LaVerne, 2005
M.Ed., Technology Education	University of Idaho, 1999
BA, Industrial Arts	California Polytechnic State University, 1977
	San Luis Obispo

CAREER PROGRESSION:

Western Placer Unified School District, Lincoln, CA Director of Technology	2009-present
American School of Warsaw, Warsaw, Poland Technology Integration Specialist	2007-2009
Dry Creek Joint Elementary School District, Roseville, CA Director of Management Information Systems	2001-2007
Cascade Public Schools, Cascade, ID Technology Instructor	1994-1997, 1998-2001
Mt. Zaagham International School, Irian Jaya, Indonesia Technology Coordinator, Computer Instructor	1997-1998
Geyserville Middle/High School, Geyserville, CA Technology Instructor	1987-1994
Arcata High School, Arcata, CA Technology Instructor	1986-1987
Conrad High School, Conrad, MT Technology Instructor	1982-1986

ASSOCIATIONS:

Association of California School Administrators
California Educational Technology Professionals Association