Adolescent Students’ Perspectives of Technology Use Both Inside and Outside the Classroom

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Adolescent Students’ Perspectives of Technology Use Both Inside and Outside the Classroom

by
Kendall P. Johnson

An Applied Dissertation Submitted to the Abraham S. Fischler College of Education in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

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Approval Page

This applied dissertation was submitted by Kendall P. Johnson under the direction of the persons listed below. It was submitted to the Abraham S. Fischler College of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

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Kendall P. Johnson
Name

August 17, 2017
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Abstract

Adolescent Students’ Perspectives of Technology Use Both Inside and Outside the Classroom. Kendall P. Johnson, 2017: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education. Keywords: adolescents, perspectives, technology, classroom, academics, social

Technology is now the norm in our educational setting. The literature shows a vast increase in technology implementation and use both inside and outside the classroom over the past few decades. Overall, the studies show a balanced mix of positive and negative perspectives of using technology for educational purposes from students, teachers, administrators, as well as from outsiders. The literature also shows a mix of academic and social effects. Unfortunately, there is little known about how adolescents perceive their use of technology for enhancing their personal academic and social performance, two areas of developmental importance.

Using mixed methods design, set in an urban junior high school in Northeast Texas, research questions addressed how much and how often technology is being used in the classroom, as well as specific ways it is being used, through educator surveys. This study also explored adolescent learners’ attitudes toward and opinions about using technology in the classroom, specific ways adolescent learners use technology for academic purposes both inside and outside the classroom, as well as how adolescent learners are engaging with peers through technology versus face-to-face, through independent interviews.

Findings indicated that overall, the teacher reports align with the literature: technology is used in the classroom at a high frequency and duration, and there is a wide range of specific ways it is being used. Additionally, the majority of adolescent learners reported perceived benefits when using technology as an aid to one’s academic development. Adolescent learners expounded on the specific ways technology is being used both inside and outside the classroom. Adolescent learners also expounded on how they are engaging with peers through technology versus face-to-face, with the majority of adolescent learners claiming technology is not a perceived aid to one's social development nor is it commonly present when engaging with peers face-to-face. It is recommended that future studies look at any relevant differences between both males’ and females’ specific technology use for both academic and social purposes. It is also recommended that future research be conducted on adolescents possibly multi-tasking with both academic and social technology use and any perceived effects of such behavior.
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Chapter 1: Introduction

Statement of the Problem

Though technology use in the classroom has become the norm in our current educational system, there is little known about how adolescents perceive their use of technology for enhancing academic and social performance (Public Broadcasting Systems, 2013; Purdue University, 2016). It is important to initially note the vast increase of technology use, both inside and outside the classroom, before assessing any potential, related effects. According to Purdue University (2016), Apple Computer Incorporated released the first personal digital assistants (PDAs) in 1993, essentially allowing computers to be a part of our everyday routine; by 2009, 97% of classrooms had one or more computers. Ertmer (2005) stated that the student-computer ratio in the United States is 4:1; 98% of all schools and 77% of all classrooms are connected to the Internet. Additionally, it has become a growing trend to allow students to bring their own devices to school; the initiative is commonly referred to as Bring Your Own Device (BYOD). In the United States and United Kingdom combined, 89% of universities and colleges and 44% of elementary and secondary schools encourage students to bring their own devices to use within the classroom (O’Bannon & Thomas, 2015). Devices were defined as: mobile phones, desktops, laptops, iPods, game consoles, and tablets. It was also discovered that only 1% of the students attending these BYOD schools did not own at least one of these devices; in other words, 99% of students are able to contribute to this initiative, thus increasing access to technology within the classroom (O’Bannon & Thomas, 2015).
According to a survey conducted by PBS (2013), nearly half (48%) of teachers reported using technology for online lesson plans, and 43% of teachers reported implementing the use of online videos, images, and articles. Additionally, the survey reported 45% of teachers allow access to web-based educational games or activities within the classroom (PBS, 2013). Ertmer (2005) and the U.S. Department of Education (DOE; 2003) revealed that 81% of teachers have moderate to high levels of access to instructional computers. None of the research showed a significant difference in computer availability by school type (elementary or secondary) or by socioeconomic level. With the BYOD initiative studied by O’Bannon and Thomas (2015), it is presumed teacher and student access to technology among nearly half of elementary and secondary schools in the United States (44%), is actually higher than the 81% reported by the DOE (2003).

Research has subsequently shown that media use outside the classroom is increasing, as well (Office of Adolescent Health [OAH], 2013). Media use is defined by the U.S. Department of Health and Human Services, more specifically the OAH, as time per day spent using media. Media includes television, computers, and audio devices; specifically, it does not include talking or texting on a cellphone or using a computer for school work (OAH, 2013). OAH (2013) stated that adolescents, defined as children ages eight to eighteen, are spending, on average, seven and a half hours per day using such media listed.

The topic. The research presented focused on adolescents' exposure to and use of technology, specifically within the classroom setting, and their perceived connection to personal success, both academically and socially. It is currently difficult to ascertain all
of the potential effects of technology on students academically and socially. After reviewing the literature, there was also an apparent need for further research on the impacts of technology implementation in the classroom and how students perceive this implementation as hindering or enhancing their overall achievement. This study examined the amount of exposure to and frequency of technology use within the classroom, how technological devices are used, how students believe technology is affecting one’s achievement, as well as explored adolescents’ ways of thinking and interacting, academically and socially.

The research problem. Although there is a clear increase in adolescents’ exposure to and use of technology, specifically within the classroom setting, the literature is limited on how the increased technology implementation within the classroom setting has influenced students’ perceived benefits of using technology for both academic and social purposes. Morrison (2014), a contributor to Forbes who has been researching and reporting on leadership in education since the early 1990s and specializes in technology in the classroom, recently stated, “there is evidence that where schools … use technology effectively there is a correlation with better outcomes … but that is not the same as saying the technology is actually aiding learning” (p. 1). Although technology is increasing within the classroom, the most common and frequent uses have typically resulted in students using the computer for writing, improving computer skills, Internet researching, and as a free-time or a rewarded activity. Overall, this use of technology allows students to develop isolated skills, not grow to intellectually or socially; this can be referred to as teacher-centered practices not student-centered learning with emphasis on higher-level thinking (Ertmer, 2005). Additionally, most students are reportedly using
technology for social purposes, such as sending messages to peers instead of following a guided lesson; however, this also leaks to using technology during free-time instead of choosing face-to-face socializing (Dundar & Akcayir, 2014). Overall, as an educator and researcher, it was important to consider if technology use is leading to negative effects on students’ educational and social performance. Before determining this, however, one must also understand that the development of critical thinking skills for academics, as well as the development of interpersonal skills, are detrimental to an adolescent’s growth. The need to assess whether students attribute technology to increased success in these areas became evident.

**Background and justification.** The use of technology in the classroom is vastly increasing every year. According to the *Education Week* Archives (2009), nearly 70% of the nation's schools reported using computers for instruction in fall 1983; this number rose from just 30% in fall 1982. With Apple brands dominating, these percentages equate to one computer for every 125 students enrolled in public schools in 1983 (Education Week, 2009; Purdue University, 2016). According to the U.S. Department of Education (2010), in 2009, these numbers jumped as almost 97% of teachers had one or more computers in his or her classroom, while 54% of these teachers had access to additional computers that could be brought into his or her classroom on request; this creates a ratio of 5.3 to 1 students to computers in the classroom every day. This trend is not solely applicable to secondary school, it is spreading to every level including preschool; more than half of the nation’s preschool teachers are using tablets within the classroom to aid in instruction. The number of teachers reportedly implementing technology within lesson plans has doubled that of reports from 2013 (Dobo, 2015).
Needless to say, there are many positive effects of technology use inside the classroom. For example, research has found both educators and students have widely perceived interactive whiteboards (IWBs) as a positive integration in the classroom (DiGregorio & Sobel-Lojeski, 2010). Interactive whiteboards are defined as interactive displays that connect to a computer. Lessons from the computer can be projected to the whiteboard, where learners can take control using a pen, finger, stylus, or other device. Additionally, Digregoria and Sobel-Lojeski (2010) also discovered empirical evidence for the positive correlation between IWBs and student motivation. According to the National Education Association (NEA, 2016), research has discovered an increase in student engagement, school attendance, and higher test scores after being exposed to relevant IWB lessons in schools located in the United Kingdom. Although the majority of all IWB research findings originate in the United Kingdom, recent studies also show the United States as having similar reports of increased student engagement, school attendance, and higher test scores after being exposed to relevant IWB lessons. However, it must be noted that only 16% of U.S. schools utilize IWBs, while in the United Kingdom this number jumps to 70% (NEA, 2016). Thus, in spite of the numerous studies in recent years on IWBs in the classroom, their direct impact on learners’ achievement has been sparsely measured.

Additionally, a study conducted by the National Writing Project (NWP, 2013) used surveys on teacher perspectives of secondary school students’ research habits to examine the impact of technology on these students’ studies. It was found that 99% of teachers in this particular study agreed that access to the Internet enables students to discover a wider range of resources than would otherwise be available (NWP, 2012). Out
of the 99%, 65% agreed access to the Internet allows students to become self-sufficient researchers. Additionally, 76% of all teachers surveyed also agreed with the assertion that Internet search engines, such as Google, Bing, or Yahoo have conditioned students with the expectation to find information quickly and easily (NWP, 2012). Yet again, the direct impact on learners’ achievement was either not measured or not mentioned.

On the other hand, there have been negative reports of technology use both inside and outside of the classroom. According to Holmes and Johnson (2009), “individuals exposed over a prolonged period of time to portrayals of reality … come to develop perceptions that are consistent with these portrayals” (p. 118). These portrayals were defined by technology content. Additionally, Suozzi (2014) stated, “When reality is used predominantly as a defense against fantasy, the fantasy pole collapses into the reality one” (p. 510). In other words, the prolonged use of technology has the potential to distort a student’s way of thinking. Furthermore, research conducted by Porter (2013) suggested such quick and easy access to a wide range of information on the Internet can, in turn, create a lack of critical thinking in the user; students are not mining for data, rather they are disregarding the quality of information and its sources. Porter continued to suggest that students who overly multitask develop concentration problems and also develop a habit of skimming rather than in-depth reading and analysis. Porter concluded with the rationale that technology has created expectations of easy access to information and instantaneous answers; this phenomenon will overall hurt the adolescent learner’s grades and the development of his or her intellect. Overall, educators agree that schools need to balance the use of technology so that basic, essential learning techniques are still being
taught, such as utilizing a dictionary to determine the spelling and definition of words or navigating a library for the purpose of research (Porter, 2013).

Lastly, alongside studies of one’s mental health being negatively impacted by technology, research shows one’s physical health can also be negatively impacted. Additional studies released from OAH (2013) stated that increased media use is associated with childhood obesity; as screen time increases, physical activity decreases. OAH also stated that compared to those watching television for less than one hour a day, adolescents watching television for three or more hours a day doubles the risk for having difficulty sleeping, which in turn interferes with academic performance.

**Deficiencies in the evidence.** The biggest concern with addressing this problem is the minimal literature on how the increased technology implementation within the classroom setting has affected students’ perspectives on its use for both academic and social purposes. In other words, how students believe technology is affecting one’s achievement, as well as ways of thinking and interacting, academically and socially. Chu and Quek (2015) stated that the original vision of using computers was to augment the human intellect. However, a single technological device can only go so far in facilitating higher-level thinking. When the technology is removed, students must return to relying on the use of their human memory, inherent mental capabilities, and social skills to make use of the academic or social information gained (Chu & Quek, 2015).

What is known is there is a rapid advancement of technology and an increased exposure to technology both inside and outside the classroom. In spite of the increasing technology use within schools, researchers are suggesting that many teachers use computers to merely support their current traditional teaching practices rather than
promoting interactive constructivist practices. Funding technology in the classroom may not be delivering the desired result: a positive effect on student learning and achievement (Ertmer, 2005; Chu & Quek, 2015; Rakes, Fields, & Cox, 2006).

Socially speaking, the data points to a distorted way of thinking and acting, as well as decreased physical activity among adolescents when engaged in increased or prolonged amounts of technology use (Holmes & Johnson, 2009; Lin, 2011; OAH, 2013). However, there is also evidence that students are actively and positively engaging with their peers when technology is implemented in an academic sense within the classroom (Coffey, 2012). Yet, there is no evidence that suggests how adolescents are socially engaging with their peers when the technology is removed.

Overall, it is currently difficult to ascertain all of the potential effects of technology on students academically and socially. There is a need for further research on the impacts of technology implementation in the classroom. This study further examined the link between the use of technology and it's perceived impact on students’ academic, as well as social achievement.

**Audience.** The parties affected by this research study include those involved in the decision making and curriculum implementation of the secondary educational field: educators, administrators, district personnel, and adolescent learners. The beneficiaries of this research study also include those involved in the educational field, as well as individuals associated with an adolescent learner’s social interaction or performance, such as: family, peers, and coaches. Additionally, beneficiaries of this research study include the future recipients of these adolescent learners after graduation, such as: post-secondary or higher education institutions and employers.
Definition of Terms

**Academic performance.** Procedural and declarative knowledge acquired in an educational system; more curricular-based criteria such as grades or performance on an educational achievement test (Steinmayr, et al., 2015).

**Adolescent learners.** Students, ages 12-14 years, enrolled in school.

**Information and communication technology (ICT).** Technology used as a tool to enhance learning (Bordbar, 2010).

**Interactive whiteboards (IWB).** Interactive displays that connect to a computer (DiGregorio & Sobel-Lojeski, 2010).

**Social cognitive theory.** Individuals learn what is valued or deemed socially appropriate through observation of media; this information is internalized to create one’s beliefs, expectations, and ideals about the “real world” (Holmes & Johnson, 2009).

**Social performance.** Average amount of extracurricular activities a student participates in that does not involve technology use; average amount of behavioral or disciplinary referrals received by a given student during school hours; relating to activities that involve being with other people (The Macmillan Dictionary, 2015).

**Tablet PC.** Portable computer that uses a touchscreen as its primary input device; most tablets are slightly smaller and weigh less than the average laptop. Some tablets include fold out keyboards (Christensson, 2011).

**Technology enhanced learning (TEL).** Educational programs that incorporate various technologies with an objective of increasing learning (Dror, 2008).
Chapter 2: Literature Review

This research study is founded upon a functionalist theoretical perspective. According to Thompson (2008), a functionalist views an institution in society, such as education, as keeping the population functioning or working properly. With any disruption to the important role of education, the population will experience a negative effect.

The literature review will outline and summarize the brief points that logically support the need for the examination of technology use and awareness of its influences, as well as patterns or themes that have been discovered from the reviewed sources. Themes that have been discovered from the reviewed sources, include: increase of technology use inside the classroom, increase of technology use outside the classroom, perspectives of technology within the classroom, academic influences on adolescent learners, and social influences on adolescent learners. Specific research questions were formulated based on theory, previous research, and experience, as noted by the following literature review.

Theoretical Perspective

This research study is more specifically grounded in the theoretical perspective of behaviorism founded by B. F. Skinner. Behaviorism, when applied to educational learning theories, has led to the development of critical aspects of instruction and learning production within the classroom. Such aspects include direct instruction, classroom management, a behavioral reward system, reinforcement, and individualized instruction (Flippen, 2014). To provide an example of behaviorism in the classroom, Flippen emphasized that student performance is largely connected to instantaneous responses,
such as grades, which can then lead to praise or criticism. Flipped (2014) stated that students are willing to put forth more effort after the reinforcement of higher scores, thus creating positive results; however, the opposite is also true.

Overall, behaviorism is primarily concerned with observable and measurable aspects of human behavior, such as how one performs academically and socially. Behaviorist learning theories place emphasis on the changes discovered in human behavior as a result of the direction by external stimuli (Standridge, 2002). Flippen (2014) defined behaviorism while learning as viewing “the learner as a tabula rasa … from that point, the learner can be influenced by his environment on which he reacts and which in turn instigates another reaction” (p. 1). In other words, the learner begins generally without any mental internalization or introspection, is exposed to a specific stimulus, responds to the stimulus, and is reinforced by the stimulus. For the purpose of this research, changes in an adolescent’s academic and social behavior will be observed through the direction of technology, the external stimuli. With consideration of the functionalist perspective, if there is any disruption to the important role of education caused by technology, the students will experience a negative effect in both academic and social performance.

**Technology Inside the Classroom**

Teachers strive to keep students participating excitedly in their learning. In today’s society, technology is a top contender for engaging adolescents. Therefore, instead of teachers applying passive teaching and learning practices in the classroom, defined as giving lectures and utilizing textbooks, contemporary educators have
increasingly focused on more entertaining forms of teaching and learning with the help of technology (Chen, Nurkhamid, Wang, Yang, & Chao, 2014).

Since the invention of the computer, technology use in the classroom has been vastly increasing every year. Technological advances and a decrease in the cost of technology have resulted in nearly 93% of public school classrooms in the United States having access to the Internet, and a considerable increase in educational programs that incorporate technology into the curriculum (North Central Regional Educational Laboratory, 2005). As stated earlier, according to Purdue University (2016), Apple Computer Incorporated released the first personal digital assistants (PDAs) in 1993, essentially allowing computers to be a part of our every day routine; by 2009, 97% of classrooms had one or more computers. According to a survey conducted by Public Broadcasting Service (2013), nearly half (48%) of teachers reported using technology for online lesson plans, and 43% of teachers reported implementing the use of online videos, images, and articles. Additionally, the survey reported 45% of teachers allow access to web-based educational games or activities within the classroom (PBS, 2013). According to the U.S. Department of Education (2010), in 2009, almost 97% of teachers had one or more computers in his or her classroom, while 54% of these teachers had access to additional computers that could be brought into his or her classroom on request; this creates a ratio of 5.3 to 1 students to computers in the classroom every day. This trend is not solely applicable to secondary school, it is spreading to every level including preschool; more than half of the nation’s preschool teachers are using tablets within the classroom to aid in instruction. The number of teachers reportedly implementing technology within lesson plans has doubled that of reports from 2013 (Dobo, 2015).
Overall, technology has been maximizing its role in the classroom over the past several decades and will continue to influence the lives of both teachers and students. According to Hicks (2011), as the cost of technology decreases and the learning curve on technology doubles every 18 months, it is probable that the use of technology in schools will continue to dramatically increase over time. Hicks continued to suggest that unlike other fads that come and go in the educational arena, technology is here to stay.

Despite this increase in access to technology and teachers striving to engage students, there are infrequent reports describing the actual use of technology in the classroom (Blackwell, Lauricella, & Wartella, 2014). When researchers have assessed technology use, findings show it is often not utilized in meaningful, student-centered ways nor as an extension of the curriculum. Rather, more traditional or didactic practices are used such as integrating technology in homework assignments or for simply practicing skills. Additionally, findings show that technology is also being implemented as a “fancy chalkboard;” in other words, as a replacement for more traditional tools. Lastly, teachers are reportedly primarily using technology as a form of communication with parents or for planning purposes (Blackwell, Lauricella, & Wartella, 2014).

Additionally, Beckman, Bennett, and Lockyer (2014) conducted a qualitative study, guided by Bourdieu’s sociological theory, to collect data investigating students’ technology practices, as well as circumstantial influences, by listening to students’ perspectives. Beckman, Bennett, and Lockyer conducted 12 case studies of students in both years 9 and 10 from two Australian secondary schools. In this research, technology use at school was assessed and reported. Beckman, Bennett and Lockyer discovered that a diverse range of digital devices were accessible to students including laptops, IWBs,
digital projectors, desktop computers, video conferencing, and smart devices including iPod touches and smart phones. However, through interviews, students reported that aside from laptops, these devices were rarely used. Laptops were reportedly used for a range of activities, such as: writing, Internet research, watching videos, e-mail, learning management systems, creating PowerPoints, and creating websites. Over a two-week period of time, students used the laptops for writing and Internet research the most; writing was reportedly used 106 times, from the 12 student cases, and Internet research was used 53 times. Comparatively, the third most frequently used function was e-mail, reportedly used only 9 times.

Overall, technology in the classroom is not the only factor to consider. Researchers must also take note of exposure to technology and frequency of its use off campus. If technology is here to stay in the classroom, the same must be true for technology outside the classroom.

**Technology Outside the Classroom**

As previously noted, research is subsequently showing that media use outside the classroom is increasing, as well. Media use is defined by the U.S. Department of Health and Human Services, more specifically the Office of Adolescent Health (OAH), as time per day spent using media. Media includes: television, computers, and audio devices; specifically, it does not include talking or texting on a cellphone or using a computer for school work (OAH, 2013). According to Hicks (2011), a national report by the Kaiser Family Foundation in 2010 noted that adolescents, ages eight to eighteen, spent an average of seven hours and 38 minutes per day engaged in entertainment technology. This data is mirrored by OAH (2013) who stated that adolescents, defined as children
ages eight to eighteen, spend an average of seven and a half hours per day using such media.

Initial research on technology outside the classroom included a study conducted by Christakis, Zimmerman, DiGiuseppe, and McCarty (2004). Christakis et al. reported that the amount of exposure to television among children ages 1-3 years was later linked to attention problems. However, these reports left many researchers with questions of whether a child’s “inner speech” was damaged by exposure to television, as well. Inner speech was defined as how a child learns to think through problems, plans, and restrains impulses. Unfortunately, minimal research has expanded on the findings Christakis et al.

Later, Willoughby (2008) conducted a study to measure the prevalence, frequency, and psychosocial predictors of Internet and computer game use across 803 male and 788 female adolescents across two time periods, 21 months apart. At the first time period, participants were in either the 9th or 10th grade, considered early high school, and at the second time period, participants were in either the 11th or 12th grade, considered late high school. Regarding the Internet, 93.7% of girls and 94.7% of boys reported access on a daily basis during the first measured time period; 28.8% of girls and 80.3% of boys reported gaming on a daily basis during the first measured time period. There was a very small decrease from the first measured time period to the second in the frequency of hours spent per day on overall technology use, with girls reporting a slight decrease in gaming as they reached late high school. Overall, the Internet was reportedly only used an average of one to two hours a day, with boys reporting an additional one to two hours a day of gaming. Willoughby also briefly presented data linking the use of technology outside the classroom with computers in the home, quality of friendships, and
academic orientation. The results suggested that the greater frequency of computer use in both time periods were associated with a greater number of computers in the home, less positive friendship quality, and weaker academic orientation. Overall, boys, whose use of the Internet and gaming was consistently higher than girls, also showed more positive feelings of well-being, yet less positive friendship quality, less positive parental relationships, and less positive academic orientation. This data suggests technology use outside the home is more so negatively effecting adolescent's social and academic development and achievement.

In a recent study focused on students with similar social and economic backgrounds, Dundar and Akcayir (2014) found that 92.7% of the 206 students had Internet connection at home and 95.1% had a computer at home; however, 94.7% did not have a tablet PC. The frequency and duration of active computer use by students paralleled their use of the Internet. Surprisingly, 73.3% of students reportedly use the computer and Internet three hours or less per day. This is only a slight increase in use from the Willoughby (2008) study six years prior. However, neither study considered the use of other technology devices as defined by OAH (2013).

Additionally, Beckman, Bennett, and Lockyer (2014), which was previously mentioned, also assessed students’ use of technology outside the classroom, which was dominated by communication and interest-driven activities. It was reported by students that technology occasionally was used for communicating about school-related tasks. Rather, communicating with peers, family, and friends, playing games, listening to music, watching videos, and Internet browsing were the predominant uses of technology and were also habitual; in other words, students were engaging in similar actives every
day. These students also reported having few restrictions when using technology and stated that their parents were utilizing technology just as much. Only 2 of the 21 parents, as reported by the students, did not use technology at any time (Beckman, Bennett, & Lockyer, 2014).

Lastly, Beckman, Bennett, and Lockyer (2014) assessed and reported the use of technology outside of school for educational-related purposes, although it was rare. These educational-related purposes included: Internet research, writing, e-mail, communication, and organizational tools. Over a two-week period of time, students used technology for organizational tools the most, reportedly used 33 times, from the 12 student cases. Organizational tools were defined as alarms to wake up for school and timetables for planning for the assigned class work. Comparatively, the second and third most frequently used functions were writing and Internet research, reportedly used 28 times and 20 times (Beckman, Bennett, & Lockyer, 2014).

Overall, there is a mix of positive and negative data found in these reports. It appears that technology inside the classroom is just as prevalent as technology outside the classroom. Thus, adolescent’s exposure to and frequency of use appears to be constant.

**Perspectives of Technology Inside the Classroom**

There is an array of perspectives on technology use within the classroom among individuals. This is especially true among the differing populations of adolescents, teachers, and administrators. These perspectives are essential because they are also factored in to the decision making of technology being implemented within the classroom or not.
Adolescents’ perspectives. Due to the data illustrating the technology increases both inside and outside the classroom, researchers have investigated the adolescent learner’s perspective of such technology. Overall, the studies show a balanced mix of positive and negative perspectives. According to the research of McKenna, Conradi, Lawrence, Jang, and Meyer (2013), adolescent learners are defined as middle and high school students in the United States. When McKenna et al. interviewed 4,000 middle schoolers, students reported a dissatisfaction with technology in school based on why or how it was employed. According to McKenna et al., one student commented on the difference between using technology at home versus school; using technology outside of school was said to be exciting while using technology at school was said to be overtly boring. Ironically, these same students ranked Internet research and using computers as the most liked or enjoyable school activity, one of the most common uses of technology in the classroom. However, when studying students receiving higher education, Gikas and Grant (2013) found that mobile computing devices, such as cellphones, tablets, and social media provide enhanced student interaction with course content which was reportedly perceived as making class more enjoyable. It is interesting to see the shift in perspectives compared with the difference in age. For the most part, feedback was academically positive.

A study conducted by Baytak, Tarman, and Ayas (2011) reported that students believe their learning is improved when using technology within the classroom; these same students reported that technology made learning more fun. This is opposite of the study conducted by McKenna et al. (2013) where students reported technology as boring. One must wonder about the other unknown internal or external factors impacting these
reports. Shifting gears, Costley (2014) reported that in today’s society adolescents love to learn by doing, interacting, and discovering; engaging in this type of learning was reported as exciting. Technology may supplement this type of learning; however, hands-on activities and learning through experience does not leave much room for sitting with a hand-held device. These three studies alone show the vast differences in adolescents' opinions on the most engaging ways to learn.

More recent research conducted demonstrated that students positively perceived not only their enjoyment but their competence after engaging in technology-based lessons. However, other students reported feeling stressed or shy due to the level of engagement required during technology-based activities. Conversely, students reported the spotlight intensified or encouraged their efforts in the activities (Chen et al., 2014). Other considerations must be taken with the data discovered by Chen et al. (2014), such as differing personalities and other social factors that are obviously present; overall, some students felt safe engaging with the activities and others did not.

Additionally, Dundar and Akcayir (2014) investigated the attitudes and expectations of 206 students regarding the use of tablet computers in the classroom through questionnaires and interviews. For the most part, the results were positive; students reported that using technology was useful and made education more entertaining. Additionally, using tablet computers ended the necessity of carrying textbooks since the textbooks could now be accessed on the PCs. These findings were in agreement with other studies previously conducted by Dundar and Akcayir (2012). Lastly, most students mentioned that their homework was easier with tablet PCs and that their interest in class had increased. On the other hand, other students honestly reported
that their interest in class had actually decreased because they were distracted by using tablet computers in class. This distraction by technology even carried over into free time; the majority of students were using their tablets during breaks instead of spending time with their friends. Essentially, the students displayed less social behavior and decreased communication (Dundar & Akcayir, 2014). This study alone captured the most in-depth reports of adolescents’ perspectives yet, and future studies should replicate the method and procedures used by Dundar and Akcayir (2014) to further investigate individuals’, not exclusive to adolescents, attitudes of technology within the classroom.

Lastly, Beckman, Bennett, and Lockyer (2014), reported students’ perspectives on the value of technology, in general and for learning purposes. Being connected was the theme that emerged as the most valued use of technology. Half of the students (6 out of 12) reportedly stated that mobile technologies were devices that they could not live without. These mobile technologies were defined as iPod, iPod touches, and mobile phones. These students described these devices as ways to be constantly connected through communication and access to the Internet. Regarding the value of technology for learning, 10 out of 12 students commented that technology was a necessity for learning and preparing for the future due to technology being a norm of society. These same students also described technology as an efficiency. Additionally, 9 out of 12 students reported that technology made tasks “easier” and “quicker” to complete. Yet, the students did have concerns when using technology. Students reported that typing notes made it harder to remember lesson content compared to using pen and paper. Lastly, the use of school-issued laptops was a recurrent topic of discussion among these students. The value of school-issued laptops was higher among those students who had access to fewer
technologies at home; these students reported the laptops as valuable to their learning. On the other hand, the students who had access to a greater variety of technologies at home described the downfalls of the school-issued laptops; these students reported that the laptops made it harder to complete assignments because of the amount of blocked websites.

As stated previously, there is an array of data reporting both positive and negative adolescent perspectives of technology use for both inside and outside the classroom. The non-definitive and extreme responses of most of these studies could be attributed to a variety of factors such as quality of technology one has access to, the influence of parental, peer, or teacher's attitudes towards technology, or even an adolescent's own unique personality.

**Teachers’ perspectives.** The teacher’s perception of technology in the adolescent learner’s classroom was observed by Kopcha (2011). Kopcha (2011) found a gap between the amount of technology available in classrooms today and the use of that technology for instructional purposes. According to Kopcha, teachers are reporting that utilizing technology requires more of their time to deal with student misbehavior, such as inappropriate use of the device or activity at hand, than being able to focus on the lesson. It has also been noticed that teachers face a number of barriers when integrating technology into instruction including access, vision, beliefs, time, and professional development. Kopcha also found a clear connection between a teacher’s decision to use, or not use, technology for instruction and the degree to which teachers are aware of or experience these potential barriers. For instance, a teacher may share access to technology with one’s content area department, or a teacher may have to reserve the
computer lab in advance. Teachers also have to worry about all students having visual access to displayed content, having parental consent to use technology or view certain content at school, having the appropriate amount of time to set up and put away technology within a given lesson, as well as concern over the actual academic benefit of utilizing such instruction. With probable roadblocks, teachers become hesitant to plan for technology implementation within a lesson or even become frustrated at the thought of doing so.

Some studies have produced positive results when observing teacher perspectives of technology in the classroom. Pamuk, Ergun, Cakir, and Yilmaz (2013) sought to study the implementation of Interactive White Boards (IWBs) and tablet computers in schools, the effectiveness of those technologies on teaching and learning, as well as any problems or issues that may emerge with regard to the use of IWBs and tablet computers. The researchers gathered data from 181 teachers in 11 schools through observations, interviews, questionnaires, and focus group meetings. Over the course of the study, teachers’ perspectives of technology in the classroom increased the longer they regularly implemented IWBs and tablet computers into their lessons. Teachers also reported having an expectation or having developed a belief that IWBs and tablets would contribute to the teaching and learning process in a positive manner; the collected field data also paralleled with these reports. Additionally, from the field observations and interviews, data showed that teachers taught lesson topics more effectively and confidently when using IWBs as long as no technical problems arose during the lesson. Essentially, Pamuk et al. (2013) discovered that, with time, teachers grew more comfortable with the process of implementing technology and believed it to be a positive aid in student learning.
Additionally, in a study conducted by Kim, Kim, Lee, Spector, and Demeester (2013), 22 teachers participated in a mixed-methods study to portray how and to what extent their beliefs about the nature of knowledge and learning, effective ways of teaching, and technology integration practices were related to each other. The goal of the study was to implement new technological devices in low performing schools in the Southwest United States, while also providing professional development workshops and technical assistance to the teachers utilizing the devices. Technology was defined as laptops, IWBs, and digital cameras and recorders. Over the course of four years, data regarding teacher beliefs was collected through questionnaires, surveys, observations, and teacher interviews. The results showed that all three beliefs, the nature of knowledge and learning, effective ways of teaching, and technology integration were positively correlated with one another. The status of technology integration focused on student-centered learning rather than on the technological device itself. Both of these studies, conducted by Pamuk et al. (2013) and Kim et al. (2013), represent overwhelmingly positive perspectives from teachers about the use of technology in the classroom. However, Kim et al. attempted focus on low performing schools, yet did not discuss any data to demonstrate how technology affected the perceived or actual academic achievement by these students. When focusing on low performing schools, data needs to produce either an increase or decrease in performance results.

Lastly, Blackwell, Lauricella, and Wartella (2014) reported that educators may be influenced by their personal beliefs on technology; thus, contributing to childhood educators’ decisions of implementing technology in the lives of young children. Those with positive beliefs relied on research that demonstrated how watching quality
educational television, such as *Sesame Street*, can lead to long-term academic and social benefits. Additionally, other media-rich literacy supplements, such as popular PBS shows, resulted in children making greater gains on letter recognition, phonics, as well as story comprehension.

However, there was a contrast with those educators who relied on the research indicating the potential negative impacts of implementing technology in these young lives. Blackwell, Lauricella, and Wartella (2014) pointed out that heavy television viewing, regardless of the program, was associated with children spending less time reading, experiencing a decrease in verbal literacy and mind skills, as well as experiencing attention problems. Due to these findings, it has been recommended there be no screen time for children under the age of 2 and limited screen time for children who were older. Early childhood educators have likely been influenced by these reports and have adjusted student learning accordingly (Blackwell, Lauricella, & Wartella, 2014).

On the other hand, some teachers have reported experiencing mixed effects, both positive and negative, of technology use in the classroom. Additionally, Dunbar and Akcayir (2014) studied the attitudes, expectations, and views of eight teachers at four high schools towards the integration of tablet computers into their classes; the positive and negative dimensions of the tablet computers were also analyzed. During interviews, teachers mentioned positive aspects such as making class more entertaining and increasing sample applications, as well as the perceived positive change in some students’ classroom focus and motivation for further research on a given topic. Since technology implementation requires planning, teachers reported being forced to prepare for class ahead of time, allowing them the ability to use class time more efficiently.
However, these same teachers reported many negative aspects of integrating tablet computers. Some teachers did not feel well-equipped with using computers due to lack of professional development trainings; not having the ability to prepare quality lessons or presentations, these teachers lost time. While some students showed improved focus and motivation, others were using the Internet for extracurricular activities and sending online messages to other members of their class. Additionally, teachers reported a perceived negative impact on students’ study habits and a decrease in inquiring and analyzing abilities due to the ease of search tools on the Internet. This decrease in higher-level thinking was noticed when students would produce only one type of answer when asked a question or told to research a topic; all students were using the same technology tool, the Internet, and were clearly not thinking or questioning the topic, according to teacher reports. Lastly, teachers ultimately suggested that there should be more control over students’ access to Internet sites. As previously mentioned, Dundar and Akcayir (2014) captured the most in-depth reports of teachers' perspectives yet, as they did with the adolescents' perspectives, and future studies should replicate the method and procedures used.

As with the adolescents’ perspectives, there is an array of both positive and negative data regarding teachers’ perspectives towards technology use, as well. It is possible the mix of attitudes is influenced by external factors, as well as by personal experience and bias. External factors could include access to quality technology equipment, professional development trainings, and the amount of time provided to plan. Personal experiences and biases could also include the amount of time personally spent using technology and the extent of savviness.
**Administrators’ perspectives.** From the school administration’s perspective, there is a high expectation for teachers to enhance student learning through the incorporation of technology in the classroom. Technology that is incorporated into the classroom for the purpose of enhancing the learning process is referred to as technology enhanced learning (TEL) (Dror, 2008). Despite this, TEL programs have produced lackluster results. Many educational institutions make mistakes or thought-lacking decisions when incorporating TEL systems in the curriculum; they are dependent on the technology to increase learning, rather than to support the learning process. A common problem is that teachers rely heavily on the technology to teach students, rather than utilizing the technology as an educational tool; worse, the technology will be used for unwarranted situations (Brown, 2011; Dror, 2008). Subsequently, this encourages leisure technology use such as students messaging their peers during class or surfing irrelevant or inappropriate sites on the Internet (Dundar & Akcayir, 2014). Without proper utilization of the technology, TEL educational programs experience limited success at the cost of the administration (Dror, 2008).

Recent research has suggested that the beliefs and attitudes held by the principal also play an important role in integrating technology into school teaching. Polizzi (2011) investigated the supportive behaviors of 95 principals across 116 schools. The results suggested that principals’ attitudes were influenced by personal beliefs about technology integration, attendance at technology training courses, and competence and frequency of personal use. There was also a link in a principal’s supportive behavior and the amount of technology available for teachers in their school and the perceived competence and frequency of technology use by teachers. In other words, the more well-versed a principal
is with technology, the more support he or she will provide for the integration of technology within the classrooms at his or her school; however, this is also reliant upon the accessibility to the needed resources and the hiring or training of technology-competent and savvy teachers (Hicks, 2011; Polizzi, 2011). Polizzi also attempted to discover a link between teachers’ perspectives or perceived attitudes of technology in the classroom with that of their principal’s. However, there seems to be little to no influence on either party. This data suggests that administrators’ perspectives on integrating technology in the classroom are solely reliant on personal opinions, experiences, and perceived results.

**Additional perspectives.** Research led by Chen et al. (2014), Herrington and Standen (2000), and Sawyer (2006) concluded that in traditional classrooms, defined as inactive teaching and learning, students learn information blindly and teachers authoritatively deliver knowledge without any clues or context. Essentially, this came to be known as instructionism, and researchers found this practice to be deeply flawed. Technology was thought to be an escape from this practice and a possible way to center the classroom environment around active teaching and learning. However, the early era of computer use within classrooms was still based upon instructionism; the computers weren't taking on a facilitating role allowing adolescents to experience deeper, student-centered learning. For example, the research presented by Herrington and Standen focused on the electronic textbook. Although this advanced textbook possessed advantages over traditional instruction or lecture, it was still an instructivist learning tool. Overall, Herrington and Standen reported the tool as boring. As was observed in the
traditional classrooms, the new technology lacked authentic context and relevant activities.

It appears from these few studies that the community also has an opinion on the integration of technology in the classroom. More research needs to be conducted to fully grasp these outsiders’ perspectives. Future studies could potentially focus on stakeholders, community members, alumni, and even the parents or guardians of adolescents.

**Academic Effects on Adolescent Learners**

According to Union, Union, and Green (2015), research has supported using professional development technology models to help teachers become more confident in delivering meaningful lessons to students when using technology as means of improving student performance. However, Union, Union, and Green also identified barriers teachers commonly face when using technology in the learning process. For example, Clark, Logan, Luckin, Mee, and Oliver (2009) and Park and Ertmer (2008) identified common factors that undermine the effectiveness of technology in the learning process: a lack of a clear, shared vision; a lack of knowledge and skills; unclear expectations; and insufficient feedback. This data suggests that teachers are not receiving the proper professional development trainings to meet these expectations nor are teachers receiving observations to address any issues, yet are still under pressure to produce increased academic achievement results.

Research focused on the actual academic performance of students has produced mixed results. Herrington and Standen (2000), who implemented and observed technology within the classroom, discovered tools, such as the electronic textbooks, were
considered as “boring.” They also discovered that students experienced difficulty applying the content knowledge in real life. Electronic textbooks reportedly lacked authentic context and relevant activities which could be a contributing factor to the experienced difficulties. On the other hand, Chen et al. (2014) hypothesized positive learning behaviors and performance when implementing similar technology activities within the classroom; yet, students reported feeling stressed during these activities. However, the stress didn’t have any measurable academic affects on their performance. The outcomes of this activity were not included in the results nor was the norm performance without technology. The positive learning behaviors resulting in stronger learning outcomes was also hypothesized, and was also not measured nor reported in this study.

Furthermore, Costley (2014) presented a synthesized report of several schools finding positive effects of technology on academic performance. While most of the results were subjective or qualitative, some studies presented data of students demonstrating the ability to recall information at an increased rate when technology was implemented as a supplemental activity (Costley, 2014; Herron, 2010). Additionally, Costley supported his position of the academic need for technology in the classroom by presenting research from Lin and Yang (2011). Although Lin and Yang conducted their study on students taking a college English class, the results were positively beneficial. Students enrolled in this course engaged in Wiki technology, an online tool for students to post relevant discussion passages while also reading and responding to the posts of their classmates. The Wiki technology, which was implemented in hopes of students improving their writing skills over the duration of the English class, demonstrated an
overall improvement of vocabulary, spelling, and sentence structure (Lin & Yang, 2011). Costley suggested similar methods could be applied to secondary students and potentially produce similar results. The findings by Lin and Yang should also be compared to the positive findings by Gikas and Grant (2013), who also focused on higher education students. It is reasonable to conclude there is some correlation with the methods of technology use being implemented with these students that could be replicated with secondary students to potentially further produce positive outcomes.

Additionally, Lim, Zhao, Tondeur, Chai, and Tsai (2013) discussed the gaps between increased funding to provide modern technology in schools and student achievement. It was suggested that schools are under significant pressure by policymakers and tax payers to ensure technology is used for teaching and learning. Additionally, the community wants to see learning outcomes that are enhanced from the considerable investment in technology within schools. Lim et al., briefly mentioned two studies which produced statistically significant findings that positively associated increased levels of technology use and school achievement. However, it was highlighted by all the researchers mentioned that isolating technology among many other factors that might affect school achievement was challenging. Lim et al. realized the need for further research, as previously discussed, on the perspectives of community members and how this is potentially impacting academic achievement, as well as on academic achievement alone, without the pressure to produce expected results.

When assessing the academic effects of technology on adolescent learners, there is not enough substantial data to conclude that technology alone is beneficial in the classroom. Nor is there enough data to conclude that technology is merely a distractor
and hindering student learning. More research needs to be conducted that is void of as many additional external contributors as possible. Such research could include focus on supplemental activities to enhance the comprehension of a lesson without technology.

**Social Effects on Adolescent Learners**

**Social cognitive theory.** According to Gupta and Bostrom (2012), social cognitive theory supports that “learning interventions affect learning outcomes through reflection on observations” (p. 2). This theory suggests that individuals learn what is valued or deemed socially appropriate through observation of media characters’ action and behaviors. This information is internalized to create one’s beliefs, expectations, and ideals about the “real world” (Holmes & Johnson, 2009). Essentially, social cognitive theory runs parallel to behaviorism and functionalism, as described previously. Individuals have a vicarious capability of engaging in observational learning rather than learning through their own actions and consequences of such. In today’s society, behavioral models are not limited to one’s immediate environment or social circle; the symbolic models of technology and the media are prominent (Holmes & Johnson, 2009). Social cognitive theory also encompasses the tenet of the role individual differences play in what is attended to and internalized from media exposure (Holmes & Johnson, 2009). In other words, the influence of media messages on individuals is varied; it is subject to an individual’s prior understanding of reality, and one’s ability and will to integrate the media message into his or her own reality (Holmes & Johnson, 2009). As adolescents are constantly exposed to technology inside and outside the classroom, they are unconsciously attempting to organize the received content into his or her own unique perspective of reality.
According to Lin (2011), social cognitive theory suggests that aggressive thoughts and behaviors are learned through enactive learning, past direct experiences, and observational learning, observing behaviors exhibited by others. Through these learning experiences, expectations and beliefs are formed that guide future social interactions and behavior (Lin, 2011). Researchers have conceptualized video games as mediated enactive experiences, and video watching as mediated observational experiences; video games allow players to freely and safely experience their behavior and the consequences of such, in a mediated environment (Lin, 2011). The enactive nature of video games assumed by the interactive player is suggested to be key in producing aggressive effects. The two types of learning defined by social cognitive theory, enactive and observational, are also relevant to identification. Enactive learning in video games allows the player to learn through direct experience, trial-and-error performances that are reinforced by rewards and punishment. Observational learning in video games allows the player to model learned experiences without suffering costly or fatal consequences (Lin, 2011). Mass media provides audiences with these styles of interactive learning, providing a guide for future behavior. Additionally, according to social cognitive theory, interactive media increases self-relevance through enactive learning; “for example, an enemy attacking a character is perceived at a more personal level by a game player (enactive experience) than by a video viewer (observational experience)” (Lin, 2011, p. 26). In other words, adolescents are learning how to negatively react or positively respond to social situations through such media experiences as gaming which typically occur outside the classroom.
**Social effects inside the classroom.** Chen et al. (2014) and Gupta and Bostrom (2012) stated that social interactions involving students observing the performance of classmates through whole-class interactive technology, could potentially affect peer learners who are engaged in vicarious learning. Students could possibly be reinforced to continue achieving high or low scores based on their perception of their performance compared to their peers. This could also affect how students verbally react or respond to their peers inside the classroom. Gupta and Bostrom initially “indicated that enactive enabled and technology-mediated learning [would] significantly and positively influence learning;” however, the results of research by Chen, et al. showed no significant difference in learner behaviors (p. 23). More research needs to be conducted in diverse classroom settings to potentially discover learners’ academic performance being affected by that of technology lessons forcing social engagement.

However, research presented by Coffey (2012) showed technology fostering positive social interactions among students when used in an educational sense. Peer-led discussions of literature included such technology as wikis, online literature circles, and online book clubs. This type of interaction produced increased student engagement and motivation to continue reading and critically thinking about the text. The problem with the study by Coffey is that this type of mixed academic and social engagement was not in real time, rather on the student's own time. The students aren't forced to respond or engage in discussions with minimal time to process the content, rather the students have ample amount of time to read, ponder, and produce a well-thought response. With this type of social interaction not reflecting real-world scenarios, more research needs to be
conducted on face-to-face social interactions revolving around academics, similar to that of Dundar and Akcayir (2014).

Lastly, Dundar and Akcayir (2014), found a student-reported significant difference in their personal learner behaviors. After implementing the use of tablet computers in the classrooms of 206 students, behavior and attitudes were analyzed. Students reported being more distracted in the academic and social setting at school. During breaks, students would use their tablets instead of spending time with their friends; as antisocial behavior increased, communication with peers decreased. This data is similar to that of Willoughby (2008), as noted previously, who also presented data linking the use of technology to negative social effects on adolescent learners. Willoughby (2008) suggested that the greater frequency of computer use was associated with a greater number of computers in the home, less positive friendship quality, and weaker academic orientation. Male adolescents, specifically, reported more positive feelings of well-being, yet less positive feelings towards friendship quality, parental relationships, and academic orientation when compared with girls.

It is safe to conclude with the data at hand that technology impacts an adolescent’s social behavior. In large part, this influence results in negative or unwanted reactions. Unfortunately, the data is very scattered and more research needs to be conducted to concentrate on adolescents’ social performance, as measured by engagement with peers and types of reactions or responses, when subsequently exposed to technology at an increased frequency and prolonged duration inside and outside the classroom.
Limitations and Areas for Further Research

There is limited research concerning how the increased implementation of technology within the classroom setting has affected students’ perspectives on its use for both academic and social purposes. Since technology use in the classroom has become the norm in our current educational system, most of the research pertains to how to appropriately educate the teachers on different forms of technology use, the best types of technology to implement, as well as how to effectively engage students through technology use in the classroom (Chen et al., 2014). The push for technology in the classroom has been confirmed through this research. However, it was deemed important to delve into this phenomenon further to discover how students are perceiving this push for technology in the classroom and if it is negatively effecting these students academically and socially; two areas important to an adolescent’s development and success.

Purpose Statement

This research study explored technology use both inside and outside the classroom as it relates to the academic and social lives of adolescent learners. Although studies have indicated that there are many benefits to using technology in the classroom (DiGregorio & Sobel-Lojeski, 2010; NEA, 2016; NWP, 2012), studies have also shown that access to instant information can lead to a lack of critical thinking and an inability to retain or retrieve authentic knowledge (Porter, 2013; Suozzi, 2014). The question remains as to whether or not there are definitive negative impacts of classroom technology use, academically and socially, and how these negative impacts are manifested. Before investigating the impact of such technology use, however, it is important to gain an
understanding of exactly what technology use looks like for the middle school population. Therefore, the focus of this study is on the amount of technology use inside and outside the classroom for adolescent learners, ways in which they use technology, their perceptions of technology use, and their engagement with peers via technology.

**Research Questions**

**Quantitative Research Questions**

1. What is the amount of exposure to and frequency of technology utilization within the classrooms of adolescent learners, ages 12 to 14, as reported by their teachers?

2. In what ways are students utilizing technological devices in the classroom, as reported by their teachers?

**Qualitative Research Questions**

1. What are adolescent learners’ attitudes toward and opinions about technology use in the classroom?

2. How do adolescents report that they are using technology for academic purposes both inside and outside the classroom?

3. How do adolescents report that they are engaging with peers through technology versus face-to-face?

**Mixed Methods Research Question**

1. To what extent does the quantitative and qualitative data regarding technology use in the classroom converge?
Chapter 3: Methodology

Participants

Quantitative. The participants of this research study were comprised of 26 general and special education teachers at a large suburban junior high school in the southwest United States. There are 795 adolescent learners, aged 12-14 years old, enrolled at the school under study, with a teacher to student ratio of 28:1. The school is comprised of 795 students, both males and females; there are 311 Hispanics, 300 African Americans, 130 Whites, 36 Asians, and 18 identified as Other (American Indian, Pacific Islander, and biracial or multiracial). There are 52 teachers employed by the school under study; 37 females and 15 males; there are 4 Hispanics, 16 African Americans, 30 Whites, and 2 identified as Other. Out of the 52 teachers employed, 36 reported having a Bachelors degree, 14 reported having a Masters degree, and 2 reported having a Doctorate degree; there are 19 beginning teachers, 21 with 1-5 years of experience, 8 with 6-10 years of experience, 1 with 11-20 years of experience, and 3 with over 20 years of experience. Twenty-six of these 52 teachers participated. Sampling was convenience based on the work setting of the researcher.

Qualitative. The participants for the qualitative portion of this research study were the same as those described previously, but only 12 adolescent learners were recruited for the interviews. Twelve students, five 7th graders and seven 8th graders, were randomly chosen to participate in the interview portion of the proposed study.
Instruments

The first data-collection instrument used was a combination of the Teacher Technology Integration Survey (TTIS) created by Vannatta and Banister (2008) and a short scale created by Gaudreau, Miranda, and Gareau (2013) (see Appendix A).

The first instrument, the TTIS, “was developed to measure six constructs of teacher technology integration: (a) Risk-taking behaviors and comfort with technology, (b) Perceived benefits of using technology in the classroom, (c) Beliefs and behaviors about classroom technology use, (d) Teacher technology use, (e) Facilitation of student technology use, and (f) Teacher support for technology use and access to technology” (Vannatta & Banister, 2008). The original survey was comprised of 61 items with four additional demographic items (see Appendix B).

An expert panel of five educators evaluated the content validity of the TTIS. Vannatta and Banister (2008) reported that the items often had little discrimination, despite several items with low loadings. It was determined the content of the TTIS was valid, as well as important with respect to technology integration (Vannatta & Banister, 2008).

The researchers also reported that the results of the confirmatory factor analysis determined the 61 items as fairly reliable entities (Vannatta & Banister, 2008). It was confirmed that the TTIS provides a reliable and multi-dimensional measure of teacher technology integration and provides school leaders with a reliable picture of technology integration among teachers. Additionally, internal reliability, calculated by Cronbach’s alpha for each generated factor, was proven high among a majority, but not all, of the items (Vannatta & Banister, 2008).
For this study, 10 items from the Student General Use subscale of the measure were used. These items can be found as Survey Questions 4-13. Some of these items were slightly edited in wording, as well as customized to reflect specific software and applications used in the school under study. Scores on this measure will be calculated by reviewing each survey response separately.

The second instrument, the Gaudreau, Miranda, and Gareau (2013) short scale, was created to measure likely prototypical laptop behaviors among university students. The original survey is comprised of 8 items within one scale (see Appendix D).

The validity of Gaudreau, Miranda, and Gareau (2013) was also determined as present. The results of the short scale indicated that laptop behaviors could be grouped into two dimensions: (a) school related, and (b) school unrelated laptop utilization. Additionally, the researchers tested measurement invariance of this model “within the confines of a multiple group confirmatory factor analysis” (Gaudreau, Miranda, & Gareau, 2013, p. 249). Therefore, it was stated by the researchers that most parameters of the model were invariant thus assuming validity.

The Gaudreau, Miranda, and Gareau (2013) short scale was also proven to be reliable. The researchers ran two studies, implementing the same short scale within both, and produced the same results each time. In both studies, school unrelated laptop utilization was significantly associated with lower levels of self-reported academic achievement and satisfaction. The researchers stated the short scale to be immune to sudden shifts in technological trends due to the prototypical examples of laptop utilization being less prone to become completely obsolete (Gaudreau, Miranda, & Gareau, 2013).
For this study, four out of eight items from the measure were used. These items can be found as survey questions 14-18. Some of these items were slightly edited in wording, as well as customized to reflect specific software and applications used in the school under study, for purposes more relevant to the proposed research. Scores on this measure will be calculated by reviewing each survey response separately.

Additionally, to ensure the reliability of answers to survey items measuring student use, it must be noted that a program called GoGuardian is installed on all students’ and teachers’ laptops and computers. GoGuardian tracks and records student activity, providing teachers the opportunity to view the live screens and history of all students enrolled in their class. This program allows teachers to know if students are participating with the task at hand versus surfing the web, visiting social networking sites, or engaging in any other off task behavior.

**Procedures**

A convergent parallel design was utilized in this study. This type of design was utilized because the researcher used concurrent timing to implement the two data strands, quantitative and qualitative, during the same phase of the research process. Additionally, both strands were prioritized equally and were kept independent during analysis; the results were then mixed during the overall interpretations (Creswell & Plano Clark, 2011). In other words, quantitative data collection and analysis occurred separate from the qualitative data collection and analysis. Once analysis was complete for each strand, the two strands came together for comparison.

The data collected in this study was then merged. After the collection of both quantitative and qualitative data, the researcher mixed the two strands during the analysis
stage. The researcher first quantitatively analyzed the quantitative data and qualitatively analyzed the qualitative data; then, the researcher merged the two sets of results through a combined analysis. The researcher was then able to further analyze the results by relating them to each other; this is demonstrated through a matrix that facilitates comparisons and interpretations (Creswell & Plano Clark, 2011).

**Quantitative data.** The unit of intended analysis was 52 general and special education teachers employed at one junior high campus, Grades 7-8; fifty two teachers is the total number of teachers employed at said school. A minimum of 26 participants from the total 52 was desired, as this is half, or 50%, of the teacher population that was contacted. Sampling was nonprobability convenience based on the work setting of the researcher. All teachers had an equal chance of participating in the study. All 52 teachers were initially contacted via district e-mail. The researcher provided these potential participants with an attached consent form via e-mail, as well. These potential participants had the option to scan and return the consent form electronically, to place it in the researcher’s personal mail box in the teacher’s lounge, or to hand it to the researcher face-to-face, within a two-week maximum time frame. One week after the initial e-mail, the researcher again contacted the 52 teachers with a reminder e-mail and attached consent form. Upon collection of all consent forms, the participants were given a signed copy of their consent form, and the surveys were distributed via district e-mail through Survey Monkey (https://www.surveymonkey.com/r/SWLHTV7). The researcher asked participants to have the survey completed within one week. Out of the 52 teachers contacted, 26 teachers opted to participate.
As previously stated, the data-collection instrument used, one quantitative survey, was a combination of the Teacher Technology Integration Survey (TTIS) created by Vannatta and Banister (2008) and a short scale created by Gaudreau, Miranda, and Gareau (2013).

**Qualitative data.** The unit of analysis was 12 adolescent learners, aged 12-14 years old. Sampling was convenience based on the work setting of the researcher. Students, five 7th graders and seven 8th graders, were randomly chosen to participate in the interview portion of the proposed study. Parents were contacted through the weekly campus Parent Teacher Association (PTA) e-mail via a memo written by the researcher regarding the purpose of the study with an attached parental-consent form. The parents had one week to return the parental-consent form to the researcher via e-mail or face-to-face. One week after the initial e-mail, the researcher again contacted the PTA with a reminder e-mail and attached consent form. Thirteen parents returned the parental-consent form. The researcher then reached out to the 13 specific adolescents to obtain their assent. With one student absent the week the researcher collected assent, the 12 participants were automatically selected. Upon collection of all assent forms, the interview dates were scheduled.

During the interviews, a series of six open-ended questions were asked in order to answer Research Questions 3, 4, and 5: How are adolescents using technology for academic purposes? What are adolescent learners’ attitudes toward and opinions about technology use in the classroom? To what extent are adolescents engaging with peers through technology versus face-to-face? The specific questions asked in each interview are listed on the Interview Protocol Form (see appendix H). This protocol was validated
using a formative and summative review process and also underwent a pilot test. The formative committee consisted of three experts in the field who were an aid to the researcher by either informing or helping to create the interview questions to be asked. The summative committee also consisted of three different experts in the field who validated or verified the legitimacy of the interview questions. Overall, the formative committee helped formulate the questions while the summative committee approved the questions. During the pilot test, the interview questions were administered to a small number of potential participants; written feedback was asked of the questions. The interview questions were then revised based on this written feedback by enlisting the help of the formative and summative committees. These pilot participants were excluded from the final sample of the study.

The interviews were conducted one week after the parental-consent and student-assent forms were received, the participants had been selected, and the conference room was booked. The parents were given a signed copy of their parental-consent forms via e-mail prior to the interview. The participants were given a signed copy of their student-assent forms upon arrival of the interview. The conference room, a private room located in the administration office, was booked to ensure privacy and confidentiality. The conference room was booked for three full days to ensure enough time was allotted to reach all interviewees for a time slot of approximately 30 minutes each. However, each interview lasted approximately 15 minutes each and only two days were needed to reach all participants.

**Data analysis.** After submission of the surveys, the quantitative interval data set was recorded automatically by Survey Monkey. The results were generated and displayed
in charts and graphs for an easier understanding. A data tabulation of the frequency
distribution was also created for the researcher to determine if the scores were entered
correctly, if scores were high or low, how many scores were in each category, and the
spread of the scores. A percent distribution was also created to display the proportion of
participants who were represented within each category. To describe the data set, the
mean, minimum and maximum values, the median, and the mode were calculated and
reported for all levels of measurement (Fink, 2002).

Specifically, the researcher looked for the mean amount of exposure to and
frequency of technology use and specific uses of technology, among all classrooms. The
researcher will also looked for trends among the amount of exposure to and frequency of
technology use, as well as specific uses of technology, across classrooms (Fink, 2002).

The qualitative data was collected through recording the interviews with the
adolescent learners and was transcribed through Rev, a private transcription company.
The researcher coded for trends among responses to the six open-ended interview
questions. Qualitative data analysis involves coding the data, dividing the text into small
units, such as phrases or sentences, assigning a label to each unit, and grouping the codes
into relevant themes (Creswell & Plano Clark, 2011). The themes can then be composed
and assigned by the researcher or can come from the exact words of the participants,
otherwise known as in vivo coding, depending on the similarities of responses from the
interviewees (Creswell & Plano Clark, 2011). For the purposes of this study,
phenomenological analysis took place after the themes were created. In
phenomenological reports, the essence or the themes of the participants’ experience is
simply the common experiences of the individuals. Similar to composing and assigning
themes, the essence locates significant statements in the interview transcripts, develops meaningful units that aggregate theme statements, and develops a description of what the individuals have experienced (Creswell, 2016). The essence is reported as a discussion within the results report; essentially, in phenomenological reports, a detailed description of how individuals commonly experience the phenomenon is included (Creswell, 2016).

The researcher also utilizing the Modification of the Stevick-Colaizzi-Keen Method of Analysis and Phenomenological Data (Moustakas, 1994). Through interviewing the students, the researcher was able to obtain a full description of the experiences of the phenomenon. Using the transcripts, each statement was considered with respect to the significance in describing the experience, and each relevant statement was recorded among the necessary, predetermined concepts and categories, as previously mentioned through the process of axial coding. Each non-repetitive or non-overlapping statement was listed separately and then clustered into themes. Each theme was then described by the texture of the experience and reflected upon by the researcher.

The mixed methods research was addressed through merging and comparing the two data sets. Essentially, how does the reported amount and type of technology use in the classroom compare with student perspectives of technology use regarding academic and social experiences? What results emerge from comparing the exploratory qualitative data about students’ perspectives of technology use impacting academic and social experiences with the outcome quantitative instrument data measured on technology use in the classroom?

A side-by-side comparison for merged data analysis was a relevant approach to present the quantitative and qualitative findings of this study. To be easily compared, this
is discussed in the results report. The quantitative results are reported first, followed by the qualitative results in the form of quotes and common themes (Creswell & Plano Clark, 2011). The merging of data simultaneously took place and is also discussed in the results report.

**Limitations**

A convergent parallel design was utilized in this study. Limitations from this type of design are typically related to external validity and the lack of generalizability of the results since the study is not experimental. Other limitations include the need for much effort and expertise from the researcher because of the equal weight given to each data type. There are also potential consequences of having different sample sizes when merging the two data sets, as is present in this study. It can be additionally challenging to merge two sets of different data and their results in a meaningful way; the same concepts must be addressed by both methods. Lastly, researchers may face the question of what to do if the results of the two data sets do not agree (Creswell & Plano Clark, 2011). Additional restrictions that potentially affected the dissertation outcome includes teachers not providing accurate or honest responses to the survey, students not answering or only partly answering interview questions with resistance to be probed further, or participants not understanding the directions or items asked in the surveys or interviews.
Chapter 4: Results

This research study explored technology use both inside and outside the classroom as it relates to the academic and social lives of adolescent learners. Twenty-six teachers were surveyed, and 12 students were interviewed in a large suburban junior high school in the southwest United States. The focus was on the amount of technology use both inside and outside the classroom for adolescent learners, specific ways in which adolescent learners use technology, their perceptions of technology use, and their engagement with peers via technology.

This chapter will begin by restating the research questions that were developed for this study. The quantitative data analysis, as collected through teacher surveys, will then be presented. The qualitative data analysis, as collected through adolescent learner interviews, will follow. Lastly, the merging and comparing of the two data sets will be presented as the mixed methods analysis.

Research Questions

Quantitative Research Questions

1. What is the amount of exposure to and frequency of technology utilization within the classrooms of adolescent learners, ages 12 to 14, as reported by their teachers?

2. In what ways are students utilizing technological devices in the classroom, as reported by their teachers?

Qualitative Research Questions

1. What are adolescent learners’ attitudes toward and opinions about technology use in the classroom?
2. How do adolescents report that they are using technology for academic purposes both inside and outside the classroom?

3. How do adolescents report that they are engaging with peers through technology versus face-to-face?

Mixed Methods Research Question

1. To what extent does the quantitative and qualitative data regarding technology use in the classroom converge?

**Quantitative Data**

As previously stated, there are 52 teachers employed by the school under study; 37 females and 15 males; there are 4 Hispanics, 16 African Americans, 30 Whites, and 2 identified as Other. Out of the 52 teachers employed, 36 reported having a Bachelors degree, 14 reported having a Masters degree, and 2 reported having a Doctorate degree; there are 19 beginning teachers, 21 with 1-5 years of experience, 8 with 6-10 years of experience, 1 with 11-20 years of experience, and 3 with over 20 years of experience. Twenty-six of these 52 teachers participated. Table 1 presents this data.

For the quantitative data set, the charts generated by Survey Monkey were reviewed to determine if the scores were recorded correctly, if scores were high or low, how many scores were in each category, and the spread of the scores. A percent distribution was also generated to display the proportion of participants who are represented within each category. To describe the data set, the mean, minimum and maximum values, the median, and the mode was calculated and reported for all levels of measurement.
Table 1

Demographic Characteristics of Teacher Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>73</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>African Americans</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Whites</td>
<td>21</td>
<td>81</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors</td>
<td>24</td>
<td>92</td>
</tr>
<tr>
<td>Masters</td>
<td>1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Years of Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning (0 years)</td>
<td>1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>1-5 years</td>
<td>9</td>
<td>35</td>
</tr>
<tr>
<td>6-10 years</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>11-20 years</td>
<td>10</td>
<td>38</td>
</tr>
<tr>
<td>21 + years</td>
<td>0</td>
<td>&gt;1</td>
</tr>
</tbody>
</table>

Note: Percentages do not equal 100 due to rounding; N = 26.

Quantitative Research Question 1. The first research question asked, “What is the amount of exposure to and frequency of technology utilization within the classrooms of adolescent learners, ages 12 to 14, as reported by their teachers?” The majority (62%) of the 26 teacher participants reported that they integrated technology into lessons several
times in a week within the classrooms of adolescent learners, ages 12-14. Thirty-five percent of teachers reported integrating technology into lessons several times in a month, and only four percent indicated integrating technology into lessons several times a year. No teachers indicated integrating technology into their lessons any less than several times a year. These findings are presented in Table 2.

Table 2

Responses to Survey Question, “How Often Do You Integrate Technology into Your Lessons?”

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Several times a year</td>
<td>1</td>
<td>3.85</td>
</tr>
<tr>
<td>Several times a month</td>
<td>9</td>
<td>34.62</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>16</td>
<td>61.54</td>
</tr>
</tbody>
</table>

Note: N = 26.

The majority (nearly 58%) of teachers reported providing students with technological devices to use for participating in lessons and/or completing assigned work several times in a week. Twenty-three percent of teachers reported providing students with technological devices to use for participating in lessons and/or completing assigned work several times a month. The remaining 19% of teachers reported providing students with technological devices to use for participating in lessons and/or completing assigned work several times a year or less. These findings are presented in Table 3.
Table 3

Responses to Survey Question, “How Often Do You Provide Students with Technological Devices to Use for Participating in Lessons And/or Completing Assigned Work?”

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Several times a year</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times a month</td>
<td>6</td>
<td>23.08</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>15</td>
<td>57.69</td>
</tr>
</tbody>
</table>

Note: N = 26.

Forty-two percent of teachers reportedly allowed students to use their own technological devices for participating in lessons and/or completing assigned work several times a month. Thirty-one percent of teachers reportedly allowed students to use their own technological devices for participating in lessons and/or completing assigned work several times in a week. Twelve percent of teachers reportedly allowed students to use their own technological devices for participating in lessons and/or completing assigned work several times a year. Another 12% reportedly allowed students to use their own technological devices for participating in lessons and/or completing assigned work once or twice a year. Four percent of teachers reportedly never allowed students to use their own technological devices for participating in lessons and/or completing assigned work. These findings are presented in Table 4.
Table 4

*Responses to Survey Question, “How Often Are Students Allowed to Use Their Own Technological Devices for Participating in Lessons And/or Completing Assigned Work?”*

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>3.85</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times a year</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times a month</td>
<td>11</td>
<td>42.31</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>8</td>
<td>30.77</td>
</tr>
</tbody>
</table>

Note: N = 26.

**Quantitative Research Question 2.** The second research question asked, “In what ways are students utilizing technological devices in the classroom, as reported by their teachers?” Technological devices are reportedly being used in the classroom in a variety of ways. Several times a week students are utilizing technological devices in the classroom, as reported by most of the teachers, to use a word processor for writing assignments (39%). Several times a month students are utilizing technological devices in the classroom, as reported by most of the teachers, to use the Internet to research topics and gather information (31%), to use the Internet to communicate and collaborate with peers (42%), to use presentation software to present information (39%), and to use writing tools in a word processor to improve writing quality (27%). Several times a year students are utilizing technological devices in the classroom, as reported by the majority of teachers, to produce multimedia projects that use digital images, video, and/or audio
(38%). Once or twice a year students are utilizing technological devices in the classroom, as reported by the majority of teachers, to produce pictures or artwork (31%). Lastly, the majority of teachers reported students are never utilizing technological devices in the classroom to produce digital newsletters, flyers, brochures, etc. (35%), to use spreadsheets to create graphs or charts, as well as to organize and analyze data (50%), nor to produce web pages or websites (48%); and to take notes (31%).

Table 5

Responses to Survey Question, “In Your Class, How Often do Students Navigate on Websites That Are Unrelated to School Work?”

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>3.85</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times a year</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times a month</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>16</td>
<td>61.54</td>
</tr>
</tbody>
</table>

Note: N = 26.

However, students are also utilizing technological devices in the classroom in ways that are unrelated to school work. Sixty-two percent of teachers reported that students are navigating on websites that are unrelated to school work several times in a week. Twelve percent of teachers reported that students are navigating on websites that are unrelated to school work several times a month. Twelve percent of teachers reported that students are navigating on websites that are unrelated to school work several times a
year. Twelve percent of teachers reported that students are navigating on websites that are unrelated to school work once or twice a year. Four percent of teachers reported that students are never navigating on websites that are unrelated to school work. These findings are presented in Table 5.

Fifty-four percent of teachers reported that students are visiting social networking sites several times in a week. Eight percent of teachers reported that students are visiting social networking sites several times a month. Eight percent of teachers reported that students are visiting social networking sites several times a year. Eight percent of teachers reported that students are visiting social networking sites once or twice a year. Twenty-three percent of teachers reported that students are never visiting social networking sites. These findings are presented in Table 6.

Table 6

Responses to Survey Question, “In Your Class, How Often do Students Visit Social Networking Sites?”

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>6</td>
<td>23.08</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Several times a year</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Several times a month</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>14</td>
<td>53.85</td>
</tr>
</tbody>
</table>

Note: N = 26.
Fifty-eight percent of teachers reported that students are watching videos or pictures unrelated to school work several times in a week. Twelve percent of teachers reported that students are watching videos or pictures unrelated to school work several times a month. Eight percent of teachers reported that students are watching videos or pictures unrelated to school work several times a year. Fifteen percent of teachers reported that students are watching videos or pictures unrelated to school work once or twice a year. Eight percent of teachers reported that students are never watching videos or pictures unrelated to school work. These findings are presented in Table 7.

Table 7

Responses to Survey Question, “In Your Class, How Often do Students Watch Videos/Pictures Unrelated to School Work?”

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>4</td>
<td>15.38</td>
</tr>
<tr>
<td>Several times a year</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Several times a month</td>
<td>3</td>
<td>11.54</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>15</td>
<td>57.69</td>
</tr>
</tbody>
</table>

Note: N = 26.

Lastly, 50% of teachers reported that students are reading text or instant messages several times in a week. Four percent of teachers reported that students are reading text or instant messages several times a month. Fifteen percent of teachers reported that students are reading text or instant messages several times a year. Fifteen percent of teachers
reported that students are reading text or instant messages once or twice a year. Fifteen percent of teachers reported that students are never reading text or instant messages. These findings are presented in Table 8.

Table 8

*Responses to Survey Question, “In Your Class, How Often do Students Read Text or Instant Messages?”*

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>4</td>
<td>15.38</td>
</tr>
<tr>
<td>Once or twice a year</td>
<td>4</td>
<td>15.38</td>
</tr>
<tr>
<td>Several times a year</td>
<td>4</td>
<td>15.38</td>
</tr>
<tr>
<td>Several times a month</td>
<td>1</td>
<td>3.85</td>
</tr>
<tr>
<td>Several times in a week</td>
<td>13</td>
<td>50.00</td>
</tr>
</tbody>
</table>

Note: N = 26.

**Qualitative Data**

As previously stated, there are 795 adolescent learners, aged 12-14 years old, enrolled at the school under study, both males and females. The researcher was unable to find any recorded data for the specific number of both males and females enrolled. There are 311 Hispanics, 300 African Americans, 130 Whites, 36 Asians, and 18 identified as Other (American Indian, Pacific Islander, and biracial or multiracial). Twelve of these 795 adolescent learners participated. Table 9 presents this data in relation to the 12 student participants including identified gender.
Table 9

Demographic Characteristics of Student Population

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
<td>8</td>
<td>67</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
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<td></td>
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<td>Hispanic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>African</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Americans</td>
<td>10</td>
<td>83</td>
</tr>
<tr>
<td>Whites</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Percentages do not equal 100 due to rounding; N = 12.

The qualitative data was collected through conducting and recording interviews with 12 adolescent learners and was transcribed through Rev. The researcher coded for trends among responses to the six open-ended interview questions. Qualitative data analysis involved coding the data, dividing the text into small units, such as phrases or sentences, assigning a label to each unit, and grouping the codes into relevant themes (Creswell & Plano Clark, 2011). The themes were composed and assigned by the researcher and also come from the exact words of the participants, otherwise known as in vivo coding, due to the similarities of responses from the interviewees (Creswell & Plano
Clark, 2011). The common units and themes created were specific to each research question.

**Qualitative Research Question 1**

The first qualitative research question asked, “What are adolescent learners’ attitudes toward and opinions about technology use in the classroom?” A note to the reader: Four months prior to this study, individual Chromebooks were provided by the school district to this campus and were assigned to every learner. These Chromebooks were not allowed to be taken off campus and were for in-school use only. Overall, two themes emerged in response to this research question: technology as aid and technology as ineffective.

**Technology as aid.** Responses from half, or six, of the participants emerged as technology being an aid. Some of the responses included: “I think it’s good.” “It helps with my learning.” “It helps maintain focus.” “It’s more interesting than paper.” “It’s more interesting than using textbooks.” “It’s more interesting than listening to a lesson.” “It saves paper.” “It’s customizable.” “You can’t lose stuff.” “Everything is in one place.” “You can stay organized.” “I can review a lesson on my own time.” “It creates student-centered learning.” “It’s more accessible.” “You can turn in assignments later.” “It’s faster.” “It’s more engaging.” “It’s fun.” Specifically, Participant 8 stated,

I think it's definitely more engaging for students because a lot of people are just so done with all of the pen and paper and it's just a lot. It makes the learning environment a lot more fun and just ... I don't know, maybe easier for students to learn or at least that is what it attempts.

Participant 9 also added,
I like it a lot better, I don't know about other people, but one of the reasons why I think kids would like it more is because of our generation, our era, it's just technology has become kind of a thing that we're used to now, so I guess it just makes it more enjoyable for us.

**Technology as ineffective.** Responses from a minority of the participants, four total, emerged as technology being ineffective. Participant 1 stated, “I don't think it makes much difference. It makes it kind of easier sometimes, but, actually, it depends on what we are doing — some [assignments] are harder, some are easier for the computer. Not everybody, I don't think, likes it.” Participant 2 replied, “I get bored … Also, well, I think a lot of the time some kids would play games and stuff like that which is kind of hard for teachers, I think.” Participant 5 replied, “I don’t really learn by just typing notes… I don’t really like that we have Chromebooks… I get easily distracted.” Participant 6 stated that the use of Chromebooks in school was “mediocre” and “distracting,” and also pointed out “it can malfunction” as opposed to paper.

**Discrepant responses.** Lastly, there were some responses that did not fit into either of the two themes. Participant 4 stated,

I think that [using technology] should depend on the learner themselves because … some people don't really understand how to use technology or it doesn't really work for them themselves. I think that you should get the option to use it or to not.

Participant 7 replied,

Sometimes it can go a little too over the top when it's like, “Oh, lets use technology for literally everything." And, sometimes it's good to just do it on
straight paper. But, I think it makes things go a lot faster. It does save a lot of paper.

**Qualitative Research Question 2**

The second qualitative research question asked, “How do adolescents report that they are using technology for academic purposes both inside and outside the classroom?” Themes emerged in response to this research question: common class devices, common home devices, class use frequency, home use frequency, research, organization, lessons and extended work, and fun. There were only two common class devices mentioned among all the participants which included Chromebooks and cell phones. Additionally, there were only two common home devices mentioned among all the participants which included computers and iPads.

**Class use and home use frequencies.** Responses for class use frequency from all of the participants included: “I use it a lot.” “We use Chromebooks multiple times a day every day.” “We use (Chromebooks) most of the time.” “The majority of our assignments are on our Chromebooks.” “The majority of our classes use (Chromebooks).”

The average of ten of the participants’ home use frequency was between one to three times a week. However, Participant 1 stated, “I only use the computer at home for homework once a month.” Participant 11 replied, “I use the computer for homework every day.”

**Research.** Research was one of four themes that emerged from the data analysis of the specific ways adolescents report they are using technology both inside and outside the classroom. Participant 1 stated, “At school, I use it as usually a search engine for things that I'm looking up to give … for projects, like research projects, or things that I
don't know and I need to figure out.” Participant 3 stated, “I use my Chromebook to look up definitions of words and stuff… if we have homework, I can look up words that I don’t know and research things that I need to focus on.” Participant 4 stated,

We use our Chromebooks, and devices, and phones a lot during school …

We use them for research purposes so that you're finding articles that are current and things that are going on in the world right now, so it's not textbooks from years ago. It really helps lot.

Participant 8 replied, “We don’t use our phones that much, but mainly Chromebooks to … research or take surveys a lot.” Participant 11 stated, “…to type research papers, we use Google, Google Docs, and [Google] Slides.” Participant 12 replied, in relation to project-based learning assignments, “we research a lot.”

**Organization.** Organization was the second of four themes that emerged from the data analysis of the specific ways adolescents report they are using technology both inside and outside the classroom. Participant 1 replied, “Sometimes I set reminders for things, like, I forgot to turn in the packet for this. I have to set reminders for a lot of things or I forget. Participant 2 replied,

I definitely think it helps … because, like I said, you can’t lose stuff. It’s a lot easier to type, I think. I think a lot of problems with kids is that they lose stuff, and I think that it doesn’t help them, and it’s harder for them to succeed. I think, because it’s always there, you can just go on Google Drive and find it, and I think that helps a lot.

Participant 5 stated,
I like that it's easy and that all of our stuff is in one place and that, since everything's Google [Drive], I don't have to take all my stuff home. I can just leave it at school, and if I'm working on a paper or something, then I can just use my computer at home to go and work on it.

Participant 6 stated, “I feel it can help with organization, keeping it all together. Not having a million physical papers on you all the time.” Participant 10 responded, Probably to study because you don't have to carry this big workbook home or packets or whatever in your backpack. It's a lot easier to just get online and do it. Yeah … Often I use Google. That is really easy to just ... If you forget something at school, then you can just search it up on the search bar on Google. [You can set] reminders just to study in general because you want to get better at what you're doing. It's all with [Google] Docs and Slides that you can also work on your presentations and projects and stuff.

Participant 11 replied, “You don't have to keep track of everything in your backpack. You don't have to be organized … Well, I think it helps because you have everything in front of you and you don't have to look for everything.” Participant 12 replied, “Say, you just lost your paper or something. It's easier if you just email it to them or share it with them. It’s all in Google Drive.”

**Lessons and homework.** Lessons and homework was the third of four themes that emerged from the data analysis of the specific ways adolescents report they are using technology both inside and outside the classroom. Participant 1 stated, “Every now and then they give us a project, and I can't do it all in class. So, I just have to finish it at home,
and a lot of times it's digital.” Participant 3 stated, “[Teachers] tell us to go on Google Classroom or Nearpod, and then we learn off of that.” Participant 4 replied,

We use Google Classroom so they can share their lessons with us or they can give us PowerPoints or notes. So, whenever we're working on assignments online, like we have to write a paper or something, then they can share the assignment with us just in case we weren't there in class or we didn't fully understand it. Then you could go on your own and read it to look at it later on. Also, we're able to turn in our assignments with them on Google Classroom … I also use it a lot whenever I don't finish things in class, whenever I have homework and lots of research going on. Most classes, whenever we don't finish in class, it's our responsibility to go home, finish the research, and then finish the assignment in class to turn it in … on Google Classroom.

Participant 6 stated,

I can access it basically anywhere … If there's something I can do that is late, I can get on Google Classroom, I can log into my account and do that. That actually is an advantage, too. I can just go on there, do the digital assignments that may be late or need to turn in the next day on. I can do it easily.

Participant 8 replied,

Well, lucky for us, since we use [Google] Classroom, a lot of time they’ll post our assignments on Google Classroom. Anytime I don’t have time to finish something in class, it’s great because I don’t have to worry about losing my paper. I have it right there on my computer or phone. I can work on [my assignment] at home on our computer or in the car on my way to dance … My science teacher uses like
EDpuzzle or something like that. I don’t even know. But there’s other things that we have our assignments on and we use like Explorelearning.com and other stuff for labs that we use so we can do those at anytime, too. You don’t actually have to have the equipment.

Participant 9 replied,

Most of my teachers, we use Quizlet, where you make your own study set, and all those [applications] for studying … They’ll share documents to us as an outline for our lesson for the day, and we share stuff with them when we’re done. We turn them in to Google Classroom and stuff … If I’m at home, and I’m studying for a final or like a major test or something, I’ll just pull up the Quizlet set that I’ve made throughout the year and that the teacher has given me, and I’ll use that to study. So, most of the time I’ll just use my phone; I don’t really use the paper study guide.

**Fun.** Fun was the last of four themes that emerged from the data analysis of the specific ways adolescent’s report they are using technology both inside and outside the classroom. Participant 1 replied, “Sometimes, if our teacher gives us free time, we will play games for fun, but only if we have free time.” Participant 4 stated, “We can play school games like Kahoot! and Quizzizz and stuff where you could work together with your partners and stuff to learn more. Then it also gives a little competition so you’re really having fun learning.” Participant 5 replied, “A lot of the time … we play Kahoot! or Quizzizz. Quizzizz and Kahoot! help me a lot.” Participant 6 replied, “Some stuff, like Kahoot! or Quizzizz … it’s fun.” As previously mentioned, Participant 8 stated, “[Technology] makes the learning environment more fun.” Participant 10 replied,
Sometimes we use Quizlet on our computers and, yeah. I think it helps us a lot better because it’s a lot easier to access instead of just writing papers and being boring. It actually is pretty fun … I think it helps because, what’s it called? It’s more fun and interactive. It lets you, how do you say it? It’s engaging.

Lastly, Participant 12 stated, “I love using technology. I like it better because it’s just fun to work with than paper.”

**Qualitative Research Question 3**

The third qualitative research question asked, “How do adolescents report that they are engaging with peers through technology versus face-to-face?” Seven themes emerged in response to this research question: social technology uses, academic technology uses, social technology use frequency, academic technology use frequency, face-to-face activities, face-to-face technology use frequency, and comfort level with no technology.

**Social technology uses.** Social technology was one theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology to engage with peers. All participants reported using technology for social purposes. The most frequently stated uses were: social media, messaging or texting, Snapchat, and calling.

Participant 1 stated,

We use messaging on our phones. We use that a lot of times to also play games, like on our [PlayStation 4s]. We use [microphones] and headsets to communicate with each other, while we're playing the game and work with each other.

Participant 2 stated,
I text a lot of people, Snapchat a lot of people. I mean I would think that we use technology a lot to communicate, and I think that a lot of times I get bored, like I'm driving the car to soccer that I'll call people or text people so I can talk to them more and communicate. I think that keeps us closer to school and stuff like that.

Participant 5 replied, “The most, Snapchat. I just Snapchat people. Sometimes I text people. I call people. Instagram lets you do posting. Sometimes Twitter, not really, though. I don’t really use Twitter. Participant 6 stated,

Social media, texting. I used to have Snapchat, but my mom was like, "It's only for negative purposes," and she made me delete it. I broke all my streaks. Sad day.

Sad day. It's not funny. It's just not because it's not. Okay.


However, Participant 9 replied,

I don't really do it too often, but when I do, I just text them. I don't really talk to my friends through social media because there's really no use. I don't really have too much social media, but I'll usually just text them.

**Academic technology uses.** Academic technology use was the second theme that emerged from the data analysis of the specific ways adolescent’s report they are using
technology to engage with peers. All participants reported using technology for academic purposes. The most frequently stated uses were: Google and texting or group chatting.

Participant 2 replied,

We have studied together with our computers on Google Docs, and shared Google Docs together. So, I think that helps. [We are] sharing Google Docs or Google Slides a lot of the time because one thing about the computers is you can use them all together. There can be like five people on one [document], and I think that really helps too because you all contribute in different ways without having to share one computer.

Participant 4 stated,

Usually, probably whenever we don't understand or completely get, yeah, an assignment, then we usually … text outside of school. Maybe if you didn't get it, then someone else understood it better, or whenever you weren't there for it and you have some questions, then you can just ask someone who was there.

Participant 5 stated,

If we’re working on a group project together, there’s probably going to be a group chat where we talk about it … Usually, we just make a group chat on iMessage and text each other. Sometimes, if it’s just working with one other person, then I like FaceTime. I like to see them face-to-face.

Participant 7 replied, “Yeah. If we’re doing a group project, we usually make a group text and then take pictures of everything. Or, if we’re working on a lab together and someone gets the data and just sends it to everybody.” Participant 9 replied, “If we have [a] project, we’ll just share it with them on [Google Drive], so we can all work on it at the
same time.” Participant 10 responded, “On Google [Drive, Docs, Slides] sometimes if you share a document or a project or whatever with someone else, then you both can work on it at the exact same time, which helps a lot. Yeah.” Participant 11 stated, “On reviews, if you have a question on one, you can text a friend and say, ‘Do you know how to do it?’” Participant 12 replied,

Yes, I have before ... I’ll use message, like I'll create a group chat. For like [project-based learning] that we had to finish, we're behind on, I'll just say like, "Maybe we can meet up after school in the library or something."

Social technology use frequency. Social technology use frequency was the third theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology to engage with peers. The majority of participants claimed a high amount of social technology use frequency when engaging with peers. Participant 3 replied, “Probably like a hundred [times a day]. Well, I text a lot of people.” Participants 2 and 4 both stated, "A lot ... 15 times a day.” Participant 5 replied, “A lot, like ten times in 30 minutes or something. I’m always on my phone … 12 hours probably, not a number I’m proud of but a lot.” Participant 6 stated, “Probably one to three hours [daily] … Probably five hours.” Participant 7 replied, "A lot. During school days, not as much because I'm in school. But, when I'm not at school, a lot. I'm on my phone all day. Probably like three to four hours during the week and five-ish hours during the weekends.” Participant 8 stated, “A lot, very often … Maybe like six days a week and three hours a day.” Participant 10 stated, “Definitely every day. Probably at least 50 to 100 [times].” Participant 11 stated, “Often. Every hour.” Participant 12 replied, "A lot. Like every day, usually.”
Additionally, Participant 9 stated,

Not too much … Yeah, not too much. Yeah, in a day, I'll usually text my friends like, "Can I have help with this homework question?" Or something like that. It's not for things like, "Hey, what are you doing?" or something. It's usually for help or just school reasons, but just ... I don't know.

**Academic technology use frequency.** Academic technology use frequency was the fourth theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology to engage with peers. The majority of participants claimed a minimal amount of academic technology use frequency when engaging with peers. Participants 3, 4, and 6 all replied, “Probably like once a week.” Participant 7 stated, “Anytime we have a group project, I don't know. We do labs and partners. So, once every week or once every two weeks-ish.” Participant 8 stated, “I would say like every other day, maybe like an hour or so a day … With peers, not as often. Most of our work is internet.” Participant 9 stated,

I guess, it depends on the time of year, because in the middle of the year, we got most of our work done at school, just because I didn't want to have a lot of homework at home, but I'd say ... I don't know, I'd say now, maybe half the time … Or one fourth the time.

However, Participant 2 replied, “I think we used Google Docs and Googles Slides, Classrooms … stuff like that, I use that multiple times a day. Every day.”

Participant 10 also stated, “Probably every day, every week.”

**Face-to-face activities.** Face-to-face activities was the fifth theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology
to engage with peers. The majority of participants claimed to engage in activities that did not involve technology when face-to-face with friends. Participant 1 said, “Talking in class, sometimes. In other ways, without technology … that’s basically it. It’s just talking to each other whenever we see each other in the hallway.” Participant 2 replied, I would think in my friend group, we really like going outside, and I know that’s not the case like some other people, but in my friend group, we play soccer, we play football, we play basketball a lot, and I think that really helps to get together as teams, too, and I think that can help us in everyday life, as well. But, some kids even just like cooking. Girls, I know they like to gossip and stuff like that, and just hang out. I think a lot of times, overall, like hanging out … We would all meeting up somewhere with a bunch of other people.

Participant 3 replied, “We usually go outside or something like that … Get our parents to drive us somewhere.” Participant 4 stated, "We're just talking at lunch and stuff … Sometimes we play cards and stuff at lunch, so that doesn't really use technology. Then in class when we're hanging out.” Participant 8 stated, Well, I mean, most of the time it's through extracurricular activities, which I dance, so that's basically where all my friends are. It's my second home. We just talk. We'll play games. A lot of times we'll go to my lake house, so we'll be tubing, do fun activities in the afternoon, on the weekends mainly if we have time.

Participant 9 replied, “I don’t know, a lot of my friends live near me so I’ll walk over to their house or I’ll go on a swim, but most of the stuff we do is just outside thought.” Participant 10 replied, "My friend group, we go to the movies and we go over to each other's houses and just hang out and do stuff, pretty much.” Participant 6 stated, “We just
hang out, talk. Come up with ideas of stuff to do. Stuff like that. Sometimes crazy stuff, depending on who you’re with … Even when we’re doing that, it’s still not really technology based.” However, Participant 6 also stated,

   Well, the friends that I hang out with, we're making these YouTube videos and stuff. If you count filming them for that as using technology … We're not sitting there next to each other not saying anything to one another, you know. It's not like that. It's more just filming each other for YouTube purposes. It's not often that we're just like, "Eh." There might be one person [using Snapchat], but he's still engaged in the conversation.

**Face-to-face technology use frequency.** Face-to-face technology use frequency was the sixth theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology to engage with peers. The majority of responses claimed to “not” being on their phones nor using technology “a lot” when with friends. Participant 2 replied,

   For the most part, we are not on our phones. I bet it’s like … 60/40 [ratio]. Probably 60 being outside, 40 being inside. Probably even a 70/30. 70 being outside, 30 being inside … I mean technology is either when we’re really bored and have nothing to do, which is 30 minutes, or late at night like 12 AM or 11 PM.

Participant 3 stated,

   Not a lot, unless we're watching a movie. Then we watch a movie, but other than that we don't really use our phones. We barely ever use technology when we're with friends, unless we're, like, super bored and we just lay there.
Participant 4 replied, “Not [using technology] as much because usually when I'm using technology it's to talk to my friends, so when I'm with them it's not as much … I would say about 50/50.” Participant 8 stated,

Me, as a person, I typically don't like to be on my phone when I'm with my friends. I know the opinion varies, but I don't really like to be on technology when I'm around friends … I would say like if it don't involve technology, it'd be like a three to one ratio.

Participant 9 responded,

I know some of my friends are on it, they're on their phone all the time, but I'm not. When I'm with them, I'm like, "Do you want to go outside and throw a football or something?" Just to do something outside. We'll be on our phones for a little bit, but it's not too terribly long … I’d say maybe 75% of the time we’re outside. 25% we’ll just be inside just hanging out or watching sports or something.

Participant 10 stated, “Not really because I'm having fun with my friends and just hanging out. I don't use technology because that distracts me from having fun with my friends.” Participant 12 replied,

Not a lot because I personally play sports. We'll just do whatever. We don't use it a lot when I'm with my friends … We have [our phones] with us, we just don't all take them out because we're usually playing basketball, playing football, just running around … It's not like I'm addicted to it, I just like always having my phone in case there's an emergency, at least one person having a phone or a cellular device in case there's an emergency.
On the other hand, some participants claimed to use technology more frequently when face-to-face with peers. Participant 1 replied, “The entire time, basically, I think … Yeah, like the whole time. We’re like collaborating in the game.” Participant 5 stated, A lot because usually, we'll just be playing music if we're just hanging out, just some background music from our phones or if there's nothing to do, we'll go onto Snapchat and Snapchat with other people or we'll watch a show together or something on Netflix, so all the time.

Additionally Participant 11 replied, 25% of the time we’re outside and 75 inside, I guess … Playing a video game or just on our phones.”

**Comfort level with no technology.** Comfort level with no technology was the seventh theme that emerged from the data analysis of the specific ways adolescent’s report they are using technology to engage with peers. The majority of the responses centered around feeling "very comfortable” or “very confident” among peers without technology. Participant 2 replied,

I mean I feel so connect to my friends. We're not shy. We’ve been together since [elementary], that I think I could have no phone for the whole time with them and be no different. Even some of the kids I met this year, I could go without my phone the whole time and nothing would happen … I don't really feel uncomfortable with any of my friends.

Participant 8 stated, “I’m a pretty social person. I’m pretty comfortable … I like to talk a lot.” Participant 9 responded, “Pretty comfortable. Most of my friends I’ve known since I was real little.” Participant 10 stated, “Pretty comfortable. We’re a pretty close group.
We know a lot about each other and it doesn’t make it awkward at all. I just feel at home pretty much.”

On the other hand, two participants had different comfort levels than the rest of the participants. Participant 5 stated,

Well, I guess it depends. If I'm in a big group, I'm not really comfortable if I'm not in the conversation at that time. You're just sitting there awkwardly. If I'm with one other person, then I don't really care if I don't have my phone.

Additionally, Participant 7 stated, “Depends on the friend. Yeah. Like closer friends. I guess we can find like whatever to talk about. But, some of my friends are just like, ‘Oh, yeah,’ and it’s more straight to your phone.”

**Mixed Methods Research Question**

The mixed methods research question asked, “To what extent does the quantitative and qualitative data regarding technology use in the classroom converge?” The themes that emerged in response to this research question across both data sets were: technology is heavily implemented, reported use varies, and social media engagement. There were also some discrepant responses among the data that are reported below.

**Technology is heavily implemented.** As previously stated, responses for class use frequency and exposure from all twelve of the student participants included: “I use [technology] a lot.” “We use Chromebooks multiple times a day every day.” “We use (Chromebooks) most of the time.” “The majority of our assignments are on our Chromebooks.” “The majority of our classes use (Chromebooks).” Teachers have similar claims; sixty-two percent reported to integrate technology into lessons several times in a week.
**Reported use varies.** Most of the teachers claimed students are mainly utilizing technological devices in the classroom to use a word processor (i.e. Google Docs) for writing assignments and to improve writing quality, to use the Internet to research topics and gather information, to use the Internet to communicate and collaborate with peers, to use presentation software to present information. Students reported utilizing technological devices in the classroom for completing lessons or sharing documents through work processors, such as Google Classroom, Google Docs, and Google Slides. These same applications were mentioned by the students when reporting how they communicate and collaborate with peers through technology for academic purposes. Students also reported using the Internet specifically to research topics and gather information. However, no student participants reported using presentation software to present information.

Additionally, students mentioned other applications for learning such as Nearpod or EDpuzzle and mentioned playing academic review games such as Quizlet, Kahoot!, and Quizizz. Unfortunately, these other specific applications mentioned by the students were not asked by the researcher to be reported upon by the teachers.

**Social media engagement.** Fifty-four percent of teachers reported that students are visiting social networking sites during class several times in a week. Fifty percent of teachers reported that students will read text or instant messages during class several times in a week. Comparably, all students admitted to engaging with peers socially through social networking or texting. However, it was not specified by the student nor asked by the researcher whether or not this was specifically taking place during class.
**Discrepant findings.** Sixty-two percent of teachers reported that students are navigating on websites that are unrelated to school work several times in a week. Fifty-eight percent of teachers reported that students are watching videos/pictures unrelated to school work several times in a week. Only one student participant reported that other students get distracted playing games. No student participants mentioned navigating on websites that are unrelated to school work nor watching videos/pictures unrelated to school work. Watching videos was only reported as a technological activity while with peers. However, neither activity taking place during class was specifically asked by the researcher.
Chapter 5: Discussion

The focus of this study was on the amount of technology use inside and outside the classroom for adolescent learners, ways in which adolescent learners use technology, adolescent learners’ perceptions of technology use, and their engagement with peers via technology. Twenty-six teachers were surveyed and 12 adolescent students were interviewed at an urban junior high school in Northeast Texas to obtain this information. This chapter will present the summary of findings, interpretation of findings, context of findings, implications, limitations, and recommendations for future research.

Summary of Findings

Overall, it is clear that technology is heavily implemented in the classrooms of adolescent learners, ages 12 to 14, as reported by both the teachers and the student participants in this study. It is also clear that there is a wide range of uses for technology, including: word processors (i.e. Google Docs) for writing assignments and to improve writing quality, the Internet to research topics and gather information, the Internet to communicate and collaborate with peers, applications for interactive lessons such as Nearpod and EDpuzzle, and academic game applications such as Quizlet, Kahoot!, and Quizizz. Google products — Google Drive, Google Classroom, Google Docs, and Google Slides — were also described among all the students as applications used daily for academic purposes. Additionally, students claimed while in the classroom that technology is largely used for research, to stay organized, to complete lessons or homework, and to play fun academic games. The only devices reportedly used were Chromebooks or cell phones. However, some students reported that teachers would also
use PowerPoint presentations to present lessons or information, as well as an overhead projector.

Despite claims of technology being used for academic purposes on a regular basis while in the classroom, the majority of teachers claimed students are off-task in four realms: navigating on websites that are unrelated to school work, watching videos/pictures unrelated to school work, visiting social networking sites, and reading text or instant messages. While the students claimed their nonacademic use of technology involved visiting social networking sites and reading text or instant messages, no students specifically reported this activity during class. Additionally, no students mentioned navigating on websites that are unrelated to school work nor watching videos/pictures during class; however, it was mentioned that other kids are engaging in these off-task behaviors.

Regarding student opinions of technology in the classroom, reports varied; either technology was viewed as an aid or technology was viewed as ineffective. More students reported technology as an aid to their learning than as ineffective. However, there was a higher percentage of males than females who felt like technology was an aid to their learning. The majority of female students reported technology as either ineffective or gave a discrepant response. It must be noted, however, that the gender ratio was unequal with eight male participants and only four female participants.

Regarding academics, students claimed they engage with peers via technology very rarely, with reports ranging from one time a week to once every two weeks. However, during these rare interactions, Google products or texting were described among the students as specific applications used.
Outside the classroom, students also claimed to be using technology at home very rarely for academic purposes, with reports ranging from one to three times weekly. When using technology at home for academic purposes, students reportedly use cell phones or computers.

For nonacademic purposes, the majority of students claimed they are consistently engaging with peers via technology, with reports ranging from 15 to 100 times a day or between 1 to 12 hours a day. The most frequently reported specified uses included social media, Snapchat, texting, and calling. However, as previously stated, no students specifically reported this activity during class.

On the other hand, when engaging with peers face-to-face, technology was rarely mentioned. The majority of students, 9 out of 12, claimed to not use their phones, as well as not using other forms of technology very much while with friends. Students specified engaging with peers through other activities such as being outside or hanging out. However, the remaining three participants claimed to use technology the entire time while engaging with peers.

Lastly, students reported varying levels of comfort while engaging with peers without technology. All 8 males claimed they are very comfortable around peers without technology; only two females made this claim. The remaining females reported feeling awkward around peers without technology present.

**Interpretation of Findings**

The results of this study show that adolescent learners are frequently exposed to technology while in the classroom. Teachers and students both report using technology in the classroom almost daily. There is also an array of applications and ways in which
students are using technology. However, outside of school, students claim to barely use technology for academic purposes, and reports were even fewer when using technology to engage with peers for academic purposes.

A significant meaning found among these results is teachers claimed students are off-task during class the majority of the time by visiting social networking sites, reading text or instant messages, navigating on sites that are unrelated to school work, and by watching pictures or videos that are unrelated to school work. Students, although admitting to socializing with peers through social media and text messages, did not report to navigating on sites that were unrelated to school work during class nor did they report watching pictures or videos that are unrelated to school work during class. It was also not specified if the engagement with peers through social media and text messages was occurring during class. However, the students’ reports of socializing with peers through social media and text messages was comparable to reports of frequency of exposure to technology use in the classroom. In other words, the reports for both academic technology use and social technology use were both high. These results suggest that students are possibly multi-tasking on both the Chromebook for school work and their cell phones for social engagement. While perceiving they are on task academically, they are possibly not perceiving the social engagement as off-task.

A second significant meaning found among these results, is that the majority of male students preferred technology while learning, yet did not prefer technology while with friends. Additionally, the majority of females did not prefer technology while learning, yet preferred technology while with friends to aid in their comfort level.
Context of Findings

Compared to the literature, these current findings confirm the increased exposure to technology in the classrooms of adolescents, ages 12 to 14. Students reported using Chromebooks at school on a daily basis, and sixty-two percent of teachers reported integrating technology into lessons several times in a week. However, as previously stated, despite the increase in access to technology and teachers striving to engage students, there are infrequent reports among the literature describing the actual use of technology in the classroom (Blackwell, Lauricella, & Wartella, 2014). When researchers have assessed technology use, findings show it is often not utilized in meaningful, student-centered ways nor as an extension of the curriculum. Rather, more traditional or didactic practices are used such as integrating technology in homework assignments or for simply practicing skills. However, the findings of this study show the opposite with students frequently using technology on a daily basis for a reported variety of meaningful purposes. These purposes were even described among some of the student participants as “student-centered.”

The ways in which teachers and students are reportedly using technology are also slightly different, and more specific than ways previously reported in the literature. The literature uses terms such as information and communication technology, interactive whiteboards, tablet PC, and technology enhanced learning. These terms are mentioned by neither the teachers nor the student participants of this study. This study’s participants used terms such as cell phones, Chromebooks, applications for interactive lessons such as Nearpod and EDpuzzle, academic game applications such as Quizlet, Kahoot!, and Quizizz, as well as Google products — Google Drive, Google Classroom, Google Docs,
and Google Slides. However, the literature did mention the use of laptops which were reportedly used for a range of activities, such as: writing, Internet research, watching videos, e-mail, learning management systems, creating PowerPoints, and creating websites. Compared to this study, these activities are very similar to the reported use of Chromebooks.

Regarding adolescent perspectives of technology use in the classroom, the literature proposed a mix of attitudes that were previously described as either positive reactions or negative reactions. This study also had a mix of attitudes with students reporting technology as either an aid or as ineffective. Disregarding the discrepant responses, this study, however, had more students reporting technology as an aid than as ineffective. These students’ reports were similar to those of the positive reactions found in the literature. For example, in a study conducted by Dundar and Akcayir, students reported that using technology in the classroom was useful and made education more entertaining. Additionally, using tablet computers ended the necessity of carrying textbooks since the textbooks could now be accessed on the PCs. Most students also mentioned that their homework was easier with tablet PCs and that their interest in class had increased. Furthermore, students that participated in a study by McKenna et al. ranked Internet research as the most liked or enjoyable school activity and one of the most common uses of technology in the classroom. Student participants of this study also claimed that technology made learning more fun, helped keep them organized, and was useful for research purposes; fun, organization, and research were three of the four themes found among the qualitative data. Lastly, in a study conducted by Willoughby, it was suggested that the greater frequency of computer use in the classroom correlated
with male adolescents reporting more positive feelings of academic orientation compared
with girls. Similar to this study, the majority of male students preferred technology while
learning than did females.

On the other hand, a minority of students found technology as ineffective or
provided a discrepant response. These students’ reports were similar to those of the
negative reactions found in the literature. For example, McKenna et al. had one student
report using technology in the classroom was “overtly boring.” Some students that
participated in a study by Chen et al. reported feeling stressed due to the level of
engagement required during technology-based activities. Additionally, students in a study
conducted by Dundar and Akcayir, reported that their interest in class had actually
decreased because they were distracted by using tablet computers in class. Lastly,
students in a study conducted by Beckman et al. reported that typing notes made it harder
to remember lesson content compared to using pen and paper. Student participants of this
study who viewed technology as ineffective or provided a discrepant response had similar
claims of technology in the classroom being boring, being implemented too frequently,
causing a distraction, as well as making the note-taking process more strenuous.

Regarding technology use outside the classroom, the OAH stated that adolescents,
declared as children ages eight to eighteen, spend an average of seven and a half hours per
day using media technology. Additionally, According to Hicks, adolescents, ages eight to
eighteen, spend an average of seven hours and 38 minutes per day engaged in
entertainment technology. These findings mirror the findings in this study with students
reporting a perceived social use of 15 to 100 times or upwards of 12 hours a day.

Additionally, a study conducted by Willoughby stated that academic Internet use outside
the classroom was reportedly only accessed an average of one to two hours a day among older adolescents, defined as students in grades 9 and 10. This reported use among students one to two grades older is similar to data obtained from this study, with adolescents in grades 7 and 8 reportedly using the Internet at home for academic purposes only one to three times a week.

Considering peer engagement, the students of this study reported a low frequency of technology use while engaging with peers either academically or face-to-face. Academically speaking, students generally reported engaging with peers through technology once a week. Yet, limited research was found on this facet, academic peer engagement outside of the classroom. However, socially speaking, nine out of the twelve participants in this study claimed to “not” being on their phones nor using technology “a lot” when with friends while face-to-face. Additionally, ten out of the twelve participants reported feeling "very comfortable” or “very confident” face-to-face with peers without technology. All of the male participants, eight total, were among these ten. Regarding the literature, opposite data was reported by Willoughby; male adolescents reported less positive feelings towards friendship quality when face-to-face with peers without technology when compared with girls.

**Implications**

As previously stated, this study was grounded in the theoretical perspective of behaviorism founded by B. F. Skinner. Behaviorism, when applied to educational learning theories, has led to the development of critical aspects of instruction and learning production within the classroom. Such aspects include direct instruction, classroom management, a behavioral reward system, reinforcement, and individualized instruction
Overall, behaviorism is primarily concerned with observable and measurable aspects of human behavior, such as how one performs academically and socially. Behaviorist learning theories place emphasis on the changes discovered in human behavior as a result of the direction by external stimuli (Standridge, 2002). Flippen (2014) defined behaviorism while learning as viewing “the learner as a tabula rasa … from that point, the learner can be influenced by his environment on which he reacts and which in turn instigates another reaction” (p. 1). In other words, the learner begins generally without any mental internalization or introspection, is exposed to a specific stimulus, responds to the stimulus, and is reinforced by the stimulus. For the purpose of this research, changes in an adolescent’s academic and social behavior were observed through the direction of technology, the external stimuli. With consideration of the functionalist perspective, if there is any disruption to the important role of education caused by technology, the students will experience a negative effect in both academic and social performance.

After analyzing and describing the results of this study, it appears the outcome was consistent with the theoretical perspective of behaviorism. All of the adolescents were exposed to technology and responded with their perceived academic and social experiences to this exposure. Regarding the functionalist perspective, technology did not seemingly cause any disruption to the important role of education. The majority of the student participants, 10 out of 12, did not report a perceived negative effect in both academic and social performances. However, one student did report a perceived negative opinion of using technology in the classroom — technology as ineffective — as well as feelings of discomfort when with peers face-to-face. Another student provided a
discrepant response when reporting if technology was viewed as either an aid or as ineffective, yet did report feelings of discomfort when with peers face-to-face.

Professionals in the field of education may find this study relevant when creating curriculum or designing lessons that will include the implementation of technology. What relevant devices and applications to implement, how and how often it should be implemented, as well as providing students with different options of utilizing or not utilizing technology may be questions that should be carefully considered in the future. Additionally, parents or guardians of adolescent students may find this study relevant when considering the frequency of use of technology for the academic or social advancement of their student.

**Limitations**

As previously mentioned, a convergent parallel design was utilized in this study. Limitations from this type of design are typically related to external validity and the lack of generalizability of the results since the study was not experimental. Generalizability was also limited due to the small number of participants and this particular campus distributing Chromebooks to each student four months prior to this study. Other limitations include the need for much effort and expertise from the researcher because of the equal weight given to each data type. There are also potential consequences of having different sample sizes, 26 quantitative participants and 12 qualitative participants, when merging the two data sets. It can be additionally challenging to merge two sets of different data and their results in a meaningful way; the same concepts must be addressed by both methods. Additional restrictions that affected the dissertation outcomes included
only half of the wanted number of teachers, 26 out of 52, submitting surveys and students
only partly answering interview questions, with confusion when probed further.

**Recommendations for Future Research**

The aim of this study, as before-mentioned, was to explore technology use both inside and outside the classroom as it relates to the academic and social lives of adolescent learners. Although studies have indicated that there are many benefits to using technology in the classroom (DiGregorio & Sobel-Lojeski, 2010; NEA, 2016; NWP, 2012), studies have also shown that access to instant information can lead to a lack of critical thinking and an inability to retain or retrieve authentic knowledge (Porter, 2013; Suozzi, 2014). However, the question remains as to whether or not there are definitive negative impacts of classroom technology use, academically and socially, and how these negative impacts are manifested. Additionally, for the purpose of generalizability, further research concerning how the increased implementation of technology within the classroom setting has affected students’ perspectives on its use for both academic and social purposes is needed. Lastly, there is an apparent need to study the difference between males and females when looking at technology as aid or technology as ineffective to one's learning, as well as one's social development.
References


Payton (Eds.), *The Impact of Pen and Touch Technology on Education* (pp. 173-190). Switzerland: Springer International.


Appendix A

Assessment for Teachers Using Technology in the Classroom
Appendix A

Assessment for Teachers Using Technology in the Classroom

For questions 1-18, use the USEIT’s five point scale: (1) never; (2) once or twice a year; (3) several times a year; (4) several times a month; and (5) several times in a week.

1. How often do you integrate technology into your lessons?

1  2  3  4  5

2. How often do you provide students with technological devices to use for participating in lessons and/or completing assigned work?

1  2  3  4  5

3. How often are students allowed to use their own technological devices for participating in lessons and/or completing assigned work?

1  2  3  4  5

In your class, how often do students…

4. Use the Internet to research topics and gather information?

1  2  3  4  5

5. Use the Internet to communicate and collaborate with peers (e.g., e-mail, Google Classroom, etc.)?

1  2  3  4  5

6. Use word processor (e.g., Microsoft Word, Google Docs) for writing assignments?

1  2  3  4  5
7. Use presentation software to present information (e.g., Power Point, Google Slides)?
   1  2  3  4  5

8. Use writing tools in a word processor (e.g., a thesaurus, spell-check) to improve writing quality?
   1  2  3  4  5

9. Use technology to produce multimedia projects that use digital images, video, audio (e.g., YouTube videos)?
   1  2  3  4  5

10. Use technology to produce digital newsletters, flyers, brochures, etc.? 
   1  2  3  4  5

11. Use technology to produce pictures/artwork?
    1  2  3  4  5

12. Use spreadsheets to create graphs or charts, as well as to organize and analyze data (e.g., Excel)?
    1  2  3  4  5

13. Use technology to produce web pages or websites?
    1  2  3  4  5

14. Use technology to take notes?
    1  2  3  4  5

15. Navigate on websites that are unrelated to school work?
    1  2  3  4  5

16. Visit social networking sites?
    1  2  3  4  5
17. Watch videos/pictures unrelated to school work?

1  2  3  4  5

18. Read text or instant messages (e.g., Google Chat)?

1  2  3  4  5
Appendix B

Teacher Technology Integration Survey (TTIS)
Appendix B

Teacher Technology Integration Survey (TTIS)

<table>
<thead>
<tr>
<th>Subscales and Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Taking and Comfort with Technology</td>
</tr>
<tr>
<td>1. I feel comfortable about my ability to work with computer technologies.</td>
</tr>
<tr>
<td>2. Learning new technologies is confusing for me.</td>
</tr>
<tr>
<td>3. I get anxious when using new technologies because I don’t know what to do if something goes wrong.</td>
</tr>
<tr>
<td>4. I am confident with my ability to troubleshoot when problems arise while using technology.</td>
</tr>
<tr>
<td>5. I get anxious when using technology with my students.</td>
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<tr>
<td>6. I get excited when I am able to show my students a new technology application or tool.</td>
</tr>
<tr>
<td>7. I am confident in trying to learn new technologies on my own.</td>
</tr>
<tr>
<td>8. I enjoy finding new ways that my students and I can use technology in the classroom.</td>
</tr>
<tr>
<td>9. Learning new technologies that I can use in the classroom is important to me.</td>
</tr>
<tr>
<td>Perceived Benefits of Technology Use</td>
</tr>
<tr>
<td>10. Using technology to communicate with others allows me to be more effective in my job.</td>
</tr>
<tr>
<td>11. Computer technology allows me to create materials that enhance my teaching.</td>
</tr>
<tr>
<td>12. Computer technologies help me to be better organized in my classroom.</td>
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<tr>
<td>13. Technology can be an effective learning tool for students.</td>
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<tr>
<td>14. My students get excited when they use technology in the learning process.</td>
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<tr>
<td>Beliefs and Behaviors about Classroom Technology Use</td>
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<tr>
<td>15. Teaching students how to use technology is a part of my job.</td>
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<tr>
<td>16. Using technology in the classroom is a priority for me.</td>
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<tr>
<td>17. When planning instruction, I think about how technology could be used to enhance student learning.</td>
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<td>18. When planning instruction, I consider state and national technology standards.</td>
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<tr>
<td>19. I regularly plan learning activities/lessons in which students use technology.</td>
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<tr>
<td>20. I try to model effective technology use for my students.</td>
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<tr>
<td>Technology Support and Access</td>
</tr>
<tr>
<td>21. My building principal encourages faculty to integrate technology in the classroom.</td>
</tr>
<tr>
<td>22. Technology support is available in my building to assist with troubleshooting.</td>
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<tr>
<td>23. A vision for technology use in our school is clearly communicated to faculty.</td>
</tr>
<tr>
<td>24. My colleagues are committed to integrating technology in the classroom.</td>
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<tr>
<td>25. Curriculum support is available in my building to assist with technology integration ideas.</td>
</tr>
<tr>
<td>26. Instructor computer</td>
</tr>
<tr>
<td>27. Set of computers (2-5) in classroom</td>
</tr>
<tr>
<td>28. Mobile computer lab (cart of computers)</td>
</tr>
<tr>
<td>29. Computer lab (10-30 computers)</td>
</tr>
<tr>
<td>Teacher Administrative and Instructional Use</td>
</tr>
<tr>
<td>30. Use the computer to create instructional handouts or assessments for students</td>
</tr>
<tr>
<td>31. Use the Internet to gather information for lesson planning</td>
</tr>
<tr>
<td>32. Create electronic templates to guide student computer use</td>
</tr>
<tr>
<td>33. Prepare or maintain IEP’s on the computer</td>
</tr>
<tr>
<td>34. Use a handheld device (Palm Pilot) to organize information</td>
</tr>
<tr>
<td>35. Use spreadsheet (or grading program) to maintain grade book and/or attendance</td>
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<tr>
<td>36. Use technology to present information to students</td>
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<tr>
<td>37. Demonstrate computer applications</td>
</tr>
<tr>
<td>46. Use Internet to research topics and gather information</td>
</tr>
<tr>
<td>47. Use spreadsheets or tables to organize and analyze data</td>
</tr>
<tr>
<td>48. Use spreadsheets to create graphs or charts</td>
</tr>
<tr>
<td>49. Use email to communicate and collaborate with peers</td>
</tr>
<tr>
<td>50. Use word processor for writing assignments</td>
</tr>
<tr>
<td>51. Use writing tools in word processor (such thesaurus, spell-check) to improve writing quality</td>
</tr>
<tr>
<td>52. Use presentation software to present information</td>
</tr>
<tr>
<td>53. Use technology to produce pictures/artwork</td>
</tr>
<tr>
<td>54. Use technology to produce paper-based products (newsletters, brochures)</td>
</tr>
<tr>
<td>55. Use technology to produce multimedia projects that use digital images, video, audio</td>
</tr>
<tr>
<td>56. Use technology to produce web pages or websites</td>
</tr>
<tr>
<td>57. Use technology to solve problems</td>
</tr>
<tr>
<td>Student Specific Use</td>
</tr>
<tr>
<td>58. Use a handheld device to gather and/or organize data, create concepts maps, write</td>
</tr>
<tr>
<td>59. Use content-specific software for concept reinforcement</td>
</tr>
<tr>
<td>60. Use Inspiration (or other) to create concept maps or graphic organizer</td>
</tr>
<tr>
<td>61. Use simulation/game software (TimeTutor, Hollywood High) to learn and apply information</td>
</tr>
<tr>
<td>Configuration of Student Use (not a subscale)</td>
</tr>
<tr>
<td>43. Work individually on the computer in the classroom</td>
</tr>
<tr>
<td>44. Work individually on the computer in a computer lab</td>
</tr>
<tr>
<td>45. Work in pairs or small groups on the computer</td>
</tr>
<tr>
<td>Overall Teacher Technology Use (items 30-42)</td>
</tr>
<tr>
<td>Overall Student Use (items 46-41)</td>
</tr>
</tbody>
</table>
Appendix C

Permission to Use Teacher Technology Integration Survey (TTIS)
Appendix C

Permission to Use Teacher Technology Integration Survey (TTIS)

Hi Kendall, You certainly have permission. Good luck to you. Rachel

Rachel Vannatta Reinhart, Ph.D.
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Bowling Green, OH 43403

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419-378-1870 (cell)

Kendall:
I believe Dr. Reinhart has contacted you with appropriate permissions. Best wishes on your research!
Savilla
Appendix D

Gaudreau, Miranda, and Gareau (2013) Short Scale
Appendix D

Gaudreau, Miranda, and Gareau (2013) Short Scale

1. Taking notes on the laptop
2. Searching complementary information on the web
3. Sending emails with the laptop
4. Navigate on web sites that are unrelated to school work
5. Visiting social networking sites
6. Using laptop to watch videos/pictures
7. Read text messages on phones or other electronic devices
8. Laptop is a source of distraction
Appendix E

Permission to Use Gaudreau, Miranda, and Gareau (2013) Short Scale
Appendix E

Permission to Use Gaudreau, Miranda, and Gareau (2013) Short Scale

Dear Kendall,

Please feel free to use and cite our scale in your research program.

Best regards,

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Appendix F

Memo to Teachers
Appendix F

Memo to Teachers

Face-to-face invitation/First e-mail correspondence:

To all interested teachers,

A doctoral research study will be taking place on campus. The research study aims to explore adolescent students' perspectives of technology use within the classroom, as well as outside the classroom. We need your help by completing a quick, 18 question survey. The researcher will be asking you how much and how often technology is being used in the classroom, as well as specific ways it is being used. The researcher will also be interviewing students to determine:

- their attitudes toward and opinions about using technology in the classroom
- how they are using technology for academic purposes both at school and home
- how they are engaging with peers through technology versus face-to-face

If you are interested, you can scan and return the attached consent form electronically, you can place it in the researcher’s personal mail box in the teacher’s lounge, or you can hand it to the researcher face-to-face. Upon collection of all consent forms, within a two-week maximum time frame, the surveys will be distributed via district e-mail through Survey Monkey. The researcher will ask participants to have the survey completed within one week. Thank you for your interest, and we look forward to hearing from you!
Reminder e-mail correspondence:

This is a reminder to all teachers who are interested in participating in the doctoral research study on campus.

If you plan on participating by completing a quick, 18 questions survey, you can scan and return the attached consent form electronically, you can place it in the researcher’s personal mail box in the teacher’s lounge, or you can hand it to the researcher face-to-face.

Upon collection of all consent forms, within one week from today, the surveys will be distributed via district e-mail through Snap Surveys. The researcher will ask participants to have the survey completed within one week from that date. Thank you for your interest, and we look forward to hearing from you!
Appendix G

Memo to Parents
Appendix G

Memo to Parents

To all interested parents,

A doctoral research study will be taking place on campus. The research study aims to explore adolescent students' perspectives of technology use within the classroom, as well as outside the classroom. In other words, *what does your adolescent student think about the use of technology here at school and at home?*

We are trying to figure out:

- adolescent student’s attitudes toward and opinions about using technology in the classroom
- how adolescent students are using technology for academic purposes both at school and home
- how adolescent students are engaging with peers through technology versus face-to-face

To figure out these answers, we need 12 students to agree to be interviewed here on campus! *If you are interested in your student participating: print off the parental consent form and e-mail it to Ms. Johnson or bring a signed copy to campus, as soon as possible, but no later than 1 week from today. Your student must also give his or her own permission to be interviewed. Ms. Johnson will provide him or her with a student-assent form upon collection of the parental-consent form.*

After collection of all the forms, the 12 student participants will be randomly chosen and contacted within 1 week. The researcher will also be asking your student’s teachers how much and how often technology is being used in the classroom, as well as
specific ways it is being used. Please e-mail kj717@nova.edu with any questions or to return your signed form. Thank you for your interest, and we look forward to hearing from you!
Appendix H

Adolescent Interview Protocol Form
Appendix H

Adolescent Interview Protocol Form

Project: Classroom technology and its influence on adolescents academically and socially

Date __________________________

Time __________________________

Location __________________________

Interviewer __________________________

Interviewee __________________________

Consent form signed?  Yes  No

Notes to Interviewee:

• Thank you for your participation. I believe your input will be valuable to this research and in helping grow our understanding of technology’s impact on academic and social behaviors among adolescent students.

• Confidentiality of responses is guaranteed.

• Approximate length of interview: 30 minutes, 5 over-arching questions

• Purpose of research: To assess adolescents’, aged 12-14, perspectives and attitudes towards technology use in school in relation to academic and social behavior.

Interview Questions:

1. How do you use technology (e.g. Chromebook, hand-held device, etc.) for academic purposes while at school?
   • How do your teachers use technology (e.g. computers, phones, Smartboard) as part of their lessons?
• In what ways do you use technology when you're in class?

2. What is your opinion about technology used in the classroom?
   • How do you think technology affects your learning (i.e. helps, doesn’t help, makes it harder to learn)?
   • How do you think technology affects your focus/attention to the lesson?
   • How do you think technology affects your interest/engagement in the lesson?

3. How do you use technology for academic purposes outside of school?
   • How often do you use technological devices outside of school?
   • How do you use these devices for school-related work?
   • How do you think using technology outside of school affects your learning (i.e. helps, doesn’t help, makes it harder to learn)?

4. How do you engage with your peers or friends through technology?
   • Do you and your friends use technology together for school-related work? How and how often?
   • How often do you communicate with your friends through technology on a typical day?
   • When you're with your friends, how much time are you using technology?

5. How do you engage with your peers or friends without technology?
   • When you're with your friends, how often do you engage in activities that don't involve technology?
   • What do you do with your friends when you’re engaged in non technology related activities?
   • How comfortable are you around your friends without technology?
6. *What else can you tell me to help me understand technology use in your classroom and at home?*

**Reflection by Interviewer:**

- Thank you to interviewees
- Reassure confidentiality
- Permission to follow-up: Yes  No

**Responses of Interviewee:**