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SKILLS

Impacts of Growing Technologies on Students' Reading and Writing Skills

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Abstract

Technology has radically changed the ways in which students and teachers function within the classroom. The use of mobile technologies, specifically laptop computers and internet use, has transformed teacher instruction along with student expectations. Given that students have a high exposure to technology in the classroom, especially at the middle school level, this senior capstone examines the impact of growing technology on their reading and writing skills through the use of literature review, teacher interviews and survey, interviews with principals and superintendents, and online teacher survey. The result findings reveal that there are several positive impacts of technology integration on students. It is also found that there is a growing dependency rate for technology and internet access use for both students and teachers.

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Impacts of Growing Technologies on Students Reading and Writing Skills

The modern world has developed new ways of making everyone's lives easier and more convenient. Over the past twenty years, computer technology has rapidly changed the way that knowledge is spread from person to person. Cellular phones have made handwritten letters a thing of the past. The internet has allowed for information to be accessed within seconds, forcing libraries to evolve with the changes in technologies. The internet has changed the ways in which information is accessed and has become more and more integrated in the classroom. With technologies on the rise, it is important to know how the integration of mobile technologies and internet access has impacted the reading and writing abilities of students.

Kids of all ages from years one through eighteen are exposed to a screen within their daily routine. It is important for teachers to remember that their students' screen time is not limited to the time in the classroom and parents must remember that their child's screen time is not limited to the home. According to Lissak (2018), fifty-two percent (52%) of younger children from ages 0-8 years old had access to a mobile device in 2011 and has since increased to seventy-five percent (75%) in 2013. Preschoolers tend to have restricted access to technologies in their school day, but access to technologies in the classroom also increases as it becomes more developmentally appropriate. The average screen time of children between the ages 8-18 years old increased to 7.6 hours by 2009, but does not indicate or consider the amount of screen time integrated into the school day (Lissak, 2018).

By the time children come into middle school, grades 6th through 8th, students are expected to be taught the skills necessary to be prepared for high school. Middle schoolers are expected to know how to utilize the internet for their academics and must also be reading and writing at their grade level in order to be successful in high school. "According to the National

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Assessment of Educational Progress, the nation's report card, reading scores in 2005 were significantly worse than in 1992" (Clough, Niederhauser, & Olson, 2013, p. 43). The implementation of the Common Core State Standards (CCSS) "mandated that technology be integrated with the teaching of reading and writing" in response to the low scoring results in literacy (Juarez, 2014, p. 5). The implementation of the CCSS was meant to increase the literacy scores of students. However, "there has not been an increase of reading scores for eighth grade students from 2009 to 2011" (De Primo, 2015, p. 1). The Common Core State Standards have also led to reduced time frames for teachers to complete handwriting instruction for lower elementary grades. The integration of technology in the classroom, as part of the Common Core requirements for students, has led to several changes in the way students are being taught reading and writing.

The primary research question for this project focuses on "how is the integration of modern technologies has impacted students' reading and writing skills?" The related research questions that will seek the answers to include *(1) What does the research say about the impact of growing technology on students' reading and writing skills? (2) How are teachers currently teaching reading and writing in their classroom? (3) How has the medium of teaching changed in relation to keyboarding skills? (4) Are students dependent on technology for their reading and writing lessons and homework in middle school classrooms? (5) What is the quality of student writing in terms of organization, spelling, and grammar according to teachers? (6) To what degree are teachers dependent on technology to teach their classes? (7) How are teachers encouraging their students to maintain their reading and writing skills while integrating current technologies into their classrooms?*

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Every research question is related to the ways in which technology is integrated into the present-day classroom and the ways in which it has changed the classroom dynamic and teaching strategies for reading and writing. The primary focus is to discover the impacts of technology on students' reading and writing because of its' increasing influence on society. Before analyzing the impacts of modern technology, the changes and transitions within the past twenty years needed to be recognized and addressed. The primary goal of the initial research was to address the technological changes along in addition to the changes in educational policies that have affected technology integration.

Literature Review

Technology is constantly changing in terms of new electronic devices and has become an integral part of global society. Over the past 200 years, "technology has been an integral part of the educational environment" (Stewart, Schifter, & Selverian, 2010, p. 5). The classroom has adopted technologies as they have become more readily available. Electronic mediums were first introduced into classrooms in the 1930s with film and radio (Stewart et al, 2010). It was not until the 1970s when television and video mediums were adopted into the classroom. The shift between the two different mediums took forty years, a much slower rate than the development of technologies today. Computers became the predominant new medium in education in the 1980s, only ten years after the introduction of television and video mediums (Stewart et al, 2010). Over the past thirty years, mobile technologies have become increasingly integrated into society and has therefore led to increased integration into education. The implementation of the Common Core Standards in 2010 has also impacted the integration of technology in the classroom.

In recent years, the internet as well as mobile information and communication technologies have changed the way people operate in everyday life (Felvegi, 2013). "Digital

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media and mobile technologies provide youth with the ability to interact with others at their convenience, with time and place posing no hurdle” (Hoff, 2014, p. 46). The internet has also expanded the possibilities for students to learn from their computers and phones. The societal shift to use new mobile technologies has impacted the goals and function of education because the change has impacted the skills needed to function in society (Felvegi, 2013). Educators have adapted new technologies because of the Common Core State Standards requirements. There is also a growing need for students to be familiar with mobile technologies in terms of how to use them effectively for their academics. Literacy is a term that “no longer refers exclusively to the reading and writing of printed text, it involves creating and deciphering meaning through a multitude of modes and mediums” (Hoff, 2014, p. 12). Mobile technologies and internet access have become an integral part of the classroom. The integration of technologies has changed the definition of literacy along with the mediums and methods of teaching reading and writing skills.

Reading, Literacy, and Technology

Literacy has become an issue of concern in United States schools for several reasons. In 2009, only twenty-eight percent (28%) of eighth grade students and thirty-four percent (34%) of twelfth grade students were able to achieve proficient reading standards according to a report by the National Education Goals Panel (Joseph & Schisler, 2009). The reading scores for eighth grade students remained stagnant from 2009 to 2011, showing no increase and revealing no immediate improvement following the implementation of the Common Core State Standards (De Primo, 2015). Data also indicated that “less and less time was allocated for students to read in school” during those years (De Primo, 2015, p. 2). Reading scores have continued to decline according to the 2019 National Assessment of Educational Progress. Sparks (2019) reports that reading scores among fourth and eighth grades have “declined significantly across states, races,

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and income levels, in public and private schools” (p. 1). The literacy among U.S. students has been significantly impacted in the last decade. However, the source of decline and the extent of the impact are yet to be known at this time, as researchers are currently working to identify the source and develop solutions.

In order to identify the source of literacy decline, it is important to understand the obstacles faced by struggling readers. Successful readers must be able to decode and infer meaning from literary and informational texts (Grover & Hannegan, 2011). Maynard (2016) asserted that, “Reading for understanding requires the ability to reason, synthesize, problem solve, and interpret information” (p. 24). Struggling students experience difficulties depending on their background of experience because reading “involves the modification of current knowledge to assimilate new knowledge” (Maynard, 2016, p. 24). In order to increase literacy, readers must be able to have a literal understanding of the text, reflect on the meaning, and engage with the text to develop their own understanding (Race, 2004). “Technology no longer limits design, nor type of media used; therefore, readers need to possess adaptable skills that let them engage and grow with each new text they encounter” (Felvegi, 2013, p. 21). As mobile technologies have become more relevant in society, they have become an essential tool for teachers to help struggling readers.

In the past decade, teachers have used technology that they already had to boost the literacy of their students. Computer technologies and programs have allowed students to overcome some of the challenges that have prevented them from keeping up with reading (Ash, 2011). Audiobooks have become part of the solution to increase student literacy because the act of listening to a person reading a text removes the struggle for the reader to decode the words. According to Grover and Hannegan (2011), audiobooks have enhanced literacy skills by

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providing models for fluent reading, building vocabulary, and encouraging independence. As a result of audiobook integration, the barrier for decoding is removed, allowing readers to gain skills in making predictions, drawing conclusions, making inferences, and retelling. However, students must be active listeners when audiobooks are being used for the method to be effective.

Students must also have the attitude and motivation to be involved and engaged in reading in order to improve their reading skills. The continuous decline in literacy among students indicates that students may be experiencing a shift in attitude towards reading.

According to Juarez (2014), the most consistent predictor of student reading aptitude is student attitude and how much they enjoy reading in the first place. Students that have poor attitudes towards reading will not be as motivated to work towards increasing their literacy and cannot be forced to improve regardless of the methods used to help them. Literacy skills continue to be an important factor for individuals to compete for better jobs within society. Race (2004) indicated that, “Students who struggle with literacy in or out of school become members of communities of others who are like them” (p. 16). While growing technologies can help some students engage and succeed, it is unlikely that technologies will engage all struggling readers.

Technology is redefining literacy, transforming the methods for teaching and is continually being developed to create new ways to engage readers. Technologies have led to new literacy practices that reflect social practices (Race, 2004). Mobile technologies have changed the ways in which people communicate and interact with each other, therefore changing the social interactions for teens and adolescents. Internet access and social media provides new ways for individuals to isolate themselves from opinions or ideas that make them uncomfortable and allows people to avoid social interactions (Clough et al, 2013). The social shift has led to increased social isolation which has allowed for people to maintain relationships with like-

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minded individuals and created easier avoidance of individuals that hold different views. Mobile technologies have become an integral part of communication and have led to varying degrees of dependence based off of an individual's social relationships. Adolescents and middle school students are required to meet face-to-face with their teachers in the classroom but the dependence on technologies for social reasons has become another issue in U.S. schools.

Students use mobile technologies to maintain their social relationships and are also required to know how to use them for their academics. Writing methods have changed dramatically from pencil and paper to online word processing programs. Dinehart (2015) states that "explicit instruction for keyboarding would improve the fluency of typing, and as a result will improve the quality of typed essays" (p. 106). However, typing instruction is not always offered, as students have become increasingly more practiced with their computer skills. Reading is another skill that has become transformed by the internet. Reading instruction is often based on required text and assignments but is now able to be read through online audiobooks instead of having the teacher read it aloud. Common Core State Standards have increased the importance for reading and writing skills through increased standards and requirements. However, "children are not learning the basics of evaluating web information and the proper importance of being a responsible digital citizen" (Is Technology Killing Critical Thinking Skills?, 2010, p. 8). Effective reading and writing skills are important for academic success but there are several concerns and obstacles that have resulted from increased technology integration.

The Importance of Writing: Concerns, Obstacles, and Technology

The mediums used for writing have changed the ways in which people are able to express their ideas. Handwriting has become a transitional skill for typing as computers and word processing programs have made the writing process easier. However, handwriting remains an

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essential skill that must be taught well in order to enhance the writing process and enable children to convey their knowledge and demonstrate mastery of content in other subject areas (Asher, 2006; Collette, Anson, Halabi, Schlierman, & Suriner, 2017). Handwriting skills lead to a better understanding of the writing process and should therefore not be abandoned by educators. Dinehart (2015) reported that quality handwriting has been positively linked to academic performance. McCarroll and Fletcher (2017) also indicate that, “when handwriting is mastered some students experience more success in writing and reading” (p. 8). However, McCarroll and Fletcher (2017) also revealed that there is very little evidence to support the claim that handwriting proficiency significantly impacts academic performance for students.

Handwriting continues to be an important skill for students to succeed in their academics, more specifically for their reading and writing skills. Although available research shows a positive correlation between handwriting skills and academic performance, Dinehart (2015) reported that, “the importance of handwriting instruction in elementary education has diminished significantly” (p. 98).

Writing instruction in elementary schools varies in the United States. Asher (2006), a prominent researcher in occupational therapy, has conducted several studies to determine the source for increasing cases of dysgraphia, a learning disability that affects writing abilities. Asher (2006) has found that “many cases of apparent dysgraphia are a result of inadequate teaching” (p. 467). She also found in her study that “educators in one school district use a variety of methods and tools to teach handwriting with no continuity of instruction between grade levels” (Asher, 2006, p. 467). Teachers in a single district revealed that the continuity for writing instruction is important in order for students to develop fluent handwriting skills as a tool of expression. Four teachers in Asher’s study indicated that they had to review and teach correct

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letter formations in fourth and fifth grades, revealing that the teachers in this district differed in their practices and beliefs regarding appropriate handwriting instruction. Students are unable to develop fluent handwriting skills because lessons and instruction differ between grades and teachers. Asher (2006) asserted that, “Students need consistent instruction on how to form the individual letters and the instruction should be coordinated with the higher grades” (p. 467). Creating instructional continuity allows for teachers to hold the same expectations of their students writing abilities in the upper grades. In 2007, test scores revealed that eighteen percent (18%) of twelfth-grade students had not met the basic writing skills of narrative, expository, and persuasive texts (Juarez, 2014). The lack of instructional continuity in the language arts classroom is a potential factor that could lead to the decline in writing proficiency.

The variations in writing instruction is one of the primary obstacles for students to develop proficient writing skills. Variance in instructional practices occurs partly because teacher training is lacking in that area and because teachers do not feel competent in teaching handwriting in elementary schools (Collette et al, 2017). Despite the preservice coursework and training required to teach, Dinehart (2015) states that teachers feel unprepared to teach handwriting in their classrooms. It is possible that trainings do not specifically address handwriting instruction and that the lack of training causes teachers to avoid explicit handwriting instruction. Writing on a daily basis is a requirement among lower grade elementary schools but is not always part of the upper grade requirements. As the mediums of writing continue to change, it is important to implement handwriting practices among all grades.

The implementation of Common Core State Standards has also influenced handwriting instruction in elementary schools. The Common Core State Standards have created an indirect barrier for handwriting instruction by placing more emphasis on content learning standards in

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reading, writing, and mathematics. Handwriting instruction is not specifically addressed in the Common Core curriculum and has led to a decline in handwriting instruction (Collette et al, 2017). The decline in handwriting instruction negatively affects the writing process and therefore affects children's written expression. "Without effective handwriting instruction, children's written expression become increasingly frustrating for struggling students" (Collette et al, 2017, p. 8). The Common Core State Standards were implemented to help students with their writing but has had the opposite effect because of the lack of handwriting instruction. The decline of handwriting instruction is also limited by teachers so that they can focus more on teaching the large amount of Common Core material that must be covered in one academic year (Collette et al, 2017). The Common Core State Standards have specified large amounts of material for teachers to use but lack specific instruction in handwriting negatively impacting students' written expression. This is to say that the Common Core State Standards are inconsistent with student preparedness because the standards placed on writing require the student mastery of written symbol production, which requires systematic instruction and practice before proficient composition is even possible (Collette et al, 2017). There is a lack of handwriting instruction as a result of the Common Core State Standards as they have omitted specific handwriting instruction and have introduced the new requirements for integrated technologies.

The integration of technology in the classroom has impacted writing instruction in several positive ways. Computer use has altered the writing process by "removing the barriers in revision that previously existed when paper and pencil were the only available tools" (Dixon, Cassady, Cross, & Williams, 2005, p. 181). The integration of internet use in the classroom has also opened new instructional resources that have created new learning possibilities for students in the U.S. Students are able to access research materials and information to incorporate in their

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writing. The use of word processing also allows for students to develop typing skills and allows for practice with computer programs. Furman (2015) believes that we can help children flex their creative writing muscles using web-based resources. Technology has removed some barriers for writing and has allowed access to limitless information for students to use and learn from. However, navigating the internet and interpreting information are skills that must be taught effectively for students to be able to utilize technologies to enhance their learning experiences.

Writing continues to play a major role in our communicative world as it is the vehicle for sharing ideas, recording research, and a form of creative expression for society. Sorensen (1977) wrote that classroom writing is a means of expression and a creative extension of oneself. Writing continues to be an important skill for communicating and conveying personal thoughts. While technology has changed the medium of writing, learning how to effectively utilize the writing process continues to be an important aspect of learning in the classroom.

Benefits of Technology Integration

There have been several benefits that have come with the last ten years of technology integration in U.S. schools. Mobile technologies including laptops, tablets, and increased internet access have provided alternative means to “challenge students that are not motivated by a personal desire for instructional strategies that promote thinking and problem-solving skills” (Race, 2004, p. 20). Technology has allowed for teachers to engage their students in the classroom using different strategies and resources. The primary goal of education is to balance inequalities, facilitate social mobility, and to prepare students to adapt to new experiences in everyday life (Felvegi, 2013). Part of preparing students for everyday life includes the use of computer technology. Education must integrate technologies, not only because of the

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implementation of Common Core, but because students must be able to adapt to the changes in society.

Mobile technologies have the potential to increase student engagement in the classroom. The internet provides a massive amount of information and resources that when used effectively, can enhance the facilitation of learning. Stewart and his colleagues (2010) asserted that, “New media can enable teachers and students to immerse their senses in the material and to engage in two-way communication with and about the subject matter” (p. 3). Technology also has the potential to help improve students’ reading and writing skills. One of the cautions of technology use is that teachers are “not doing the same thing with new tools but, doing new things or difficult old things with tools that make it easier” (Ash, 2011, p. 22). It is important to remember that technology is a tool that must be utilized effectively in order to improve students’ reading and writing skills.

Research shows that technology integration has impacted the reading classroom in a few positive ways. Maynard (2016) has found that electronic books are driving renewed interest in classic literature because the medium facilitates interaction with the text by including images and videos that are not available in print versions. Electronic books are also more cost efficient in terms of upkeep and replacement. Maynard (2016) reports that “print textbooks have a 2-3 year cycle before needing replacement” (p. 6) and that digital textbooks eliminate the need to purchase new print textbooks every 2-3 years. The internet allows for digital textbooks to be updated on a regular basis so that the information can reflect current events as they occur. Teachers are also able to modify digital textbooks to fit the needs of their classes. Sparks (2019) states that, “widescale, extensive use of computers and tablets in reading classrooms has boomed

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only in the last decade” (p. 12). As a result, it is difficult to determine the long-term impacts of how reading on digital devices is changing students reading skills and habits.

Computers and word processing programs are changing the mediums used to learn and practice writing skills in the classroom. Keyboarding is another medium that could potentially replace handwriting skills in the classroom. With explicit keyboarding instruction, students are able to improve their fluency of typing which allows them to improve the quality of their writing (Dinehart, 2015). Using word processing programs is beneficial for writing skills because they allow for users to easily edit and modify their writing. With the addition of the internet, writing documents can now be shared between classmates and the teacher for feedback and comments. Writing fluency has also improved as a result of technology integration. “Peterson’s 1993 analysis of fluency showed that students will compose more content in a thirty-minute time frame using computers versus writing by hand” (Dixon et al, 2005, p. 182). This study shows that typing is a faster method of writing as the quantity of writing is greater than the quantity produced by hand in the same time frame. Computers can correct spelling and grammatical errors, but it is important to remember that “the student is ultimately in control of the way technology is used” in the classroom (Is Technology Killing Critical Thinking Skills?, 2010, p. 8).

Drawbacks of Increased Technology Use

With increased technology use in the classroom several drawbacks have emerged. Mobile technologies have developed so rapidly that educators struggle to keep up. Felvegi (2013) asserted that, “the continual changes in new technologies have brought great possibilities, but also great challenges, new sets of skills and competencies needed to cope with them” (p. 17). It is difficult to develop new skills in an equally fast paced manner as technology is continuing to

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change. As a result, a gap between digital natives, students, and digital immigrants, teachers, began to appear in 2010 (Stewart et al, 2010). There are some teachers that have undergone the shifts in technology use for longer than the past ten years. Teachers with the most experience have had to adapt to the changes in technology in accordance with Common Core State Standards, while students have grown up with the same technologies used in their classrooms. A profound digital divide also exists “around the world in terms of economic and social class” (Stewart et al , 2010, p. 3). The digital divide has led to varying degrees of access to technology among economic and social classes.

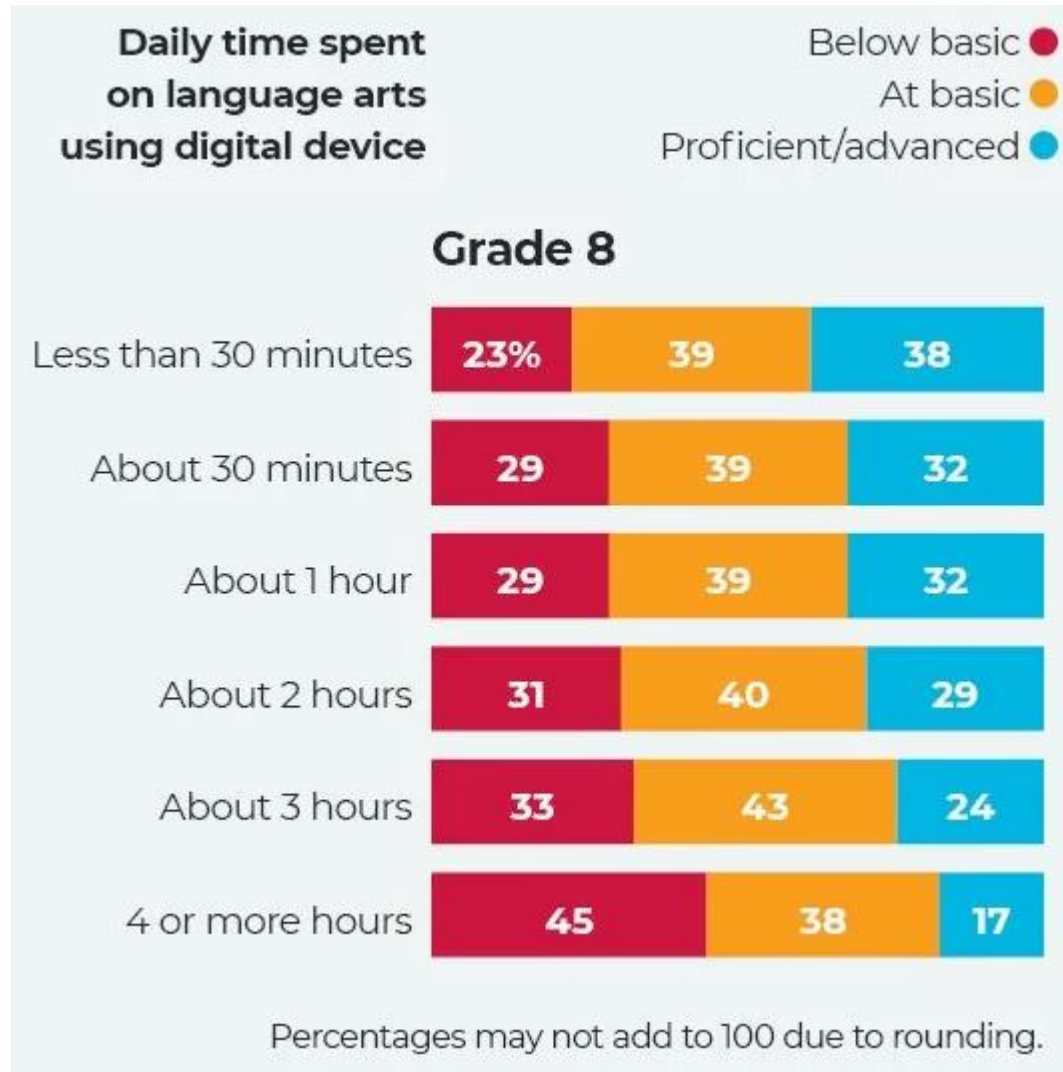
While technology has been integrated into U.S. public schools, students from low income families cannot always provide internet access or the tools necessary to use technology at home. Ash (2011) revealed that most of the students participating in her study did not have access to computers at home. However, the “National Assessment of Educational Progress revealed in 2019 that more than 9 in 10 students in grades four and eight have access to a computer, tablet or smartphone for academic work at home, with the vast majority having access to more than one device” (Sparks, 2019, p. 7). There has been a significant increase of technology access outside of school and the gap between economic and social classes in terms of technology access has decreased over the past ten years. As teachers utilize online resources in teaching, it is important to remember that having access does not mean that students actively engage with the given materials (Hoff, 2014). Students must learn how to utilize the internet and technological resources in order to actively engage with web-based resources. Participants in a 2004 study “entered high school lacking basic computer skills and showed minimal interest in using the computer for anything other than games or fashion and music websites” (Race, 2004, p. 162). It is important to teach students how to use technology as an educational tool.

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Students must be able to use technology successfully in order to access online resources and learn through the internet. In 2004, typing skills were an obstacle to successful technology use along with an inadequate understanding of Microsoft Word (Race, 2004). The same obstacles are not as problematic in 2019. The digital divide has created students that are more experienced with new technologies but still lack the guidance to use technology as an educational tool. A 2010 report included several teacher perspectives indicating that “children are not learning the basics of evaluating web information and the importance of being a responsible digital citizen” (Is Technology Killing Critical Thinking Skills? 2010, p. 8). Part of the struggle to evaluate information includes the negative impacts of technology on reading skills.

Reading through newer technological mediums has positive impacts along with negative impacts. Studies have found that reading through digital media has a negative effect on reading skills. Maynard (2016) reported a study by Dundar and Akcayir concluding that browsing and manipulation of digital textbooks reduces a readers’ ability to comprehend details. There is also an increased amount of distractions that come up while using internet-based reading sources. Pop-up ads disrupt the reading process which causes readers to become less focused on the comprehension of content. Students must also have the self-control and discipline to avoid using their mobile technologies for entertainment or social reasons while they are reading. Using online reading resources is more distracting for students. However, there is a significant use of digital devices for language arts classrooms among eighth graders. The following screen time figure indicates the most recent data for technology use in a language arts classroom among eighth graders.

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Note: Reprinted from Screen time up as reading scores drop. Is there a link? by Sarah Sparks. Retrieved from <https://www.edweek.org/ew/articles/2019/11/08/screen-time-up-as-reading-scores-drop.html> Copyright 2019 by Editorial Projects in Education.

Increased Technology Impacts on Health

The integration of technology in the classroom has changed the ways in which students learn and has increased the amount of screen time students experience daily. Rapid technological improvements and increased integration draws youth to excessive screen time use over the recommended 2 hours per day limit (Lissak, 2018). Domingues-Montanari (2017) indicated that, “There is a general consensus among health authorities that excessive screen time has an adverse impact on childhood development” (p. 333). Excessive screen time hinders cognitive abilities

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and attention spans because the exposure to fast-paced internet content is not attention demanding (Lissak, 2018). Shorter attention spans and hindered cognitive abilities are not conducive to learning in all educational settings. Excessive screen time has also been linked to “depression and suicidal behavior among adolescents” (Lissak, 2018, p. 152). Overall, the health of middle school students is a major concern regarding increased technology use. Adolescents between the ages of 6-17 that are rated as having attention problems were found to have greater rates of screen time (Lissak, 2018). Screen time in the language arts classroom indicates that most students are spending over half of their two-hour recommended limit for their academics. It is important as educators to be mindful of the ways in which technology is being utilized as an educational tool. It is equally important for parents to be mindful of the amount of screen time their children experience in their academic school day. Domingues-Montanari (2017) reported that “parents admitted to not limiting their children’s screen time to avoid conflict and social isolation or to entertain or distract children” (p. 333). However, it is very important to remember the health impacts of excessive technology use. Excessive screen time accumulates throughout a students’ day at home and at school. Middle school students are directly impacted as a result of increased technology use in their social relationships along with their academics.

Methods and Procedures

This study focuses on the middle school language arts classes. Students in middle school are preparing for high school and have been through their duration of school with the Common Core State Standards. In order to learn more about the practices in the language arts classroom, data is collected from middle school language arts teachers. Language arts teachers are directly involved with their students and can provide the most insight for the impacts of technologies on their students. Principals are also insightful as they can provide information to the ways in which

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technologies are implemented and the ways in which traditional resources, including libraries and textbooks, are prioritized at their school sites. Superintendents are another source of information because they are indirectly involved in technology integration and cannot directly see the impacts. The range of subjects for this study are based on their direct involvement on the integration of technologies in the classroom.

The research for this study includes several past studies and heavily includes the findings of past projects. However, teacher surveys (See Appendix A for Teacher Survey Questions), online surveys and questionnaires (See Appendix E for Online Teacher Survey and Questionnaire), and interviews (See Appendix D for Teacher Interview Questions) will provide direct data that will reflect the practices and opinions of current teachers. All questions will be designed to seek the answer to the research questions. The initial approach started out by locating middle schools and contacting administrators. I began my research from the most indirect influence, superintendents, and moved towards the teachers who are more directly involved. I interviewed superintendents (See Appendix C for Superintendent Interview Questions), principals (See Appendix B for Principal Interview Questions), and teachers (See Appendix D for Teacher Interview Questions) within a two-week period. Teachers who were interviewed were also surveyed. In order to get more comprehensive data, I reached out to middle schools that were not represented in the two-week interview period through the use of an online survey and questionnaire (See Appendix E for Online Teacher Survey and Questionnaire). Most administrators did not respond so I contacted teachers through their school websites and sent an email with a link to my survey and questionnaire. This approach gave me varying opinions but consistent information regarding technological integration. This approach allowed me to get an idea of what to expect as I moved from superintendents (See Appendix C for Superintendent

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Interview Questions), principals (See Appendix B for Middle School Principal Interview Questions), to teachers (See Appendix A for Teacher Survey) within a school district. All interviews were conducted in person and were recorded in order to maintain a level of professionalism that is sometimes lost in phone calls. Surveys were preferred to be conducted in person as well. However, most teachers had varying free time in their days and were unable to meet in person. In response to this, I created an online survey and optional questionnaire in order to expand my research to teachers that would otherwise be excluded from this research study and narrow my findings.

The use of surveys, interviews, and online survey with a questionnaire allowed for me to obtain a variety of information. The impacts are sometimes deeper than what is apparent on the surface and this approach allowed for teachers, principals, and superintendents to provide their input on the subject. What I found were varying opinions on the subject of technology in the classroom among the research participants. Quantitative data was collected in the form of surveys to specify what types of technologies are being used and to gain perspective on the degree to which students are using technology in the classroom. The bulk of quantitative data was collected through the use of the online teacher survey and questionnaire (See Appendix E for Online Teacher Survey and Questionnaire) and while this method was tedious, it allowed for me to gain data from a broad group of teachers from varying school sites. The online approach was a secondary attempt to gain more data and it provided relevant data that gave insight to my primary and secondary research questions.

Results and Findings

Technology has impacted the language arts classroom in several ways. The Common Core State Standards have mandated that technology is integrated into the curriculum. As a

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result, reading mediums have changed but the majority of teachers in this study emphasize the use of traditional mediums. Reading scores also remain stagnant among middle school students, with no signs of increase or national improvement. Writing mediums are also shifting to the use of computers as there are more tools available. Teachers indicated that they still integrate daily handwriting practice in middle schools and that the quality of writing is lower. Students often revert to “text talk” when they are typing for academic reasons. Students struggle to separate their social language from academic language resulting in decreased quality of writing. Teachers are relying on library access to encourage their students to read, but funding is steadily disappearing. Teachers must find new ways of encouraging their students to explore their interests in literature as libraries are adapting to the technological needs of students. Teachers and students are also increasingly dependent on technology to function in their classrooms. Teachers and students must be prepared for situations that make technologies unavailable. Teachers can still be teachers without the internet. Increasing technology use in a students’ daily life is negatively impacting reading comprehension and writing quality. Teachers must find ways of balancing technology use with traditional methods for reading and writing.

1) What does the research say about the impact of growing technology on students’ reading and writing skills?

According to Juarez (2014), technology has changed the classroom in several ways. The increased access to the internet is “profoundly changing the way humans learn and acquire knowledge and information” (p. 2). As a result of growing technology, the classroom has had to adapt and address the changes in knowledge acquisition. The internet makes it easier for teachers to tap into students’ interests and provides an opportunity to teach digital and media literacies (Ash, 2011). Computers have also changed the medium for writing but the research on the

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impacts of technology on the mental writing process are far from comprehensive and results of existing studies are complex (Dixon, Cassady, Cross, & Williams, 2005). The integration of internet access in the classroom has also resulted in the “learning not being limited to the physical space of the classroom walls” (Juarez, 2014, p. 3). The internet allows students access to several informational sources that are thought to enhance the learning experience.

Digitalization of media has become “more sophisticated in the ability to present subject matter vividly, seamlessly, and interactively” (Stewart et al, 2010, p. 3). While computer technologies and the internet have expanded our informational world, it is important to remember that some things cannot be learned through the internet. Clough et al (2013) reminds us that information is helpful only if we can determine the meaning of it and that moral values are developed through interpersonal relationships, not computers. Teachers indirectly teach their students life skills like accountability and responsibility, important skills needed to be successful in life.

2) How are teachers currently teaching reading and writing in their classroom?

Teachers indicated any and all ways technology is integrated into their classrooms. Nine out of twenty-five (36%) participating teachers reported that they require their students to read from a hard copy book everyday while sixteen percent (16%) indicated the opposite, having no requirements to read from hard copy books. Many participants indicated that several integrated technologies have resulted in several classroom benefits. Google classroom is the primary resource mentioned by teachers while online quiz sites and reading programs are secondary. Technology based reading programs include Accelerated Reader along with access to digital libraries. A participant indicated that they allow students to play academic games because it helps the students to reinforce skills (Online Survey Teacher Respondent A, personal communication, 30 October 2019). Another teacher stated that students are expected to utilize

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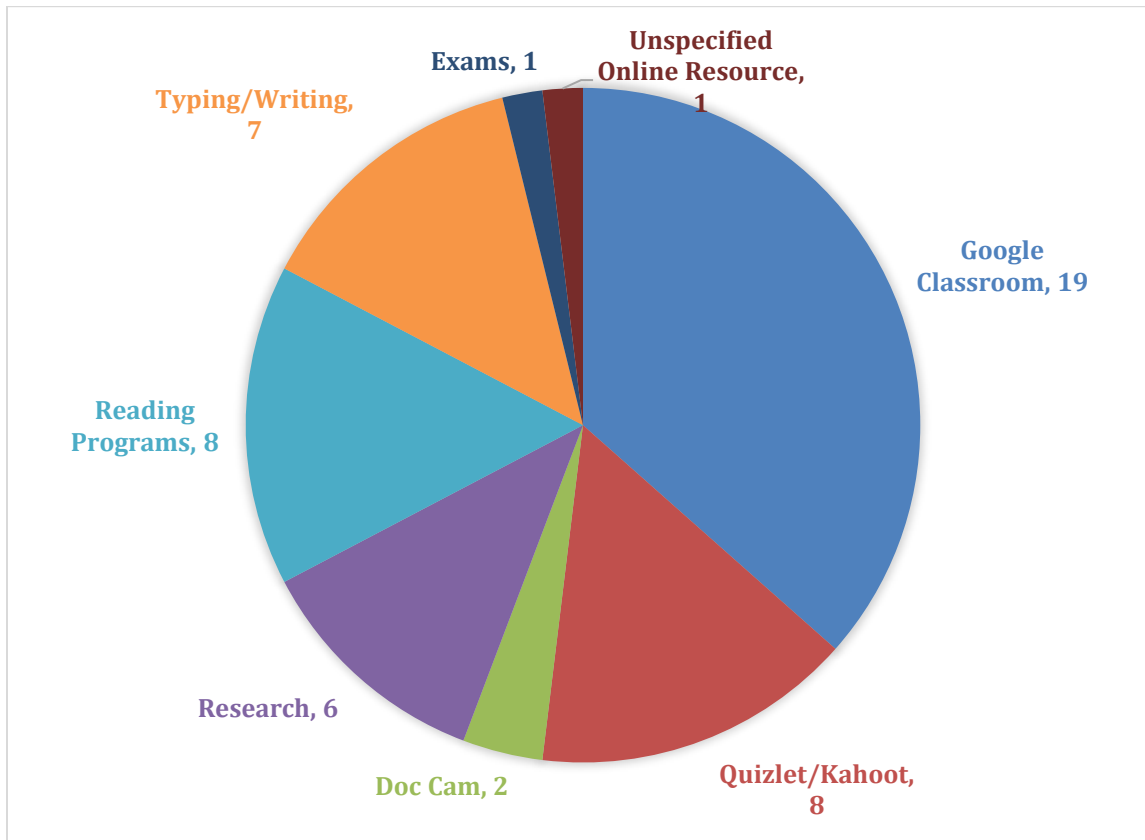
technologies when they are absent to make up class assignments. Being absent no longer excuses students from classwork (Online Survey Teacher Respondent B, personal communication, 30 October 2019).

3) How has the medium of teaching changed in relation to keyboarding skills?

Thirty-six percent (36%) of participating teachers indicated that they require their students to handwrite assignments five days out of the school week. Daily typing requirements are not as common as only two participants (8%) reported that class assignments and homework are typed every day. The teacher survey (Appendix A) and online teacher survey and questionnaire (Appendix E) also revealed that there is a slight imbalance of technology use for writing practice. A majority of the participating teachers (56%) require their students to type assignments 2-3 times a week while there was a thirty-six percent (36%) majority indicating that they require students to handwrite assignments every day. The teacher survey (Appendix A) and online teacher survey and questionnaire (Appendix E) indicated that a majority of participating language arts teachers place more emphasis on handwritten assignments as opposed to typing. The types of technologies and methods of use in middle school language arts classrooms are indicated in Graph 1.

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Graph 1: Integrated Technologies



Three out of four interviewed principals stated that their school sites were considered to be one-to-one, meaning that each student has their own mobile device, chromebooks, for academic use at school and at home. Principal D (Appendix B) indicated that accommodations are made for low-income families so that students can still access the internet. Principal A indicated that their school site is not considered to be one-to-one but has the same type of mobile technologies, chromebooks, available for their students during school hours. The data indicated from the superintendent interviews (Appendix C) was consistent with the information given by participating principals. However, when asked what has changed, Superintendent B stated that “effective teaching hasn’t changed but the ways we engage them have and technology has made learning more engaging” (Superintendent B, personal communication, 16 October 2019).

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4) Are students dependent on technology for their reading and writing lessons and homework in middle school classrooms?

Principal opinions varied on the topic of student dependence on technology. Principal A indicated that the school was not one to one and therefore the students are not dependent. However, Principal A did state that the students would lose a lot of the benefits that technology provides if they had to go without (Principal A, personal communication, 11 October 2019). Principal C also stated that their current students were not dependent, and that student dependence varies based on the group of students (Principal C, personal communication, 21 October 2019). Principal B stated that student dependence increases year after year (Principal B, personal communication, 17 October 2019). As movement towards technology integration increases, so does the dependence on the use of that technology. Principal D indicated that their students were absolutely dependent on their electronic devices for academics. When the power goes out, Principal D's students do not know what to do or what to expect during their school day (Principal D, personal communication, 21 October 2019).

A teacher's perspective revealed to be very different from the participating principals. Twenty participating language arts teachers explicitly specified levels of student dependence. Of the twenty, three stated that their students are not dependent on technology. Teacher A (Appendix E) in this category stated that they do a ton of group work and as a result, the students depend more on each other rather than technology (Teacher A Online Survey Respondent, personal communication, 30 October 2019). Teacher M stated that they do not consider their students dependent because they do not consider them competent with technology use (Teacher M Online Survey Respondent, personal communication, 22 October 2019). Teacher B (Appendix E) stated that students in their class needed to be shown visually what assignments look like

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online but that the students are not dependent (Teacher B Online Survey Respondent, personal communication, 30 October 2019). The seventeen remaining teachers indicated dependence to varying degrees.

The first group comprised of three teachers stated that students are dependent on technology use for their academics indicating that they need internet access to view their Google classroom, assignments, and instructions. These teachers also mentioned that students are dependent on technology for writing purposes as they use word processing tools like spell checks and synonym search. The second group comprised of five teachers, stating that students are addicted to their technology for social purposes and communications. There were several written statements indicating that students are dependent on their mobile phones. Table 1 includes teacher statements indicating that students are dependent on their phones and their ability to access the internet.

Table 1: Teachers Say Students are Addicted

Teacher W	“Some students wrote in their narratives that they would literally die without wifi. The fact that this even comes up is a testament to our changing world.”
Teacher P	“Students have meltdowns if you take away their phones.”
Teacher K	“Students communicate with others and their parents.”
Teacher Q	“Students are completely addicted to their phones.”
Teacher W	“Students check their phones constantly, at every chance they get.”

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The remaining nine out of twenty participating teachers expressed that students were extremely dependent on technology use in several ways. Teachers had similar statements regarding similar issues as presented in Table 2.

Table 2: Student Dependence According to Teachers

# of Teachers	Issue Dependence	Statements
2	Analog vs. Digital Clocks	<ul style="list-style-type: none">- Students cannot read analog clocks- Students struggle to tell time
3	Entertainment	<ul style="list-style-type: none">- Constantly using technology for something to do- Dependent for entertainment- When something is hard in class, students shut down
4	Internet Access	<ul style="list-style-type: none">- Dependent for searching facts and reference materials for art- All work is done on chromebooks- Students struggle to keep up without a chromebook or wifi- Students are dependent on the ability to access the internet

5) What is the quality of student writing in terms of organization, spelling, and grammar according to teachers?

Twenty out of twenty-five participating teachers expressed a level of concern regarding students spelling and grammar skills. Only two indicated lower levels of concern. When Teacher B was interviewed, she stated that she notices her students proofread their written work more carefully when they do it by hand (Teacher B Interview, personal communication, 11 October 2019). Teacher B also stated that students do not take the time to go back and see their errors on the computer and students make several grammatical errors where I's are not capitalized, and students use the letter "U" instead of typing "Y-O-U." Students in Teacher B's language arts classroom will sometimes turn things in on the computer that have not been spell-checked and

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have noticeable red lines underneath their errors (Teacher B Interview Respondent, personal communication, 11 October 2019). Teachers indicated in Appendix E that there are several impacts of technology use on writing quality including a lack of creative writing, and difficulty in teaching students how to paraphrase information instead of using the copy and paste feature. Teacher F (Appendix E) stated that handwriting quality has declined significantly over the past six years to the point where it is often unreadable, and typing has become beneficial as a result. Teacher L (Appendix E) also expressed concern for handwriting skills stating that it is a skill that is being overlooked. Teacher L also stated that their students spelling and grammar skills are suffering because they do not need to remember how to spell words when they type, as word processing programs will indicate the correct spelling (Teacher L Online Survey Respondent, personal communication, 30 October 2019). Teacher S has similar concerns stating that technology has slowed down students' abilities in spelling and grammar and mentioned that students revert to "text talk" instead of using academic vocabulary. Teacher S sees similar errors as Teacher B (Appendix D) in student writing including lowercase proper nouns and forgetting periods at the end of sentences (Teacher S Online Survey Respondent, personal communication, 30 October 2019). Teacher M (Appendix E) indicated that technology is more efficient, but they see the quality of writing suffer. The example given said that students will write a beautiful rough draft by hand that will look like garbage once they type it. Teacher M thinks that their students do not want to put in the time or effort to produce quality work using computers (Teacher M Online Survey Respondent, personal communication, 30 October 2019).

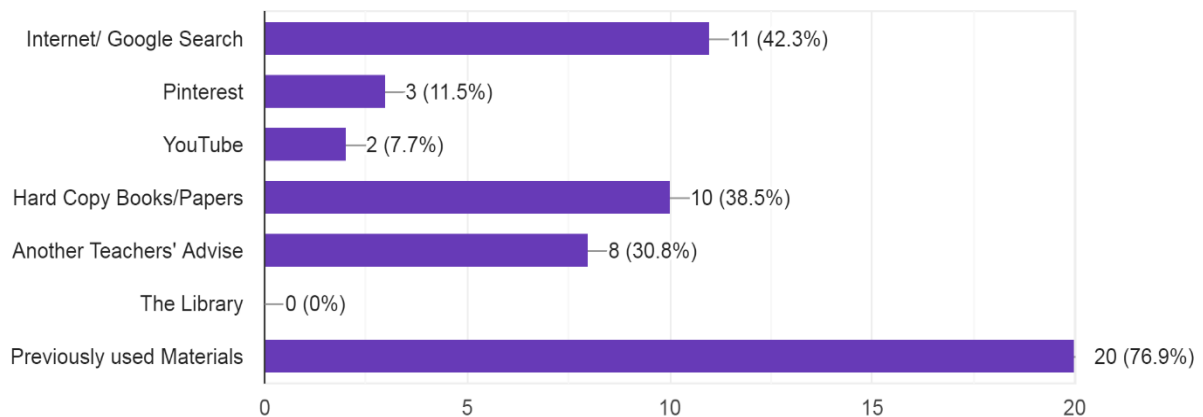
6) To what degree are teachers dependent on technology to teach their classes?

Teachers were instructed to indicate all the resources they use to prepare for teaching their classes. They were then asked which resources they most heavily relied upon. The survey

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indicated that the majority of teachers rely on the use of previously used materials and the second largest resource was an accumulation technology-based resources. Google search, Pinterest, and YouTube are all of the technology-based resources that were mentioned and when combined, make up the second largest resource indicated by teachers. Graph 2 indicates the various resources that are language arts teachers rely on for preparation.

Graph 2: Top Resources Used for Teacher Preparation



Teacher U provided the most insight of their technology dependence in the classroom stating that it has made grading easier and saves time by eliminating the need to print rubrics and assignments, hand them out, and collect them. Teacher U also stated that they have become dependent on tools like the document camera for successful lesson delivery (Teacher U Online Survey Respondent, personal communication, 30 October 2019). Teacher K and Teacher F stated that they enjoy having access to digital libraries but still prefer to use hard copy books and paper

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handouts (Teacher K and Teacher F Online Survey Respondent, personal communication, 30 October 2019).

7) How are teachers encouraging their students to maintain their reading and writing skills while integrating current technologies into their classrooms?

Thirty-six percent (36%) of participating teachers indicated in Appendix A that they think that reading and writing skills are in danger of disappearing in the future. Another thirty-six percent (36%) indicated that they were not concerned or worried about the possibility of the disappearance of reading and writing instruction in the future. Ten of the participating teachers stated that they encourage their students to read by taking biweekly trips to the library. Seven teachers also indicated that they try to encourage reading skills by providing hard copy books in class and by expressing their own enthusiasm for reading. Teacher T stated that following the completion of required class books they read a novel together as a class, something fun and interesting to engage students in reading (Teacher T Online Survey Respondent, personal communication, 30 October 2019). Teacher U mentioned that they fund a personal class library in hopes that students will find a book that they like (Teacher U Online Survey Respondent, personal communication, 30 October 2019). Teacher V stated that they find it most important to remind students that reading is a lifelong process (Teacher V Online Survey Respondent, personal communication, 30 October 2019). Teacher A (Teacher A Online Survey Respondent, personal communication, 30 October 2019) and Teacher B (Teacher B Online Survey Respondent, personal communication, 30 October 2019) (See Appendix D) mentioned that their school site has implemented a Sustained Silent Reading period for their students. During that time, students are encouraged to read a book of their choosing in hopes that the students will want to learn more about their own personal interests. Teacher A (Appendix D) provided an

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example stating that a student read a book that was set in the year 1950 and that the student was motivated to do their own reading and research on their own without having the teachers direct them to do so (Teacher A Interview Respondent, personal communication, 11 October 2019).

Teachers mentioned very little about the ways in which they encourage writing skills. All participating teachers indicated that it is important for their students to maintain both reading and writing skills, while eighty percent (80%) indicated that learning how to use technologies is equally important. Teacher A and Teacher L (See Appendix E) stated that they try to limit technology use in the classroom and that they think students get tired of starting at screens all day (Teacher A & L Online Survey Respondent, personal communication, 30 October 2019). Teacher L specifically stated that they purposefully and intentionally use hard copy textbooks and assign all homework with physical copies so that students have an opportunity to complete their work based on their preference (Teacher L Online Survey Respondent, personal communication, 30 October 2019).

Discussion

Technology has become increasingly more integrated into the classroom. Reading comprehension and writing skills are still an important aspect of a functioning society and the majority of teachers still, surprisingly, require their students to read from hard copy books every day. Handwriting practice is also implemented in the majority middle school language arts classrooms, while the majority of typing practice is required only two to three times per week. These practices reveal that the majority of teachers in this study still emphasize traditional reading and writing practices over the use of modern technologies. Two teachers stated that they believe their students get tired of looking at screens which is why they limit computer use in their classrooms. However, a majority of teachers indicated specific areas of dependence on

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technologies for themselves and their students. Teachers are dependent on technologies to prepare for teaching as well as grading. When teachers are dependent on technologies, the students also become dependent because they must have internet access and a computer in order to turn in assignments and complete tests.

With increased technology use comes increasing dependence. Teachers expressed concern regarding their students spelling and grammar skills, indicating that the skills are being lost or forgotten as a result of using informal text messaging to communicate. Teachers also stated that word processing has made it easier for students to produce more writing but stated that the quality of writing is starting to suffer. By using computers and keyboarding skills, students are trading off their quality of writing for quantity. Students must be taught how to use technologies effectively in order to counteract these negative effects that are identified by this study. Further research is needed to confirm and address solutions for the negative effects that are identified by this study.

Teachers also indicated their own dependence on technology use and stated several challenges that come along with increased technology integration. Internet access can be distracting for students and can cause them to be less engaged with class materials. Teachers cannot force their students to engage, but they can use various mediums for classroom instruction to keep things interesting. The research revealed very little about students' reading comprehension skills. However, a majority of teachers indicated that they rely on taking trips to the library to encourage their students to read. According to Principals (Appendix B) and Superintendents, (Appendix C) funding for libraries is minimal, most often relying on Book Fair fundraising and local tax measures to provide additional funds. Libraries are changing with the times, often transitioning to becoming another computer lab. With libraries being the primary

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source for reading encouragement, it is important to remember that libraries are adapting to the needs of students by including computers and digital libraries. Teachers will have to find new ways of encouraging their students to read when there are no longer hard copy books in the library. Teachers and Parents should be aware of the amount of screen time their children are exposed to in their school day as it is negatively impacting reading comprehension skills and effective writing strategies. Parents and teachers should also know the negative health impacts on their students and be aware of the amount of time their kids are spending in front of a screen. Reading and writing skills remain paramount for effective communication skills and should not be forgotten in the classroom.

Problems and Limitations

When I began the research process, I decided to omit the addition of the smallest district in the area. The district serves less than fifty students from grades K-8 in a rural part of the area. The size of this district represented the smallest school population and therefore I decided to omit them from the research process. I began this project with hopes of interviewing several teachers and principals but very few administrators responded to my initial outreach, limiting my teacher population. I addressed this issue by creating online surveys and questionnaire forms and reaching out to teachers through their school email. The lack of data motivated me to reach out to several teachers which resulted in another problem with my research. There were twenty-five middle school language arts teachers that participated in my study and the comprehensive data was more than necessary. I could have addressed this issue by eliminating questions and by rewording my survey and questionnaire to be more specific to answer my secondary research questions. This study represents several districts over the area of one large city. The data and

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findings cannot necessarily be applied to schools across the country, as my study is limited to the population of one city in California.

Other problems and limitations include my personal issues with my access to technological resources and mild addiction to checking my phone and social media. I gained a large portion of my data through my email which allowed me to broaden my findings and include schools that did not initially respond for interviews. I have not always had consistent access to my emails and would have communicated with administrators more effectively if I had the email access. Typing, listening to interviews, and recording data have also been a challenge for this project as my only working computer has had numerous issues, from failing battery charging to spontaneous shut downs. My mobile technology, laptop, is an incredible tool for doing research but has limited my abilities to work on this project. I also found that my phone and tablet were becoming distractions from doing the work required to complete this research. I had to constantly overcome the distractions by reminding myself of the negative health impacts that technology has on people. My results and findings showed that there is an increasing dependence on technology, and it is not always for academic reasons. I found myself falling victim to my own results in this case, through the distracting nature of mobile technologies.

Recommendations

Technology will continue to change the ways in which we function in society and it is important to remember that basic skills are always necessary. Reading and writing instruction have changed in terms of methods, strategies, and teaching mediums but it is important to include the basics, by reading from hard copy books and writing my hand. Both practices are still important for the language arts classroom as indicated in the results and findings, even though technology integration has become increasingly important in the classroom. Research and

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findings also found that there are several negative impacts on students' academics as well as some technology addictions for social interactions and communications. It is extremely important to remember that our technological devices are merely machines that make things easier for society to function.

Technology is going to continue to be developed to make everyday tasks easier and more convenient. Tasks like writing by hand could very well be lost in the future but events like power outages remind everyone why they need to be able to function without modern technology. Resources like power and the internet are not always guaranteed and we must remind ourselves that learning does not require these resources. While mobile technologies are becoming increasingly more integral in society, it is also important to remember to live your life to the fullest and put down the phone and enjoy life, rather than spending it on a screen. I am guilty of being in front of a screen more often than I would like but I would like to experience the world in person rather than through a screen. Students should be reminded that mobile technologies are not the only way to learn something new. Practical skills, including writing by hand and reading, are also important when modern technological luxuries are not available. Internet access make it easier for students to learn, but it is important to remember that there are several alternative strategies that can engage students in learning.

Conclusion

This senior capstone research project examines the impact of growing technology on students' reading and writing skills. The integration of modern technologies has had several impacts on students' in the language arts classroom. The Common Core State Standards have established increasing technology use in the classroom which has led to a shift in teaching methods and instruction which has been beneficial in some areas but has led to drawbacks in

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others. Increased technology integration has led to a decrease in student interest for reading. As mobile technologies are less attention demanding, it is increasingly more difficult for students to engage in sustained reading. Writing mediums have also shifted to the use of word processing programs as opposed to the use of pencil and paper. Technology has offered several tools to improve student writing, but the quality of writing is decreasing. Teachers within this study have reported that the quality of student writing is much better when it is written by hand as opposed to being typed on the computer. While the integration of modern technologies has made some aspects of reading and writing more effective and engaging, other impacts are more harmful for student health and success.

Even though teachers are prioritizing traditional reading and writing methods over modern technological devices, teachers have indicated that they are extremely dependent on internet access and modern technology to effectively instruct their class. Four participating teachers in this study, explicitly stated the impacts of technology that they have experienced. Teacher A (Appendix E) stated that students are dependent on technology when looking for reference material for art and oftentimes copy images from those available online instead of being creative and making their own. Teacher B (Appendix E) expressed concern for student organizational skills and stated that students struggle to organize their online work. Students are expected to use technology for their studies but are not explicitly instructed how to use it effectively. The other two teachers addressed issues regarding student engagement. Teacher C (Appendix E) stated that students are accustomed to bright visuals as they spend time online, being bombarded with graphics and images designed to demand attention. Teacher D (Appendix E) stated that they are always trying to keep students engaged, and sometimes, it is hard. When

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students are online, they are prone to visual distractions and teachers are struggling to keep their students actively engaged in their classroom.

The internet has the potential to provide resources for teachers to make their classrooms more engaging for their students. However, it is important to remember that some things cannot be learned through internet use and that teachers play an integral part in teaching students to be accountable and responsible for their academics. Language arts teachers are using a combination of traditional teaching methods, including the use of hard copy books along with online reading programs to keep their students engaged in their reading skills. Teachers are also placing a higher priority on hand written assignments through their daily practices. While most teachers are using word processing programs, they are requiring students to practice their typing skills less often than their handwriting skills.

Language arts teachers are attempting to balance the use of technology with traditional methods for reading and writing but there is a growing dependence on technology to engage students in learning. When teachers become dependent on technologies to teach their class, they are also creating a student dependence on internet access in order to complete work and assignments. Students are trading in their quality of writing for quantity which can be remedied if students were taught how to use technologies effectively for academic use. Teachers are primarily focused on using library resources to keep their students engaged with their reading skills, but libraries are adapting to the need for technological resources and are less of a priority when it comes to funding. Teachers must also continue to balance the use of traditional teaching methods along with technology integration in order to maintain students' reading and writing skills. It is important for both teachers and parents to be aware of the negative impacts of screen time and how much of their students' time is spent on screens at home and at school. Learning

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does not require modern technology, or the internet and it is important to remember that our mobile technologies are merely tools that make tasks easier. Reading and writing skills are important for student success and should not be forgotten in the classroom.

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IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

Appendix

Appendix A: Teacher Survey 10-12

1. How often do you require students to read from a hard copy book for your class?
a. Everyday b. 3-4 times a week c. 2-3 times a week d. Never
2. How often are class assignments and homework handwritten?
a. Everyday b. 3-4 times a week c. 2-3 times a week d. Never
3. How often are class assignments and homework typed?
a. Everyday b. 3-4 times a week c. 2-3 times a week d. Never
4. What resources do you use to prepare yourself for teaching your class? Circle all that Apply.
a. Internet/Google Search e. Another English Teachers Advice
b. Pinterest f. The Library
c. Youtube g. Previously used Materials
d. Hard copy books
5. Which resource do you primarily rely on for class preparation?
a. Internet/Google Search e. Another English Teachers Advice
b. Pinterest f. The Library
c. Youtube g. Previously used Materials
d. Hard copy books
6. How concerned are you with your students' spelling and grammar skills?
Please Rate on a Scale of 1-5

Yes 5 4 3 2 1 No
7. Do you think it is important for your students to maintain their reading and writing skills?
Please Rate on a Scale of 1-5

Yes 5 4 3 2 1 No
8. Do you think it is important for your students to learn how to use new technologies?
Please Rate on a Scale of 1-5

Yes 5 4 3 2 1 No
9. Do you think that reading and writing skills are in danger of disappearing in the future?
Please Rate on a Scale of 1-5

Yes 5 4 3 2 1 No

IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

Appendix B: Middle School Principal Interview Questions

1. What kinds of technologies are available to students at your school?
2. How much of your schools' funding is put into updating the libraries?
3. How much of your schools' funding is put into upgrading and implementing new technologies?
4. In what ways do you influence the funding choices for your school?
5. What is your opinion, do the benefits of using technology in the classroom outweigh the benefits of using traditional teaching methods in the classroom?
6. Do you think that your students are dependent on the use of technology for their academics?

IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

Appendix C: Superintendent Interview Questions

1. What kinds of technologies are available in your school district for middle school students?
2. How much of your schools' funding is put into updating the libraries?
3. How much of your schools' funding is put into upgrading and implementing new technologies?
4. How has teaching changed since you began a career in education?
5. Are school districts able to keep up with the growing changes in technology?

IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

Appendix D: Middle School English Teacher Interview Questions

1. How is technology integrated into your classroom?
2. How do you monitor your students' use of technology in your classroom?
3. In what ways is the use of technology beneficial for you and your students?
4. What are the primary challenges that you experience as a result of increased technology in the classroom?
5. In what ways do you encourage your students to explore their individual interests in literature?

IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

Appendix E: Online Teacher Survey and Questionnaire

Survey

1. How often do you require your students to read from a hard copy book?
 - a. Everyday
 - b. 3-4 times a week
 - c. 2-3 times a week
 - d. Never

2. How often are class assignments and homework handwritten?
 - a. Everyday
 - b. 3-4 times a week
 - c. 2-3 times a week
 - d. Never

3. How often are class assignments and homework typed?
 - a. Everyday
 - b. 3-4 times a week
 - c. 2-3 times a week
 - d. Never

4. What resources do you use to prepare yourself for teaching your class? Mark all that apply.
 - a. Internet/Google Search
 - b. Pinterest
 - c. YouTube
 - d. Hard copy books/papers
 - e. Another Teachers' Advise
 - f. The Library
 - g. Previously used materials

5. Which resource do you primarily rely on for class preparation? Please pick one, two if necessary.
 - a. Internet/Google Search
 - b. Pinterest
 - c. YouTube
 - d. Hard copy books/papers
 - e. Another Teachers' Advise
 - f. The Library
 - g. Previously used materials

6. How concerned are you with your students' spelling and grammar skills? Please rate on a scale of 1-5.

Not Concerned	1	2	3	4	5	Very Concerned
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IMPACTS OF TECHNOLOGIES ON STUDENTS READING AND WRITING SKILLS

7. Do you think it is important for your students to maintain their reading and writing skills?
Please rate on a scale of 1-5.

No 1 2 3 4 5 Yes

8. Do you think it is important for your students to learn how to use new technologies?
Please rate on a scale of 1-5.

No 1 2 3 4 5 Yes

9. Do you think that reading and writing skills are in danger of disappearing in the future?
Please rate on a scale of 1-5.

No 1 2 3 4 5 Yes

Questionnaire

1. How is technology integrated into your classroom?
2. How do you monitor your students' use of technology in the classroom?
3. In what ways is the use of technology beneficial for you and your students?
4. What are the primary challenges that you experience as a result of increased technology in the classroom?
5. In what ways do you encourage your students to explore their individual interests in literature?
6. To what extent are your students dependent on technology? In what ways?