STAKEHOLDER PERCEPTIONS OF THE IMPACT OF TECHNOLOGY ON STUDENT LEARNING IN THE HUMANITIES CLASSROOM

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Abstract

The purpose of this qualitative study was to examine stakeholder perceptions of technology use and its potential impact on student achievement and student engagement. The data were gathered from educators and administrators in a secondary school in southwestern Louisiana. The data utilized in the study were collected through surveys, observations, and interviews of stakeholders in education. The findings of the study resulted in several themes from which connections were made to answer the two research questions: What are stakeholder perceptions of technology use in the Humanities classroom and its impact on student achievement? What are stakeholder perceptions of technology use in the Humanities classroom and its impact on student engagement? Stakeholder perceptions of technology use and its impact on student achievement included: best practices for student achievement, student effort, quality teaching and teacher efficacy, feedback, and future implications. Stakeholder perceptions of technology use and its impact on student engagement included: best practices for student engagement, technology training, technical malfunctions and other obstacles, and resource availability and funding.

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Dedication

First and foremost, I would like to dedicate this study to my students – past, present, and future. As educators, I think we often forget that our students have a great deal to teach us about the world. I started this journey three years ago after only a year of teaching under my belt. I wanted to be better for my students; I wanted to be a better educator and leader. It is our responsibility to not only educate students in our content area, but in life. We live and teach by example. I hope that by completing this program, I have inspired my students to go further than they ever thought possible. I hope they realize their fullest potential, always see their worth, and reach for their dreams, regardless of how daunting they may seem to be.

Secondly, I would also like to dedicate this study to my fellow educators. Thank you for contributing to this study and selflessly giving your time by completing surveys, allowing me into your classrooms, and participating in interviews. Words cannot express my appreciation for all that you do for students and your schools. I've been an educator in three different states in the last four years, and it never fails to amaze me that in every single school I have worked, there are countless educators working diligently and selflessly to help students succeed. I truly believe that we are in the most rewarding profession and I am extremely blessed to have met some of the best educators in it.

"Education is the most powerful weapon which you can use to change the world."
- Nelson Mandela

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CHAPTER 1: INTRODUCTION

Background Information

Since the beginning of time, humankind has found new techniques and methods of completing tasks effectively and more efficiently. Technology is defined as the gradual development of different methodical techniques for making and doing things (Buchanan, 2005). While most people today would think of computers, smart phones, and machines when they first hear the word "technology," the actual concept of technology is significantly more extensive. Ventura (2015) reported that one of these earlier forms of technology included the abacus, a machine used for counting in 190 A.D. This device was the first true computer in the sense that it was a simple machine that used numbers to process information. It consisted of a wooden frame with beads on metal rods. Each metal rod had a specific value and the beads could be moved around to add, subtract, multiply, or divide. As a result of these early forms of technology, curiosity and intrigue were cultivated to make any and every task or action more efficient and effective. From the invention of the first automatic calculator in 1642 by Blaise Pascal to the beginnings of the internet in 1969, innovations in technology continue to significantly impact the development of society, government, and nations. Each invention and technological modification is also felt in classrooms and school districts, affecting students and educators alike.

When developing new technologies for the world to utilize, there are several aspects to consider. There is a distinct relationship to technological advances and social involvement that cannot be overlooked. For new innovations in technology to be accepted and successful, they must connect with social needs, social resources, and social ethos, or the way in which people interact (Buchanan, 2005; Laegaard, 2008). Without meeting the needs of each of these

categories, new technological advances would cease to be as successful or pertinent to users. One of the most basic steps that needs to be taken in terms of new technologies is to know what the target audience truly needs or wants and the functionality of the technology for a specific purpose (Schweiger, 2016). These same principles can be applied to the development and integration of technology in education.

Currently, technology impacts every aspect of an individual's life, from waking up in the morning to the way in which people conduct business. It is an integral component of modern society and the importance of one's technological knowledge should not be undervalued. Each major technological advancement has played a part in restructuring the world's workforce through simplifying tasks and creating new roles (Burgess, 2017). With every passing year, the employment fate of different professionals, such as lawyers, journalists, and pharmacists, is called into question with the loss of responsibilities due to advancing information technology (Ford, 2015). Given the impact that technology can have on a person's success in his/her career and life, the consistent access to technology should be an important factor to consider in developing curriculum and instruction in education, especially within secondary levels and in higher education.

Historically, there has typically been a notable disparity in access to technology between individuals from different socio-economic backgrounds; this currently remains true. The discrepancy is often referred to as the digital divide, which exemplifies the glaring differences between the digital lives of Americans from lower and higher income households (Anderson, 2017). Even in terms of access to the internet, in households making less than $30,000 per year, only 62% of adults used the internet. In contrast, in households with an income between $50,000-$74,999, 90% of adults have access to the internet (Zickuhr & Smith, 2012). Smart

phones have played a key role in providing internet access to individuals and helping to bridge the digital divide (Soltan, 2016). In 2012, a research report showed that young adults, minorities, individuals with no college experience, and people from low-income households were more likely to admit that they access the internet primarily from just their phones (Soltan, 2016; Zickuhr & Smith, 2012). The access to technology and internet, especially as a young adult, is crucial to cultivating valuable 21st Century skills and developing one's digital citizenship. However, there continue to be many areas in the United States where access to technology and the internet, both at home and in school, is limited or non-existent.

There are various factors that impact the implementation of learning technologies in any setting, whether that be in a business or a school. The best learning technology implementations have four characteristics in common: aim, people focus, perspective, and attitude (Taylor, 2017). The implementation must have a clear aim with a specific purpose and should solve a particular problem. An integral part of any new change is engaging people as active supporters and participants; without the support of the people, successful implementation becomes difficult to achieve. Successful groups that effectively implement new learning technologies are able to gain perspective of the bigger picture and greater good. Additionally, when those involved are able to maintain a positive attitude, implementation is more likely to be successful. These principles can easily be applied when implementing new technologies within classrooms or schools.

Often, administrators, technology coaches, and instructional or curriculum coaches receive opposition from educators resisting unfamiliar technologies in their classrooms. However, it continues to be important that educators are evolving with the technology that is becoming available for education. In the 1990s, the field of education faced a substantial shift between the instruction paradigm and the learning paradigm. Instead of simply imparting

knowledge and information to students (i.e., the instruction paradigm), educators were tasked with developing students as problem solvers through the learning paradigm (Mocanu & Nichimis, 2018). Regarding the learning paradigm, the result was to produce learning through student discovery and powerful learning environments that allowed individuals to construct new knowledge and obtain a better quality of learning. This push toward new methods of inquiry and learning would continue to develop alongside technological advances utilized in curriculum and instruction.

New technologies are created every day and an increasing number of those technologies are being directed toward the field of education. The importance of technology in education is slowly being realized as an imperative component of a well-rounded education. By integrating technology into education and the learning process, educators and schools are able to provide personalized learning for every student (Herold, 2016). Personalized learning ensures that each student has an educational approach that is tailored to his/her preexisting knowledge, learning needs, and goals (Alli, Rajan, & Ratliff, 2016). In an effort to establish technology as a formative tool in personalized learning, the Bill & Melinda Gates Foundation, along with the Michael & Susan Dell Foundation and EDUCAUSE, devised four distinct pillars of personalized learning – learner profiles, individualized learning paths, competency-based progression, and flexible and structured learning environments (Herold, 2016; Johns & Wolking, 2018). With the growing popularity of digital curriculum, blended learning, online testing, open educational resources, and distance learning or virtual education, incorporating technology into education is becoming inevitable (Herold, 2016). However, there continues to be a significant deficiency in educators' ability to balance their changing role in facilitating lessons with personalized learning while still meeting state curriculum and instruction standards.

Research Problem

The concept of digital citizenship and a solid foundation of 21st Century skills should not be underestimated in the education of young people, especially when considering their future success outside of school. By definition, digital citizenship reflects an individual's habits and actions that impact the relationships of digital content and communities (Heick, 2017). Technology can substantially improve 21st Century skills in students from all backgrounds. There are 16 different skills that a student should possess to be truly successful in the 21st Century: literacy, numeracy, scientific literacy, information and communication technologies (ICT) literacy, financial literacy, cultural and civic literacy, critical thinking/problem-solving, creativity, communication, collaboration, curiosity, initiative, persistence/grit, adaptability, leadership, and social and cultural awareness (Soffel, 2016). Even though these skills may seem standard for success, traditional education and learning is increasingly falling short of equipping students with skills that are necessary to ensure success. College graduates are now faced with competing with technology for jobs and over the past decade, wages for new graduates has steadily declined as a result of technology being able to do a job more efficiently and cost effectively. Nearly 50% of these new college graduates are being forced to take positions and careers that do not even require a higher education degree (Ford, 2015). As a result of these statistics, educators at the secondary level and in higher education should make technology skills and knowledge, specifically related to career area content, a priority in preparing graduates for a continually technologically advancing world.

Technology significantly impacts student learning in a multitude of ways, including but definitely not limited to accessibility of resources, learner motivation, language acquisition, and reading comprehension (Murphy, 2016; O'Hara & Pritchard, 2014). Through technology,

students are able to interact with others from all over the world to enhance their knowledge, understanding, and appreciation of other cultures and languages. Regarding content areas and reading comprehension, studies have shown that students perform better when given the opportunity to utilize technology. For example, in one such study, students who were taught using technology showed significantly more improvements in the recognition and use of main ideas, supporting details, and cause and effect relationships in comparison with other students who were taught the same material, but without the use of technology. The students in the technology group also exemplified better and more cohesive writing and communication skills than the students in the non-technology group (O'Hara & Pritchard, 2014). This is just one example of many in which technology has shown to be a more effective avenue of instruction and facilitation of student learning.

However, without sufficient access to technology in many public schools, it becomes difficult to ensure that each student is receiving a well-rounded education that truly prepares them for life after high school. While technology has brought challenges to education, especially for teachers and administrators, the benefits of using technology far outweigh any negative components. In a 2013 survey of educators from across the country, it was evident that an overwhelming majority of educators admitted the stark differences in the role technology played in wealthy school districts versus their low-income counterparts (Purcell, Heaps, Buchanan, & Friedrich, 2013). According to the survey, 54% of educators stated that all or almost all of their students had adequate access to technology tools while at school. However, only 18% stipulated that their students had sufficient access to digital tools in their homes. A significant majority (84%) of educators polled agreed that technology today was creating larger gaps between affluent and disadvantaged schools and districts (Purcell et al., 2013). These perceptions of

educators are important in determining their effectiveness in using the technology available, as well as their attitudes toward technology incorporation into the classroom to significantly impact student learning.

Purpose of the Study

The purpose of this qualitative study was to analyze the effects that technology use in the Humanities classroom has upon student learning through stakeholder perceptions. Educator, and administrator perceptions of particularly effective technological strategies and resources was also reviewed and analyzed. Data was gathered through interviews with educators, surveys of educators and administrators, and observations of educator classrooms. The purpose of this study stems from the relevant problem of access (or the lack thereof) to technology in public schools in the United States and how it affects student learning. The primary focus was on classrooms from different subject areas within the Humanities since technology is often primarily emphasized in the areas of math and science. This study disclosed stakeholder perceptions concerning the effectiveness of technology use in the Humanities classroom in relation to student learning, as well as revealed specific technological strategies or methods that stakeholders show to be effectual in benefiting student learning.

Research Questions

The following research questions will guide this qualitative study:

- What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement?
- What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement?

Theoretical Foundation

The theoretical framework for this qualitative study is the concept of constructivism. Constructivism revolves around the concept of how individuals learn. In general, constructivism dictates that people build their own understanding and knowledge of the world through experiencing new things and then reflecting on those experiences. This theoretical framework informs the research questions because the results will examine how students' experience with or without technology has impacted the way they learn.

The conceptual framework for the study revolves around the concepts of technology use and student learning. The study will allow the researcher to identify and interpret stakeholder perceptions of technology use in the classroom and the impact it can have on student learning. This informs the research questions because it provides the framework for creating data collection and analysis tools. A significant amount of previous research indicates a positive relationship between technology use and student learning in the classroom. The type of qualitative research that was used for the study was phenomenology. Phenomenology revolves around experiences and understanding human consciousness. This type of qualitative research was appropriate for this study because the research centers on technological experiences that further student learning and understanding.

Rationale for the Study

With each passing year, the area of technology is becoming increasingly more important to student development, learning, and preparedness. As a result of this ever-advancing world, it is imperative that students are prepared with the right tools and skills necessary for success outside of school. Additionally, studies and research have shown that the utilization of technology in the instructional process increases student learning and achievement. In 2016, United States public schools spent an average of $3 billion on digital content. Moreover, the

educational technology industry totaled more than $8 billion in revenue from educators and school systems alike (Herold, 2016). This constantly growing industry mirrors the relevance and growth of technology tools in classrooms and schools across the nation.

The concept of improving student learning in general is a much-discussed area in the education field. There are consistent inquiries to new techniques, methods, or resources that could potentially improve classroom learning. Advancements in technology are a significant portion of this discussion, especially with new innovative technological tools entering classrooms each school year. Much research has been conducted regarding technology's role in math and science subject areas. However, there is a limited amount of research regarding the use of technology in the Humanities classrooms and the significant impact it can have on student learning and engagement in these subject areas. This research study sought to determine and analyze the effectiveness of technology use in the Humanities classroom, as well as the best technological practices that proved to be successful.

Researcher Positionality Statement

The researcher for this qualitative study has taught at the secondary level for four years and holds a Master of Arts in Teaching and Specialist Degree in Education. Currently, the researcher teaches English II at a rural high school in Southwest Louisiana. As an intern teacher during a master's program and as a first-year teacher, the importance and vital role that technology plays in the facilitation of student learning was introduced. Faced with an overwhelming lack of technological resources in inner city schools, the researcher was inspired to further her knowledge of technology and its impact on education. Between 2015-2018, there were many opportunities to attend multiple professional developments and trainings to expand her understanding of technology and acquire the experience needed to make significant changes

within her classroom. Throughout these professional development sessions and other learning community meetings, many different perceptions were encountered. The impact that perceptions of technology use in educator classrooms could have on instruction and teacher effectiveness, especially in terms of student learning, was able to be fully comprehended. The various attitudes toward technology use sparked a great interest to make connections between stakeholder perceptions of technology use and student learning.

The researcher's role in the process ensured that the qualitative study, research, observations, surveys, and interviews were conducted with no bias and were free from personal opinions or perspectives. The researcher was solely responsible for gathering and organizing all data to analyze and determine the impact and effectiveness of technology use on student learning in the Humanities classroom.

Limitations and Delimitations

A limitation for this qualitative study was the time constraints associated with the research process and analyzation of data. This is a valid concern given the time period between data collection and completion of analysis and writing. Thus, there may be less differentiated data in terms of gathering information from a variety of stakeholders. To combat issues that arise from this limitation, it was important to conduct the study efficiently and to be consistent with schedules. Additionally, a diverse sampling would be considered a delimitation for this study. The school being used in the study is a middle class secondary school in rural Southwest Louisiana. According to data provided by the research district in the 2016-2017 school year, the student body consisted of 71% Caucasian, 25% African American, 3% Hispanic, and 1% Other. Accordingly, there may be a lack of diversity in the sampling group. The delimitation can be

addressed through purposeful sampling of a variety of classrooms – including different grade levels, academic abilities, and subject areas.

Definition of Terms

- Humanities: Academic disciplines that study human culture, including literature, history, philosophy, and the arts (Liu, 2014).
- Student Achievement: Measures and methods of evaluation of student data related to specific types of environments and situations where learning is being facilitated (Student Achievement, 2018).
- Impact: A marked effect or influence (Hearn, 2016).
- Educational Technology: The practice of facilitating learning and improving performance by using technological processes and resources (Kurt, 2018).
- Student Growth: How much academic progress a student has made between two points in time (Balow, 2017).

Organization of the Study

This qualitative study is separated into five chapters, with the first chapter introducing the study and providing its conceptual foundations. Also included in the first chapter is the theoretical and conceptual framework upon which the study is centered. Additionally, this section incorporates the purpose of the study, identification of the research questions, and definition of the key terms. Moreover, the first chapter discusses the rationale of the study, limitations and delimitations, and researcher positionality. The second chapter reviews the professional literature and previous research related to the study. Within the literature review, the basis of technology's impact on education is presented. The theoretical framework of technology use and student learning is detailed and further explained as a relevant foundation for

the study. Also incorporated in the second chapter is the history of technology in education, along with the benefits of incorporating technology into the classroom. In the third chapter, the research methodology is presented. Included in the methodology is a description of the population and sampling, research techniques, and procedures that were utilized throughout the study. The fourth chapter details the findings of the study and analyzation of the data. In the fifth chapter, the conclusions that were drawn from the findings of the study are explained. The implications of the study are also provided in this chapter, as well as specific suggestions for further research on the subject.

Summary

With each passing year, the use of technology in every classroom becomes increasingly more important. While many students face obstacles and deficits outside of school, their ability to have access to technology and utilize technological tools should not be withheld from their education. Technology is just one area in which students need to be significantly proficient; however, it is imperative that this area is addressed and cultivated throughout their education and within every content area. Technology should be intertwined with student education to the point that students are confident and more than competent in technology skills and knowledge. Current students have a profound advantage over students in past generations due to the beneficial assets technology provides. There are countless methods and strategies for utilizing technology within the classroom to enhance student learning to the greatest possible extent. Stakeholder perceptions of technology use greatly impact the way in which it is used and incorporated in education.

CHAPTER 2: LITERATURE REVIEW

Technology Defined

The definition of technology is ever-changing, given new advancements in science and engineering. Originally, technology was defined simply as different products and processes that are used to simplify the daily lives of individuals (Ramey, 2013). Individuals, especially those within science and technology fields, have distinct definitions of technology and how it is applied. One of the most profound and applicable definitions stipulates that technology is the general organization of knowledge for the use of practical purposes (Mesthene, 1970). Regardless of the technical definition of technology, humans continue to adapt it for their needs and distinct purposes.

Technology can be divided into three definitive components. First, technology's primary objective is to carry out a person's purpose. Irrespective of the technology, it must fulfill

specific purposes that benefit people's daily lives and actions. Next, technology contains a grouping of various practices and elements. Finally, technology should also encompass a collection of devices that are available to a specific corresponding group of people (Arthur, 2009). Often, this creative process of technology development relies heavily upon the effort of humans. The ideal outcome of technological advancements is to organize the world utilizing various methods of problem-solving (Hughes, 2004). This problem-solving process then leads to the invention and development of new practices and devices.

While many may argue that technology is slowly taking over the roles humans fulfill in society, it can also be reasoned that people play a crucial part in the creation of such technologies (Ramey, 2013). Without individuals utilizing science and knowledge to create innovative technologies, advancements would cease to exist. There is a distinct connection between humanity and technology that has long been examined. Since technologies are developed to extend human interests, it is understandable that humans and technology affect and shape each other (Kaplan, 2003). Technology's definition will continue to evolve in the future, ever dependent on human influences and innovations.

Ancient Technology

Given the various definitions of technology, it is understandable that its early forms are often scrutinized as not technologically advanced according to today's standards of technology. However, for millions of years, humans have invented technologies to assist in making tasks and daily life easier. With the first development of tools made from stone, wood, antlers, and bones, people created technologies to survive and prosper (Woodford, 2018). Even the smallest advancements that assist people in making daily life easier can be considered as technology. It can encompass any tools, machines, weapons, communication, and utensils people utilize, as

well as the way in which they are produced (Bain, 1937). As a result, the history of ancient technology dates back millions of years.

There are several main innovations of ancient technology that changed the way in which early humans viewed the world and how they functioned within it. One of the most renowned discoveries that changed the course of mankind's history was the invention of fire. Most evidence suggests that fire created by man originated over 1.8 million years ago (Kendal, 2017). While many may not consider fire as a traditional technological advancement, it continues to be deemed as a vital piece of technology that altered the way in which humans were able to live and survive. Fire permitted people to stay warm, cook their food, defend themselves from predators, and thrive in harsher climates (Cohen, 2012). Because of these benefits, individuals were permitted to make further inventions to accommodate people living longer and meeting the needs of a growing population.

The creation of stone tools pre-dates fire by over a million years. Archaeological discoveries indicate that humans created tools made from stone dating back 3.3 million years. These types of discoveries that are continually altering the way in which the timeline of technology is written show that these ancient peoples had an extensive knowledge of working wood and stone, while also implementing comprehension of heat and friction to mold them as tools (Gowlett, 2016). These early humans shaped stones into tools that could be used to make their lives easier and safer. While these were the most basic of stone tools, humans made them more technological as time progressed by shaping them more carefully to make straighter cutting edges, resembling modern-day knives (Carr, 2017). The same type of critical thinking and problem-solving that was utilized to create fire and stone tools is used to create modern technology that makes people's lives simpler and more efficient.

History of Technology

There are countless inventions that changed the course of history and impacted the way in which humans interacted with the world around them. There are several notable inventions that are more important and impactful than others. These technological innovations include the compass, electricity and the electric light, transistors, magnifying lenses, the telegraph, the steam engine, and the printing press (Andrews, 2012). While these do not seem to be the largest or most profound of inventions, each innovative tool contributes greatly to the overall technological development of the world. Each innovation impacts the world and education today in its own unique way.

The development of the compass affected the changing tecnological world. The invention of the compass had a significant impact on early navigation and exploration of the oceans and new lands. The earliest forms of the compass originated in China around 1088 and were created using the mineral lodestone (Vardalas, 2013). By the 14th century, magnetic compasses appeared in Europe and influenced the eventual beginning of the Age of Exploration. These compasses allowed explorers to obtain a reliable method of traveling, using the directional information to cross formerly treacherous and dangerous oceans (Andrews, 2012). Ultimately, the Age of Exploration allowed many European countries the funds and resources to move into the Industrial Revolution, which saw the creation of countless technological inventions that impacted the future of mankind.

The technological invention of electricity and electric light currently impacts every facet of life. It is easy today to take electricity for granted since very few know life without its existence. However, much of modern-day technology would cease to exist if not for the invention of electrical technology. Benjamin Franklin is often credited with the discovery of

electricity, but it has also been discovered that ancient Greeks utilized static electricity (Atkinson, 2015). Additionally, researchers in the 1930s uncovered ancient batteries that used copper to produce light in ancient Rome. The first long-lasting light bulbs were created in 1879 and 1880 by Thomas Edison and Joseph Swan (Andrews, 2012). These electrical technology inventions prompted the development of electrical wiring and useful appliances.

The transistor is a lesser-known invention that has had a lasting impact on technology. Many do not realize that the transistor is a necessary and essential part of almost every modern electronic. The transistor was first developed in 1947 and utilized small semi-conductor devices that control the flow of electrical current through circuit boards (Andrews, 2012). While originally reserved for use in radios, the transistor gave way to more efficient and portable electronic devices (Stromberg, 2011). This development, in turn, fostered more advances in technology that made communication more effective and information more accessible. Over time, the transistor was modified to become faster, smaller, more reliable, and less expensive for manufacturers (Laws, 2013).

The technological invention of magnifying glasses propelled the discovery of the microscope and telescope, among many other related innovations. While the first lenses used for correcting one's vision were created in the 13th century, it was until the late 16th and early 17th centuries that magnifying lenses were used for the first telescopes and microscopes (Andrews, 2012). Given the significance of magnifying glasses within scientific knowledge, the microscope would lead to revolutionary discoveries in medicine and biology. Additionally, the same invention of the magnifying glass led to innovative telescopes that were used to discover new realms of information regarding the solar system and space (Gordon, 2015). Without the

seemingly simple technological invention of the magnifying glass, there would not have been crucial scientific discoveries.

The telegraph was a crucial and necessary step in connecting countries and people throughout the world. The telegraph permitted individuals to communicate across great distances, which had a significant impact on banking, warfare, and government. In general, telegraphs utilized the concept of Morse code by sporadically stopping the flow of electricity along wires (Andrews, 2012). For more than a century, the telegraph was the main form of communication across long distances. Eventually, telegraph technology would be implemented in the creation of the telephone by Alexander Graham Bell in 1876 (McGillem, 1999). Since this invention, telephone technologies have only increased in use and popularity, especially given the extremely updated versions available today. Telephones have provided individuals the chance to connect to others throughout the world and provide new opportunities for cultural awareness and acceptance.

The steam engine was one of the most influential inventions relative to technological advances in transportation. The concept of external combustion originated in 1698 with the steam-powered water pump and was further modified in the later 1700s to apply to other types of machinery. The steam engine inspired the invention of internal combustion engines that are used today in cars and aircrafts (Andrews, 2012). Many historians argue that the steam engine was the most important invention within the Industrial Revolution. This reasoning is valid given the steam engine's influence in mining, manufacturing, agriculture, and transportation (Palermo, 2014). Without the technology of the steam engine, the numerous industries would be significantly less advanced than they are today.

Prior to the internet, there was no invention that impacted the world more than the printing press, specifically within the field of education. Johannes Gutenberg's invention in 1440 allowed the production of the written word to spread throughout Europe and, eventually, the rest of the world (Andrews, 2012). Gutenberg's printing press was created out of lead, tin, and antimony that allowed letters and words or phrases to be cast in molds at low temperatures. The molds could then be reused in different orders to compose the print on pages; therefore, multiple pages could be made quickly by resetting the words and letters for the next page of writing (Kreis, 2000). The Gutenberg printing press had a significant impact on society because it made books available and affordable to the lower classes. Previously, this level of society was generally illiterate and uneducated due mostly to a lack of resources and the expense of education. Additionally, the printing press influenced the occurrence of the Age of Reason, or the Enlightenment. This time period in history led to advancements in reason, philosophy, and the scientific method (Szaley, 2016). The Enlightenment would eventually lead the world into new realms of science, technology, and education.

The First Computers

Computers are a staple in most American schools, whether it be one computer per child or a computer lab shared by classes. Although computers have only made substantial advancements in the past few decades, the origin of computers dates much farther back, roughly 2,500 years (Woodford, 2017). The world's first computer is widely-known as the abacus, an ancient Chinese device dating back to 2400 B.C. that could count figures up to ten trillion (Dadian, 2012; Blank, 2017). Originally made from wood, stone, or metal, merchants, traders, and clerks in various parts of the world continue to utilize the abacus for numerical purposes

(Zimmerman, 2017). This original computer gave rise to inspiration for inventors and researchers to create future computing devices.

One of the first computers developed in the United States was created to assist in tabulating the U.S. Census results. In 1880, these punch-card based devices filled entire rooms and made large number calculations easier and faster (Zimmerman, 2017). This type of punch-card computer first originated in 1801 when Joseph Jacquard used punched cards to weave fabric designs on a loom (Lee, 1995). It was not until the World War II era that gigantic digital computers became more prevalent and used in different aspects of society. The first truly digital computer was created in 1944 by Howard Aiken. The creation of this machine was sponsored by IBM and was a surprising 15 meters long (Woodford, 2017). This digital computer used over 3,000 magnets to relay numbers and compute messages through switches. Most of these early computer technology advancements were intended for use as military tools, especially for warfare.

Computers have had a significantly impacted on society as a whole – from the way people communicate to improving the production of goods and services. These machines essentially dictate what information people receive, how products are designed and manufactured, and how individuals conduct business and communicate (Zobel, 2016). Alongside other information technology, computers continue to increase human's reliance on all forms of technology. Consequently, technology is advancing at a rate that makes it problematic for people to keep up. Ultimately, the reliance on technology calls into question moral and ethical dilemmas, as well as when technology should or should not be used (Ayers, 1999). As computers continue to advance, it becomes increasingly imperative that individuals are educated on computer technology and associated information.

Introduction of the World Wide Web

Having a world of knowledge at one's fingertips has completed changed the way in which research is conducted, as well as how people function in everyday life. There are often no longer questions that go unanswered because of search engines and mobile devices ready at hand. In 1965, two computers at Massachusetts Institute of Technology (MIT) communicated with one another for the first time utilizing packet-switching technology (Zimmermann & Emspak, 2017). Interestingly, the concept of internet existed long before there were actual machines of technology to create the World Wide Web. In the 1930s and 1940s, Paul Otlet and Vannevar Bush attempted the creation of a storage network of books and media that was searchable by individuals (Andrews, 2013). Each new advancement in networking brought countries, cultures, economies, and governments closer together through more effective and efficient communications.

The creation of what is now the modern-day internet began in the 1960s with the establishment of the U.S. Defense Department's Advanced Research Projects Agency Network, or ARPANET (Zimmermann & Emspak, 2017). In 1969, with the addition of universities in London and Norway to ARPANET, the first global networking system was established. However, ARPANET's four-node network had many issues to work out of its two-host computer system before it was able to be modified to the next level of functional networking. Individuals described using ARPANET as being provided a telephone with no credit limit, only to realize that the only people one could call did not speak the same language (Navarria, 2016). By early 1971, ARPANET had expanded to include a 15-node network and 23 host computers. Throughout the 1970s and 1980s, there were substantial improvements made to personal computers regarding storage and networking that made the internet more accessible to

individuals outside of the government and universities (Zobel, 2016). Compared to today's network, ARPANET was not mobile because the machines were quite large and communication occurred through fixed links (Tarnoff, 2016). Although ARPANET was basic networking by today's standards, it was truly the birth of modern internet.

From 1989 to 1990, Tim Berners Lee, along with other researchers at CERN, created a database to publish and store documents called the World Wide Web (Navarria, 2016; Zobel, 2016). While the creators had specific goals in mind, the outcome the internet has produced in today's world has far surpassed any expectations. In 2015, over 3 billion people had access to the internet (Torricke-Barton, 2015). Comparatively speaking, the beginnings of the World Wide Web functioned with roughly 100 Gigabytes of data per day. By 2014, the Internet traffic reached 16,000 Gigabytes per second, with that number only projected to quadruple over the course of the following decade (Navarria, 2016). The global network is utilized for almost everything today – from how politics are conducted to obtaining advanced educational opportunities.

The internet has provided the modern world with tools for communication and connectivity that have never been seen before. The world wide web is bringing the world together through planetary thinking, action, and institutions (Torricke-Barton, 2015). The internet can bring previously faraway countries and cultures closer together. Causes that were once only limited to local or national communities are now propelled to global interest levels, providing people with the opportunity to think more about global concerns and how to have empathy for individuals of other cultures, races, and religions. The internet has become deeply integrated in the world of politics and government, so much so that it has substantial impacts on elections, political scandals, and global events (Navarria, 2016). Because of this planetary

forward-thinking, the internet is also mobilizing people to act on these causes and events. Ultimately, planetary institutions are being established to enact long-term global, national, and local changes (Torricke-Barton, 2015). The internet has changed every way that people and countries interact, propelling the world into new realms of communication and connectivity.

History of Technology in Education

Technology is more extensive than only machines and gadgets. In the technical sense of the word, the first technologies incorporated into education occurred in the mid-1600s with the creation of the library and the pencil (Parson, 2017). Education revolves around the transmission of knowledge from one generation to the next. While over time this process has become easier with the help of technology, the concepts and goals in the field of education remain the same (Muttappallymyalil et al., 2016). Even with ever-advancing technologies, it is important for educators to maintain a balance between traditional educational principles, new methods of teaching, and advancements in the knowledge of student learning.

The Slide Rule was one of the first technologies implemented in the classroom in 1654 by Robert Bissaker. Although this tool was created in the 1600s, it was strictly utilized by scientists and engineers until it was integrated into math education in the 1950s (Parson, 2017). The slide ruler was used prior to the modern calculator to make scientific and mathematic calculations. The slide ruler consisted of scales that could be used for multiplying, dividing, calculating logarithms, and computing square roots (Gaur, Pallardy, & Young, 1998). The device was an integral part of most math classrooms until the creation of the calculator in the 1960s. This technological tool permitted students to learn specific mathematical concepts much more effectively and efficiently than ever before.

The hornbook is a well-known early educational technology tool from the 1600s. This resource consisted of a wooden frame with a sheet attached that often contained the alphabet, vowel and consonant exercises, and the Lord's Prayer (Sampaolo, 1998). The device was used as the primary tool in teaching students the basics. The materials were typically laminated using sheep and oxen horns to protect from normal classroom wear and tear, while also providing the opportunity to reuse the hornbooks in subsequent school years (Parson, 2017). These early forms of technological notebooks eventually would morph into online versions of textbooks and curriculum.

Originally produced in 1646 for use in theaters, the Magic Lantern was incorporated into classrooms with the intent of increasing student learning and engagement. This innovative technology tool was essentially the predecessor to the slide projector. The original slides were created using glass plates that could project images and information onto screens for students to view (Dunn, 2011). Much like the slide projectors of the future, the Magic Lanterns slides could be changed fast enough to make it appear as if the image on the screen was moving (Parson, 2017). While this technology seems outdated for this time period, it changed the way in which information could be delivered within the classroom and provided educators with a new tool for instruction and engagement.

During the 1800s, slates and chalk were integrated into classroom instruction and activities. Primarily, this provided students with the opportunity to learn from mistakes and attempt problems or questions additional times until the concept was mastered (Dunn, 2011). Even though the slates and chalk were able to replace pencil and paper for short assignments, they were not ideal for longer assignments (Parson, 2017). Often, teachers were required to write the lesson or equation on each student's slate at the beginning of class so that students were

able to effectively participate in using the slate and chalk throughout the lesson (Muttappallymyalil et al., 2016). This addition to the classroom also provided students with a different learning activity than previously used that allowed them to actively engage with the content through trial and error.

Perhaps one of the more influential developments within the classroom was the integration of blackboards, also referred to as chalkboards. Traditional chalkboards were created from slate and framed with a wood border to keep the slate from cracking or breaking (Parson, 2017). For one of the first times, teachers were able to deliver whole-class instruction using the blackboard to dictate the content and provide visuals for students. Additionally, chalkboards allowed students the opportunity to engage more with the content, as well as provide them with a point of focus for the lesson (Buzbee, 2014). The alternative to the chalkboard, known as the whiteboard, eventually began replacing blackboards during the 1980s. They were a much more effective method of instruction with the same general benefits of the chalkboard. Whiteboards made it easier to erase and re-write lessons, while also being more cost effective and health conscious due to the lack of chalk dust (Muttappallymyalil et al., 2016). Whiteboards continue to be a staple in most American classrooms today.

The typewriter was a technological innovation that greatly impacted the course of education. Christopher Latham Sholes is credited with the invention of the first typewriter in 1867 (Dugan, 2013). Sholes created the QWERTY keyboard on this first typewrite model that continues to be used today on most computers (Parson, 2017). However, it was not until the 1880s that Sholes, and other typewriter manufacturers, were able to find a market in which to sell the new technology. Originally, the only market in need of typewriters were those working in correspondence and responsible for keeping accounts and records. Typewriters made their jobs

easier and more efficient (Dugan, 2013). Ultimately, typewriters began to make their way into higher education, as well as many schools around the country. The technology provided ways in which people could typically create papers, essays, and notes at a faster rate than handwriting. Several aspects of the typewriter served as inspiration for the creation of computers decades later.

The stereoscope, created in the early 1900s, allowed individuals to view pictures and images as three dimensional. Although originally designed for individual entertainment, the stereotype was ultimately utilized within schools for visual aids in education (Parson, 2017). The Keystone View Company marketed stereoscopes for schools by creating images that could be used in the machine that illustrated specific points in history, scenes from literature, and images related to science content (Dunn, 2011). Stereoscopes are considered to be one of the first forms of virtual reality (Thompson, 2017). This piece of technology permitted students to have a visual to supplement the content, which helped them to better comprehend subjects.

The film projector arrived in many classrooms by 1925, giving educators a vital tool to use in creating curriculum and developing new instructional strategies. Early film projectors showed images from film strips accompanied by audio recordings (Parson, 2017). Possibly one of the more long-standing types of technology, film projectors were a staple in almost every classroom until the 1980s. These film strips were utilized to show educational films in nearly any subject area and to provide critical support to curriculum. It was the first technology to allow educators to stop the projection to have class discussions and then resume the film strip wherever it was stopped (Akanegbu, 2013). Film projectors are often considered to be the predecessors of modern day VHS and DVD players, which would also later be utilized in classrooms for a myriad of educational purposes.

The radio also began to be incorporated into the classroom in 1925. The radio gave students the chance to connect with the nation and hear news from the around the world. Additionally, many producers began creating specific radio shows targeted toward educational content that could be implemented in the classroom (Parson, 2017). Classes were also given the opportunity to create their own lesson radio shows to broadcast to other schools. This gave students the chance to take the content they were learning in class and apply it to teaching others the material. Radio was one of the first technology tools that could deliver educational programming to diverse populations, reaching geographic regions that were formerly unattainable (Chandar & Sharma, 2003). While often overlooked because of other formative technologies such as video and projectors, radio continued to play a significant role in education through the early to mid-1900s.

Created in the 1930s, the overhead projector was initially used in the military for training in World War II. However, given its usefulness, it spread quickly to business organizations and schools (Dunn, 2011). An overhead projector consists of a glass top with an interior light and attached arm containing a lens and mirror. A sheet of transparency was placed on top of the glass and whatever was written on the sheet was projected onto the screen (Cortez, 2017). Overhead projectors became more of a staple in schools across the nation during the 1970s. Roger Appeldorn created the modified overhead projector that was popularized and ultimately manufactured by 3M (Akanegbu, 2013). The machine permitted educators to deliver instruction in different ways while allowing students to receive a visual with the content. Overhead projectors were early versions of the data projectors and document cameras that would appear in future classrooms.

Utilized in the 1940s, the mimeograph came into use in schools as a resource for teachers to print necessary classroom materials. Schools were also able to use the machines to print important documents and forms (Parson, 2017). Interestingly, the technology device was known as the ditto machine. The mimeograph was hand-cranked and used cut stencils wrapped around a cylinder. The cylinder would push ink through the stencil and onto the pieces of paper to create copies (Santosus, 2001). Eventually, the mimeograph was made irrelevant because of the invention of copiers and printers resembling those in existence in schools and businesses today. Xerox first initiated the photocopier machine in the 1950s, and mimeographs would soon become an item of the past (Parson, 2017). Regardless of the type of machine, these devices provided higher efficiency for schools and educators, allowing them to be more effective in their roles.

While headphones may seem like a trivial technological advancement by today's standards, their appearance in classrooms in the 1950s created more conducive learning environments. In that time period, schools installed listening stations connected to audio tapes that would play back lessons and content to help with memorizing information (Dunn, 2011). This technology assisted students, especially those with learning disabilities, in understanding content that they would not necessarily grasp without hearing it multiple times. The available listening stations were also known as language labs (Parson, 2017). While it is difficult for students to imagine daily life without headphones attached to their mobile devices, the first inclusion of headphones in listening stations changed the way in which students were able to receive information and how they were able to grasp the concepts.

Similar to the film projector, the introduction of the videotape into educational settings had a comparable impact. The first videotape was created using an Ampex tape recorder that

took images from cameras and translated them to electrical impulses that were then stored on the magnetic tape (Parson, 2017; Nuwer, 2013). The original videotape was developed in 1950 and produced grainy and blurred images. However, an upgraded version that created a better-quality picture was developed only a year later that would be consistently used in classrooms for viewing content (Dunn 2011). Although videotapes have become relatively obsolete, they held a specific role in education for decades.

The reading accelerator, originally developed in 1957, was an interesting technology tool meant to assist students in reading more efficiently (Dunn, 2011). The device consisted of a metal bar that would be placed over a book to hold it in place and contained a moveable piece that would help to underline text while reading. The metal bar that moved up and down the page was meant to aid students in following along while reading the text, which in turn was intended to improve reading pace and comprehension (Wilson, 2010). Today, there are many different, more technologically advanced forms of reading accelerators that are geared towards improving student reading efficiency.

The Skinner Teaching Machine, created in 1957 by behavioral scientist B.F. Skinner, was technology specifically geared toward education (Wilson, 2010). It was one of the first educational programs that was designed for students to move at their own paces conducive to their learning styles. The Skinner Teaching Machine created a program of instruction that was designed around standardized questions and a specified reward system (Dunn, 2011; Parson, 2017). When students answered the questions with the correct response, the machine provided a piece of candy. Ultimately, the machine was intended to provide positive reinforcement for learning the material and establishing mastery of the content. While the Skinner Teaching Machine was the first of its kind in individualizing student learning and creating avenues of

motivation for students, it became the basis on which further individualized education technologies were founded.

A great development in research and academics was the invention of the microfilm or filmstrip viewer in the 1960s. This technology allowed students to view filmstrips at their own pace and was mostly used for research purposes (Parson, 2017). The filmstrip viewer was often utilized in libraries and universities to examine newspaper archives, as well as other forms of research. The device was mostly beneficial for those in academia or conducting research. The primary job of the microfilm viewers was to project old newspapers for the user to read through. Typically, most microfilm viewers have newspapers available for viewing dating back to the 1850s through the 1990s. Most newspapers published after the 1997 were converted to a digital format (Stansel, 2016). However, there were also benefits for students in education that needed additional support and time with the content, since they could view the filmstrips at their own pace. There are also many facilities today that continue to use versions of the filmstrip viewer, especially for older documents that are not available in digital forms.

The earliest form of the hand-held calculator is considered to be the calculating engine, created in 1822 by Charles Babbage. This machine was also the basis for digital computers that exist in today's schools. The device contained the capabilities to input numbers, store them in a memory, and output numbers (Parson, 2017). This calculating engine eventually gave rise to the hand-held calculator in 1970 and the creation of the modern graphing calculators in 1985 that are used in classrooms today (Dunn, 2011; Morris, 2014). With the origination of hand-held calculators in classrooms, many educators were extremely hesitant to implement them into curriculum and instruction for fear of calculators overriding the necessary basic skills that

students needed to learn. This was a similar sentiment as technology's presence continued to grow in classrooms through advanced calculators, computers, and other devices.

In 1972, the Scantron Corporation created a machine that permitted educators to score multiple-choice assessments much faster than hand-grading items. These original scantron machines were easy to use and the educator only needed to pay for the grading forms needed for scoring (Wilson, 2010). Scantrons use Optical Mark Recognition (OMR), which utilizes beams of light that shine through the grading form to determine where the dark marks are located. While scantron machines still exist today, they have experienced vast improvements over the years (Cortez, 2016). The most recent scantron model can score 30 to 40 tests a minute, as well as provide data analysis on missed questions and student scores. Even after many technological advancements in education, scantrons continue to be utilized in education, especially at the university level.

The Public Broadcasting System, more commonly known as PBS, was introduced to education in 1970. While it was produced and available for the public, the shows on PBS were geared towards helping young people learn about different educational areas, including culture, science, and literature. Some of history's most renowned televisions programs were produced by PBS, including *Sesame Street*, *Mister Roger's Neighborhood,* and *The French Chef* (Cunningham, 2012). Educators all around the country took advantage of PBS' education programs to help support the content they were teaching in the classroom. A large benefit of PBS was that it was not only available in classrooms, but accessible from people's home televisions (Parson, 2017). This provided the opportunity for children to receive educational content even when not at school. Prior to PBS, there was an extremely limited amount of educational programming available on public television.

While the installation of desktop computers in schools made a significant impact on curriculum and instruction, the Apple II desktop computer is perhaps the most well-known of these first computing machines in education. Distributed between 1977 and 1987, the Apple II desktop computer was able to support graphics and even provided a color monitor, the first of its kind (Warner & Warner, 2018). The machine used cassettes and floppy discs to view different content on the screen, but the computer did not have any type of internet access. Typically, students used the Apple II computer in schools for learning geography, along with other subject areas, and playing different computer games (Parson, 2017). While it took a great deal of time to distribute desktop computers to all schools, education continued to benefit from increasing technology use.

The mainstreaming of personal computers in the early 1980s created a new world for individualized education. By 1984, for every computer, there were 92 students, which is limited in comparison to the ration of one computer to every four students in 2008 (Dunn, 2011; Wilson, 2010). The Plato Computer, created by International Business Machines (IBM), was perhaps the most common personal computer in schools throughout the 1980s (Parson, 2017). The Programmed Logic for Automatic Teaching Operations (PLATO) computer was an original computer learning system that was adapted for classroom and school use (Smith, 2017). Each advancement in personal computer machines helped to make the devices more accessible and affordable for use in education.

The inclusion of CD-ROM drives into computers and machines in 1985 provided students with a larger amount of information than had ever previously been found outside of books. Entire encyclopedias, including video and audio resources, were available on a single disc (Wilson, 2010). The CD-ROM, which stands for compact disc read-only memory, holds

computer memory that can be read by a drive using a laser beam that reads digitized data. These discs were a much cheaper, more efficient, and more useful alternative to the floppy discs of the past (Sampaolo, 2017). While recordable CDs did not become available until the 1990s, the original CD-ROMs allowed a great deal of memory to be stored and used repeatedly for educational purposes.

As previously discussed, the internet altered the communication throughout the world. However, in the 1990s, the internet substantially impacted the way in which education was delivered and received. Internet was not made available to the public until the mid-1990s, but in schools across the nation, students had access to a wealth of knowledge and information at their fingertips (Parson, 2017). The internet also gave rise to an increase in mobile and distance learning, allowing students to obtain an education even when unable to physically attend a school or class, particularly at the university level (Muttappallymyalil et al., 2016). In the United States alone, over 6 million students were enrolled in some form of online coursework in the fall semester of 2016. Each year, online enrollment only continues to grow, especially given the convenience and affordability of distance learning (Friedman, 2018). Given the humble beginnings of the internet, it is astounding to compare how far the World Wide Web has reached and its significant impact on education.

Data projectors are an essential component in classrooms, and many teachers have not known education without them. While data projectors were created in the 1980s, they did not become more prevalent in classrooms until the 1990s and 2000s. The data projector receives signals from a computer or television and then projects the image or content onto the screen (Akanegbu, 2013). While data projectors ultimately superseded the main role of traditional whiteboards, interactive whiteboards began to replace data projectors. Interactive whiteboards

were implemented into classrooms beginning in 1999. While these instructional technology tools did not become widespread until later in the 2000s, it was a substantial change for educators using a typical data projector. Original interactive whiteboards utilized a touch-screen, projector, and computer (Wilson, 2010; Parson, 2017). Given the cost of interactive whiteboards, it has taken a considerable amount of time for all schools to transition ordinary data projects into interactive whiteboards. Currently, there are many schools across the country who have not yet installed interactive whiteboards within their classrooms. In some cases, interactive whiteboards are reserved for specific content-area classrooms rather than distributed to all rooms throughout the school. However, many educators who have interactive whiteboards within their classrooms are unable to use them effectively, whether that is a result of lack of training or desire to use them (Manzo, 2010). For interactive whiteboards to be truly effective in instruction and student learning, educators should be trained in their tools and software in order to use them correctly. As interactive whiteboards continue to spread to new classrooms, it becomes increasingly important to embrace the technology and learn alongside students.

YouTube is a surprising educational tool that is incorporated into most classrooms at some point. Created in 2005, YouTube quickly became a convenient and reliable source for educational and instructional videos (Bellis, 2018). There is an astonishing 100 hours of content uploaded to YouTube every minute, with roughly six billion hours of video content watched monthly. Schools and classrooms across the world implement YouTube daily to support content in their classes and to deliver entire lessons to their students (Antonio & Tuffley, 2015). Today, there is even a specific YouTube channel completely dedicated to education and enhancing instruction. Many of the educational channels available provide interactive and engaging videos that put classroom content into understandable and intriguing terms, helping students learn faster

and better (Hua, 2015). From music to videos to tutorials, YouTube continues to be an integral component in classrooms, schools, and homes across the world.

IClickers first appeared in classrooms in 2005, making formative and summative assessments easier and more efficient for instructors. These devices were utilized to poll and quiz students on content to determine student levels of mastery. One of the benefits of iClickers is that the educator can receive instant data from the results (Wilson, 2010). Subsequently, this allows teachers to adjust content and instruction to better meet the needs of their students. The iClicker technology can be used at the beginning, during, or at the end of the lesson and takes relatively little time to implement. While there are many other polling devices available today, the iClicker was the first of its kind in real-time data collection (Parson, 2017). Although student laptops were quickly becoming more common in classrooms around the same time, iClickers continued to be a beneficial resource for quick polling and quizzing for content mastery in the classroom.

Much like personal desktops and laptops, iPads revolutionized the way that instructors can individualize education for their students. The iPad is one of the most common learning tools, especially in elementary education. Created in 2010, the iPad brought mobile devices equipped with Wi-Fi to classrooms for educational purposes (Parson, 2017). Newer iPads have the ability to incorporate many different applications, which can run simultaneously. The revolutionary tablets put educational tools in the hands of even the smallest of students. While also instructionally effective, one of the newest iPad versions has also been made to be more affordable for schools and educators to purchase (Calore, 2018). With the inclusion of new education software, Apple continues to push forward in influencing and impacting the field of education.

Virtual reality is one of the more recent developments in advanced educational technology. This innovative technology provides educators the opportunity to enhance student learning while creating engaging activities utilizing virtual reality (Parson, 2017). With its appearance in classrooms in 2017, virtual reality can take students on educational journeys that explore academic content in three-dimensional and interactive forms. Schools are beginning to utilize virtual reality in numerous ways. Educators can create virtual reality field trips where students are able to truly experience different time periods, scientific innovations, and literary events with their own eyes (Walsh, 2017). Additionally, virtual reality has started to combine with artificial intelligence and educational coaches. While this method of instruction is not yet widely used, artificial intelligence programs within virtual reality education are able to monitor student learning more accurately while also extending student knowledge on the given subject (Wadhwa, 2018). For many schools and districts across the country, funding is limited for field trips and outside resources. By providing forms virtual reality technology to students, they can interact with new information and content in a much more impactful way. Virtual reality fosters new opportunities for learning and experiencing the world in a way in which students have never been able to before.

Integrating modern technology into the classroom is just one of the many changes the field of education has faced in its history. In the past two decades, educational technology has significantly improved previous technology and invented new pieces of technology. Given the progress made in the last 20-30 years, the future of educational technology is seemingly limitless. Even as technology continues to progress, it is imperative that teachers and educational leaders are trained on new devices and understand the implications and affects technology can have on a student's long-term learning.

Relevancy of Technology

In this constantly changing world of technology, education that incorporates technology is becoming increasingly more important with every passing year. The skills and knowledge that are gained, not only from learning about technology but also learning with technology, are irreplaceable. There are various abilities that cannot be effectively mastered without the assistance or presence of technology. It is integrated into people's daily lives throughout the world and provides crucial connections between cultures, business, economies, and governments. Every year that passes sees increases in technology innovations and overall technology use. The relevancy and importance of technology will only continue to intensify, which will further perpetuate the dependence on technology in all aspects of one's life.

While the concept of a student's future career may seem trivial to consider when the pupil is still in elementary school, the technological skills and experience they acquire begin there. Incorporating technology into educational practices helps to prepare students for future careers and lives outside of school (Mareco, 2017). The students in school today will enter a world after high school that is saturated with new technologies. Every aspect of their professional lives, whether that be in college or a career, will incorporate some form of technology (Delgado, 2012). With the appropriate information technology (IT) skills and certifications available, students have the potential to graduate high school with relevant criterion to be hired in the IT field. According to a research study of hiring managers, 91% claimed that they would consider an employees' technical certifications as criteria to hire them and 81% asserted that certified employees typically performed better than their co-workers with no technology certifications (Microsoft Corporation, 2013). It is imperative to students' future success to begin with building a foundation of technological knowledge early in their education.

Careers in technology are only projected to increase in the future. In 2012, researchers estimated that by 2020, occupations involving technology would increase by 22% overall (Thibodeau, 2012). Although specific jobs within computer and information technologies will increase more than others, the career field is predicted to increase substantially. When all occupation areas experienced a decrease in employment rates in the recession of 2007-2009, the technology career field only lost 1% of its jobs, which was the lowest loss of all vocations (Csorny, 2013). This exemplifies the point that regardless of future economic downfalls, there is a great chance that technology careers will continue to flourish. Statistically speaking, it would be necessary to cultivate a larger technological workforce to prepare for the impending growth in this industry.

Given the projected and continual increase in technology-related jobs, the incorporation of technology into all aspects of education is crucial to the development of technology-minded young adults that will one day embark into the workforce. According to a study conducted by the Microsoft Corporation (2013), over half of jobs today require applicants and employees to have a certain level of technology skills. Throughout the next 10 years, that percentage is anticipated to increase to 77%. In the same study, it was discovered that in the year 2020, an estimated 5.8 million jobs will require a certain amount of information technology skills. However, at the same time, it is predicted that there will only be a little over 3 million candidates who are qualified for those positions. Considering that many current jobs could potentially be automated in the future (Manyika, 2017), it is important for individuals, as well as national economies, that people are trained and prepared for this impending shift in the demand for technology.

Moreover, the use of technology greatly cultivates a student's digital citizenship. In general, digital citizenship is the set of standards for appropriate and responsible use of technology (Ribble, 2017). Digital citizenship allows students to understand the consequences of actions in relation to technology and the impact it can have on one's life. Students who learn technology from a young age are more likely to be responsible technology users as adults (Mareco, 2017). In connection with this concept, owning or borrowing a piece of technology allows children to increase their decision-making skills, along with fostering a sense of ownership in something important and valuable.

Technology helps individuals from across the globe connect and collaborate by building networks and relationships (Delgado, 2012). The ability to do this requires students to be prepared with how technology is utilized and the impact it can have on communication. Because of technology, the world of education has changed drastically to the point that individuals are able to learn from others in a global perspective. Technology provides the tools needed to learn effectively while also communicating with others. Rather than online learning being difficult and isolating, it has the potential to provide opportunities for students to receive a quality education from reputable institutions (Whyte, 2015). Moreover, distance or online learning is providing higher education opportunities to individuals who previously may have been unable to pursue post-secondary degrees due to location, time, or finances.

Technology and the Development of 21st Century Skills

The concept of equipping students with specified 21st Century skills was first enacted in 2002 with the creation of the Partnership for 21st Century Skills corporation (Johnson, 2009). 21st Century skills pertained to the skills, knowledge, and expertise that are considered necessary for students to succeed in work or life in the 21st Century. The primary components of the 21st

Century skills are the 4Cs – communication, collaboration, critical thinking, and creativity (Pakizer, 2016). Each of these skills are imperative to the potential success of students in the world outside of school. To acquire these 21st Century skills, technology has the ability to cultivate such abilities and fully prepare students to function as international digital citizens.

Communication is a vital part of one's professional and personal life; therefore, it is important for students to learn communication skills throughout their education. Technology has significantly impacted the world of communication in more ways than one. When leaving high school, students should be able to effectively articulate their thoughts and ideas, actively listen to others, utilize technologies in the process, and be able to communicate well with diverse individuals (Partnership for 21st Century Learning, 2015). Technology has brought communications to another level of effectiveness and efficiency (Pakizer, 2016). For a student's 21st Century skill of communication to be fully developed, he/she would need to incorporate technology communications into his/her skill set.

Effective collaboration is an ideal skill to possess for a well-rounded adult in the 21st Century. Individuals must be able to fully collaborate with co-workers or colleagues on a consistent basis. The ability to work together is a trait that can easily be transferred to technological purposes. The Partnership for 21st Century Learning stipulated that collaboration involves the ability to work effectively with different groups of people while being flexible in making compromises and valuing the work of individual team members (2015). Collaboration has become significantly easier through technological innovations (Pakizer, 2016). However, as technology further advances, students will need to be trained and prepared to collaborate with others in-person, as well as via e-mail or video conference.

Critical thinking skills are often more difficult to learn and master, which is especially apparent given the significant push toward this skill in recent years on teacher evaluations and curriculum standards. Critical thinking can be defined as the act of searching for new methods to solve a problem while also utilizing content knowledge from other skills or subjects (Pakizer, 2016). While critical thinking skills often work in collaboration with problem-solving abilities, critical thinking will continue to be utilized in daily life, as well as within one's professional life. Students with critical thinking skills can utilize different types of reasoning, make connections to how parts interact together, solve various unfamiliar problems, and analyze claims (Partnership for 21st Century Learning, 2015). It is easy to allow technology to complete tasks; however, it is important avoid relying completely on technology for everything. If this occurs, students lose momentum in their critical thinking skills and may be at a disadvantage upon entering the real world and the workplace.

Creativity is often an overlooked and underrated skill that is not fully addressed within most classrooms, apart from art or theatre. Creativity is often the trait that is minimized or not necessarily considered when developing students for the future. There are countless ways in which technology can be utilized to incorporate and foster creativity. According to the Partnership for 21st Century Learning, students should be able to utilize various brainstorming techniques, create new ideas, as well as evaluate and edit their own ideas (2015). Part of creativity involves teaching students that it is in their control to make connections between a project or piece and the technology that could be used to complete it (Pakizer, 2016). Technology is at an interesting and pivotal place with the 21st Century skill of creativity, given the wide expanse of creative outlets and options.

Access to Technology at Home

A student's technology proficiency is often a direct result of the technology available in his/her home. When students come to school with minimal technology skills, it is more difficult for them to adapt to assignments utilizing technology and may require additional time to practice their proficiencies. According to the U.S. Census Bureau, in 2015, 78% of households had a computer, 75% had a handheld computer such as a smartphone, and 77% had a broadband internet subscription (Ryan & Lewis, 2017). These numbers have steadily increased every year and should continue the same trajectory as internet usage becomes more and more affordable and accessible. Interestingly, the less education the head of a household obtained, the less likely he/she was to have a computer or internet access in the home. Comparatively, of the individuals with no high school diploma, over 38% did not have a computer of any kind, including a handheld device, and 51% did not have internet access. People with a bachelor's degree or higher were 97% likely to have a computer and 91% likely to have an internet access. Of all low-income families, more than half do not have connection to the internet (Monahan, 2014). While some may think that this disparity does not exist, it is still an extremely relevant and urgent issue that continues to impact students across the country.

Although there are several ways to support students who do not have internet access or technology resources at home, it often places them behind other students academically, further widening the achievement gap between students with technology in their homes and students without. This concept is known as the homework gap, and it encompasses the barriers that some students face when completing homework without the help of reliable internet access or appropriate technologies (McLaughlin, 2016). In a poll of teachers and students from 2009, it was reported that over 70% of teachers typically assign homework that requires internet access. Within the same study, it was found that over 42% of students admitted to receiving a lower

grade on an assignment due to the absence of internet at home. Without consistent internet access in the home, students will eventually fall behind in various areas, including basic research skills, networking skills, attending post-secondary school, and applying and qualifying for jobs (Heick, 2016). While there are many ways to support these students, such as notifying parents of community resources that could assist them or creating times before and after school to work in the teacher's classroom, it is important to realize that a student's access to technology substantially impacts his/her long-term learning gains and retention.

Access to Technology at School

Technology access at school has increased substantially in the past decade and will hopefully continue in the coming years of education. An important aspect of incorporating technology in schools is the establishment of acceptable student use policies for different types of technology. These policies make it acceptable for students to use mobile or personal devices for educational purposes. Additionally, they also explain the expectations for responsible technology use for students while at school either on school computers or the school's internet (Rouse, 2014). Acceptable use policies maximize technology within a school. There is a great deal of controversy surrounding the use of cellular devices in secondary schools. However, according to the U.S. Department of Education, over 88% of schools have some form of acceptable use policy as it relates to cell phones (2010). Moreover, 66% of elementary schools and 78% of secondary schools utilized online curricula in some capacity. Schools are beginning to transfer most curricula, resources, instruction, and activities onto strictly online platforms. While this has many benefits, it could be considered a disadvantage to those students continuing to struggle with little to no access to technology at home.

While some schools may have countless technological resources, there are others that do not have even the most basic of educational technology resources, as deemed by today's standards. As a result, this only perpetuates the achievement gap due to unequal access to the same level of resources (Delgado, 2012). Having technology throughout a school has been proven to have a significant impact on the achievement gap. A staggeringly small 3% of teachers from high-poverty schools thought that their students had the necessary technology skills necessary to succeed (Alliance for Excellent Education, 2014). This is in comparison to the 52% of teachers from more affluent areas that thought their students were prepared with the appropriate technology tools. When schools do not have the necessary technology to teach students effectively and to the same level as other schools with technology, it is a supreme disservice to students.

Technology Use in the Humanities

Technology has permeated all subjects and content areas; the Humanities are no exception. Although many individuals fear that the Humanities will eventually become irrelevant because of technology. Some argue that technology has a great deal to learn from the Humanities and Arts, while others assert that the opposite is true (Ottino, 2014). Regarding education, the Humanities, which includes English and math, become extremely important in exploring technology, specifically at a young, elementary age.

Educators are continuously prompted to increase rigor in the classroom within activities and content. The learning technologies that are available within a classroom have a significant impact on an educator's ability to implement complex and rigorous tasks (Aubusson et al., 2014). Science and math content areas typically have an abundant amount of well-known technology tools that can be used within those classrooms. However, the Humanities are not

known for having an extensive number of technology resources. Educators within this content area continue to find additional technological resources as they are developed for their curriculum and instruction purposes.

In the Humanities classroom, the most common methods of technology use occur through taking notes, self-directed learning, research, and writing (Cutler, 2016). The tedious notetaking of the past can be significantly altered by technology, making the learning process and content mastery much more engaging and effective. Self-directed learning is a concept that can transcend nearly any subject area, especially given the ability of many programs to be alterable by the educator. Regarding writing, there is an extensive amount of technology related to the writing and editing process.

Impact of Technology Use

Coinciding with the development and promotion of 21st Century skills, there are various other benefits of incorporating technology use into educational settings. While the use of technology in education has proven to have an impact on student learning, there are different barriers to integrating technology into a classroom. These barriers are categorized as first-order and second-order barriers. External factors, such as resources, training, and support to the educator are considered first-order barriers. Conversely, internal factors, such as confidence, beliefs about technology's impact on student learning, and technology's value, are designated as second-order barriers (Aubusson, Burke, Schuck, Kearney, & Frischknecht, 2014). As an educator, overcoming technological barriers can be difficult, but the benefits of technology use far outweigh the difficulties of implementing the technology.

A primary benefit of utilizing technology within the classroom is that students can learn at their own paces and preferences. All individuals need a different amount of time to master a

subject; for some, it may take one day, but for others it may take several days. Therefore, technology provides that opportunity for students to learn at their own pace and truly have the time to master the content or skill (Wantulok, 2015). In comparison, each student has his/her individual learning style in which he/she is able to learn or master material most effectively and efficiently. Educational technology helps deliver instruction and activities that is accessible to students of all learning styles (Mareco, 2017). Effective educators incorporate the principles of differentiated instruction into daily lessons and unit plans. Utilizing technology can greatly assist teachers in differentiating instruction, activities, and assessments to ensure they are meeting the academic needs of all students (Elliott, 2016). Regardless of the technology that is incorporated into a classroom, it will be beneficial in increasing the quality of student education.

There are few limitations of knowledge given the access to information outside of a text or subject that technology can provide, which is a great advantage to implementing technology (Wantulok, 2015). Thanks largely to the creation and widespread use of the internet, the access to information is now faster and more thorough than ever before. There are few circumstances where a question or issue goes unanswered since the world is one click away for students. While skeptics claim that this dependence on instant knowledge has a negative impact on education, there are others that argue it just needs to be implemented and utilized correctly. If educators can incorporate technology effectively, it provides students with the skills to locate reputable information on their own to be leaders of their own education.

Technology can also impact the changing role of the educator within the classroom. As more technology is integrated, educators can become facilitators as opposed to instructors. The traditional passive learning model of teaching is a becoming outdated. Technology provides the opportunity for teachers to become facilitators, advisers, and coaches (Mareco, 2017). While

direct whole-class instruction continues to be utilized, it is poor pedagogy to teach with that method lesson after lesson. In this respect, the use of technology allows students the chance to work through the problem-solving process, either independently or collaboratively (Britland, 2013). Young people today are often criticized for lacking problem solving and critical thinking skills. However, this absence of skills could be attributed to the educational environment in which they learned. If they are simply handed the information and told the answers to questions, it is doing them a great disservice in regard to their long-term progress. Students should be the individuals driving their education with teachers there as the guideposts and facilitators of learning.

The enhancement of relationships between teachers and students is another benefit of technology use in education (Wantulok, 2015) This is a result of technology's ability to make connections with such a diverse grouping of individuals. Ultimately, technology encourages the use of different avenues of communication with classmates and instructors (Mareco, 2017). Regarding distance or online learning, it is important for educators and students to make an additional effort through video conferencing to establish a strong relationship. Many view more technological education tools as opportunities to build relationships with students across the world that are just as real and personal as the ones created in the traditional classroom (Wilkins, 2014). Moreover, technology use in the classroom often provides the teacher with more time to interact with students either in a one-to-one capacity or within small groups (Lynch, 2018). By teaching as the facilitator of learning, the educator can better reach students in their own environments and learning zones. It is incumbent upon educators, as well as students, to make the most out of the technological resources at their disposal and to utilize them appropriately to make connections and build relationships together.

Arguably the most notable advantage of incorporating technology into the classroom is the impact it can have upon student engagement (Wantulok, 2015). Student engagement is one of the primary concerns in classrooms across the country, with many professional development opportunities stemming from increasing student engagement. According to a survey conducted in 2013, only 55% of students are engaged in learning, 28% are not engaged, and 17% are designated as actively disengaged (Wardlow, 2016). Actively disengaged refers to students who are extremely unhappy, which is evident through their attitudes, actions, or words. Typically, these types of students also distract others from learning by undermining and disrupting those working around them (UNC Executive Development, 2016). While over half are technically engaged in the lesson, there continues to be a significantly high portion of students that are not engaged in the content or activities, which means that they are not learning effectively. In a similar study conducted in 2016, a Gallup student poll found that less than half of students reported feeling engaged at school, with 10% confiding that they felt both discouraged and disengaged during lessons (Brenneman, 2016). Additionally, the poll also showed that student engagement drastically decreases as students move up in grade level, with the data reaching the lowest amount of engagement by the 11th grade. As educators and administrators, it is imperative that even as students age in school, it continues to be beneficial to their education and future endeavors to consistently incorporate technology into the classroom.

Given the drastic percentages of student disengagement levels, it is crucial for educators to commit to technology use in the classroom. Technology impacts student engagement in numerous ways. Ultimately, technology allows educators to implement active learning and the flipped classroom teaching model to better meet the academic needs of their students (Brown, 2017). Active learning and the flipped classroom teaching model are just two of several teaching

techniques that can incorporate technology use. Eventually, enough technology integration in the classroom cultivates a deeper form of independent, student-centered learning (Aston, 2016). When independent learning occurs, there are many benefits, including improved academic performance, increased motivation, and the ability to identify and manage one's own weaknesses (Meyer, Haywood, Sachdev, & Faraday, 2008). At its foundation in education, technology assists in figuratively meeting students where they are and providing them with the best chance for quality learning. When student engagement increases in the lesson, there is a much greater chance that learning will occur.

A significant factor in students' motivation to learn is making the content relevant and relatable to their own daily lives and futures. When students find an activity or resource relatable to themselves, things they enjoy, or even the outside world, they are more likely to become invested in the content and in their own education. Often, technology can make academic content and material more relatable to students (Wardlow, 2016). For example, combining technology research tasks that are personally relevant to students can increase their motivation to work hard on the assignment and make the learning real, relevant, and relatable (Grafwallner, 2017). By incorporating technology alongside relevant content, students can further understand how technology and information can be effectively utilized for their own intents and purposes.

An appealing aspect to technology today is the fact that most technologies are, or will soon become, mobile. This same concept applies to an educational setting because technology in the classroom allows education and information to be mobile (Delgado, 2012). For the first time in educational history, cell phones and tablets are allowing learning to be truly mobile with the ability to bring the device virtually anywhere. The information that students access and work on

at school from their mobile devices can then also be utilized at home (Lawson-West, 2017). Programs such as Microsoft Office 365 and Google Classroom allow students access to assignments wherever they may physically be located from their own devices. These software programs, along with ever-advancing mobile devices provide students with the opportunity to extend their knowledge and learn more, no matter where they may be.

Feedback in all forms is essential to student development and understanding the subject. Therefore, specific and targeted feedback allows students to grow more as individual scholars. While many individuals probably do not realize the importance of creating formative and summative assessments, educators would argue that administering such assessments, grading them, and analyzing the results to adjust for instruction is one of the most imperative aspects of teaching. Technology makes this process much easier and more efficient by providing tools to grade assignments and send specific feedback directly to students. Real-time assessment is a benefit of technology in the classroom in the sense that it provides instantaneous feedback and data on whether or not students are meeting the established learning target (Stone, 2015). While this would normally take educators a significant amount of time to grade and organize the data, real-time assessments alleviate that consumption of valuable time. Educational technology can substantially improve this through different applications and programs that will do a great deal of the work and effort for the educator. Many programs will also share results and progress with students, which essentially provides students with nearly instant feedback. According to research, feedback is one of the most powerful tools that can positively impact learning and achievements (Hattie & Temperley, 2007). By utilizing technology to provide thorough and fast feedback, student learning and achievement will be positively impacted since students will be able to access the feedback instantly and adjust their work.

The Future of Technology in Education

There are countless predictable, as well as unforeseeable, ways in which technology will impact the future world of education. Digital literacy could ultimately surpass various forms of academic literacy (Heick, 2015). The concept of digital literacy revolves around an individual's ability to identify, analyze, and use information found through nontraditional sources, such as the internet, social media, or video games (Heitin, 2016). Not only will students need to have academic knowledge, they will also need the foundational digital knowledge vital to success. The premise that digital literacy could become more important that academic literacy is certainly understandable given the prevalence of current educational technologies.

In the future of education, schools will begin to function as virtual think-tanks for local and global challenges as a result of technology incorporation (Heick, 2015). A think-tank refers to individuals or a group of individuals whose purpose revolves around reading, discussing, thinking, and writing to solve issues that are of great concern to humanity (Mendizabal, 2014). Ultimately, education will center around solving many of the world's problems, such as clean water and religious intolerance. Students are the future of the world and will ultimately determine the outcomes of current global, national, or local situations. Schools will play an imperative role in preparing students with the necessary problem-solving skills to be catalysts of change in all levels of their communities.

Biometrics is an unexpecting area of technology that has the potential to make its way into the classroom. Biometrics, or the information of biological responses, could eventually be utilized for administrative and educational purposes (Heick, 2015). From finger printing or retinal scans used for checking in to school to heart rate or eye position to determine educational feedback, biometrics will be a new frontier of education (Hand, 2018). Within the classroom,

sensors could utilize infrared technology and analyzation of body language to adjust instruction and content, while also possibly preventing behavioral issues. While this technology is seemingly out of reach in comparison to today's classroom, biometrics is predicted to make in impact in future educational settings.

By 2028, the traditional schools known today will be outnumbered by variations of e-learning and self-directed learning programs (Heick, 2015). These predicted educational platforms will simulate environments and activities that are conducive to all students' particular learning styles and interests. As a result of massive open online courses (MOOCs), mobile learning, advancements in virtual reality, and gamification of content and academic materials, eLearning could revolutionize the areas of teaching and learning (Rosen, 2014). The current technologies implemented in most schools today are the vehicle to future educational technology.

Summary

The impact of technology on student learning is profound and has the potential to be limitless. However, it is imperative that teachers and educational leaders are advocating for their schools and classrooms to use technology to their advantage. These tools that can be placed into students' hand are irreplaceable in the skills and knowledge they provide to users. Given the progress of technology in education in the past, there is no way to predict what types of technology tools will be utilized in the classrooms of the future. This, it is imperative to prepare students as much as possible for the world ahead and incorporate technology into curriculum and instruction. As of the most recent study on classroom technologies, roughly 97% of individuals commented that both online investigation and exploration is crucial to student learning, specifically in relation to his or her problem solving and critical thinking skills (Teich, 2018).

Additionally, 94% of educators and administrators admitted that their classrooms and schools utilized the internet as a resource for curriculum and instruction. Technology provides students with new opportunities to learn and explore, engaging them in content and material that otherwise would have gone underappreciated and unlearned. While there are various opinions on the use of technology within education, it is undeniable that there is substantial evidence of the positive impact that the utilization of technology can have upon student learning.

CHAPTER 3: METHODOLOGY

Introduction

The intent of this qualitative study was to reach a better understanding of stakeholder perceptions of technology use in the Humanities classroom and the impact that it can have upon student achievement and engagement. The study also revealed specific technological resources and strategies that greatly benefited student learning, as well as how these uses of technology can easily be implemented into the classroom. When considering the methodology of this study, it is important to understand the research approach, populations and samples assessed, data collection procedures, ethical considerations, and specific data analysis procedures.

Research Questions

Within this qualitative study, data was collected for the purpose of analyzing and to ultimately answer the following research questions:

- What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement?
- What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement?

Description of Research Approach

A qualitative research approach was chosen for this study to provide more extensive insight into the perspectives of various types of stakeholders. For this study, the conducted surveys served as the primary source of data. However, triangulation of data was reached through the use of in-depth interviews and participant observations. Qualitative studies are typically utilized to answer different questions regarding experiences, perspectives, and/or viewpoints of participants. Two of the most common forms of data within qualitative studies

include participant observations and in-depth interviewing (Siegle, 2002). In contrast to quantitative studies, qualitative researchers venture beyond typical testable theories and hypotheses when analyzing data. Additionally, the population taken for qualitative studies are usually selected to participate in the study as a result of their experiences and knowledge in the associated subject. Qualitative research was chosen for this study because it allowed the researcher to gain access to a wider variety of data by being able to select a diverse group of participants. Stakeholders' perceptions needed to be thoroughly articulated and explained, making qualitative research the best option for the most comprehensive data collection possible. The foundation of the study revolved around the insight, experience, and feedback from stakeholders on the relevancy and impact of technology use in the Humanities classroom.

Surveys were incorporated to provide the researcher with a broad database of stakeholder perceptions regarding the study's subject. Participant observations produced significant information that helped create and organize questions on the surveys, as well as provided insight into the various uses of technology in each classroom. The in-depth interviews conducted were a significant contribution to the development of the data and allowed the researcher to reflect deeper with stakeholders regarding their perceptions and feedback on technology use. A survey is a tool used to collect data that typically involves asking participants in the study to answer a set of multiple choice, multiple select, or constructed response questions (DeBois, 2016). Surveys provide the researcher with the ability to collect data from large audiences quickly and efficiently. Additionally, this type of data allows the researcher to cover all aspects of the topic, as well as provide room for supplementary feedback. It is important to include surveys within this qualitative study for the researcher to be able to ask more than just a couple of questions. When conducting in-depth interviews, it can often be difficult to gather the greatest amount of

data because of the discussion that occurs, which can also be beneficial. However, surveys allow participants to answer a multitude of questions at one time, thereby providing the researcher with more data. During the study, the researcher also utilized in-depth interviews with stakeholders to foster a much more significant discussion on the subject. This gave the researcher an opportunity to discover new levels of perceptions and analyze the various interactions with different stakeholders. The interview consisted of open-ended questions and targeted questions, while also giving participants the chance to add any additional commentary on the topic or question. This method of research provided the researcher with the opportunity to analyze a substantial amount of data, which further inspired reflections on stakeholder perceptions of technology use.

Description of Study Participants and Setting

The researcher conducted the qualitative study in a suburban secondary school in Southwest Louisiana. The school participating in the research study is comprised of roughly 570 students in grades 9-12 with the following demographics: 404 Caucasian, 142 African American, 17 Hispanic, 6 Multiracial, and 1 American Indian. The student population is 47% female and 53% male. Of the total number of students, 39% were considered to be economically disadvantaged, which was determined by the number of students in the free or reduced-price lunch program. The school has an 83% graduation rate, with 27% of students participating in an Advanced Placement course. The average ACT score for students at this high school is a 20, which is higher than the national average. Stakeholder participants included educators and administrators.

A sampling of teachers from different Humanities content areas were selected for interviews and classroom observations. A larger pool of teachers and administrators were

utilized for surveys. All participants were selected from the same aforementioned school. However, participants ranged in experience levels and content areas. This method allowed the researcher to observe, interview, and survey a sampling that was representative of the population since qualitative data was derived from different content areas, experience levels, and academic backgrounds. The expected number of participants were ten educators and two administrators.

Data Collection Procedures

Prior to conducting the study, the researcher obtained permission from the Carson-Newman University Institutional Review Board. This was a required step in order to begin collecting data and research. Additionally, the researcher was required to get permission from the school's principal, as well as from personnel at the county's central office. The researcher also obtained approval for teacher and administrator participation. This was done to ensure the legality and ethics of the research study were followed.

After the approval process, the stakeholder participants were selected to include a diverse population of individuals that would provide a wide range of data. The qualitative study incorporated three forms of data collection, including participant observations, in-depth interviews, and surveys. Surveys were distributed among participants to gather data from a larger sample size of the population. The surveys consisted of open-ended questions and targeted questions that provided the research with additional information that could not be acquired in the interviews and observations. Additionally, the survey included questions measured with the Likert scale. Within this type of method, participants are required to select an answer choice from 5 to 7 pre-coded responses (McLeod, 2008). Regarding this study, the Likert scale questions provided respondents with five choices ranging from "strongly agree" to "strongly disagree." By using the Likert scale for a portion of the survey, the researcher could

obtain clear data that can be effectively analyzed give the lack of explanation and additional information. Surveys were conducted utilizing Google Forms. This method of data collection was useful to gather and organize the information efficiently and effectively.

Participant observations were utilized to provide preliminary information that informed further questions for research within the interviews and surveys. Throughout the observations, detailed notes were recorded. When permitted, video and images were taken of the classroom environment and technology incorporation to review later when analyzing data. Interviews were conducted following the participant observations to further research stakeholder perceptions of technology. Within the in-depth interviews, stakeholder personal experiences and perspectives were gathered and articulated. All interviews were audio recorded and transcribed for data analysis purposes. In addition, the researcher also took extensive notes on the stakeholder's demeaner, attitude, and involvement in the interview. The researcher performed the interview using a set list of questions but provided the participants with opportunities to make additional comments throughout the interview.

Ethical Considerations

Prior to beginning the study, the researcher received approval from both the Carson-Newman University Institutional Review Board and the school and district participating in the research. The researcher did not begin to select and interact with stakeholders until all necessary approval was granted. Additionally, all names of educators and administrators remained confidential within the explanation, data analysis, and findings of the research study. Moreover, the names of the school and district were also kept anonymous to protect all participants in the study. Any names used are not the true names of participants and are created to protect specific teachers or administrators. All participants, including educators and administrators, were

required to sign consent forms to take part in the research. Any refusal to complete consent forms resulted in the participant's inability to take part in the study.

Prior to beginning the study, all ethical considerations were reviewed to anticipate future issues or concerns. Ethical considerations included the trustworthiness techniques utilized during the qualitative study that supported the credibility, transferability, dependability, and confirmability of the research. To ensure credibility, a participant should be able to designate the research and data as a credible or believable from their own perspective. Transferability generally refers to the ability of the qualitative study's results to be transferred to a different context (Trochim, 2006). The concept of dependability is emphasized by the research's capability of being replicated or repeated in future studies. Additionally, confirmability relates to the capacity of the research findings to be confirmed by subsequent studies.

Peer debriefing was incorporated periodically throughout the study, specifically after the research was conducted and the final reports were written. Peers reviewed transcripts, data, reports, findings, and methodology to confirm them as credible. This type of technique specifically supports the credibility and confirmability of the study. Triangulation of data is also incorporated to ensure the research remains ethical and dependable. A minimum of three forms of data were collected throughout the study via observations, interviews, and surveys.

Member checks were conducted periodically throughout data collection to support the credibility, transferability, and dependability of the study. These were done through summarizing and repeating information from the study to participants to check for accuracy. Additionally, detailed descriptions of the context of the study were incorporated into collecting data and analyzing the findings. This process contributed to the credibility and transferability of the research and was used to provide specific information and data related to the context.

Context description was done throughout the writing process to ensure all context for the study and findings have detailed descriptions. Reflexivity was incorporated to provide the research with confirmability. This aspect required the researcher to consistently reflect upon one's own practices in data collection and analyzing, as well as upon the data. The reflexivity process was done consistently throughout the study.

Data Analysis Procedures

Following each step in the data collection process, the researcher analyzed the data and reflected upon the study. Surveys were conducted to gain preliminary data for the study that would inform the creation of questions for later interviews. After the participant observations were completed, the researcher transcribed all notes and information into a record notebook. When reflecting upon the observations, the researcher created and adjusted questions to utilize within the in-depth interviews. Following the interview process, the researcher transcribed the recorded interviews, as well as all notes and relevant reflections into the record notebook. After every transcription, member checks were conducted to provide participants with the opportunity to read through the transcription and verify that the transcripts were accurate.

The data analysis process included three different types of coding – open, axial, and selective. Open coding involves labeling various concepts, defining categories, and developing those categories based upon common characteristics (Khandkar, 2017). This type of coding is beneficial because it allows the data to be categorized in a way that makes it easier to ascertain conceptual patterns within the data. Axial coding requires data to be analyzed by relating categories to their corresponding subcategories (Mills, Durepos, & Wiebe, 2010). Axial coding provides the opportunity to make connections within a specific group of data. Ultimately, selective coding is often the last stage in the data analysis process. During this phase, identified

categories and subcategories are further analyzed by forming additional connections between all aspects of the data and in relation to the core variable (Holton, 2010). Selective coding embodies the final step in analyzing the data before presenting the findings and conclusions drawn from the data.

To begin the research process, surveys were conducted with a variety of stakeholders. The three stages of data analysis were used for the coding surveys. Open coding was utilized to categorize similarities and differences in initial stakeholder perceptions. Initially, axial coding was used to identify relationships between those surveyed. Selective coding was then utilized to code data that specifically relates to identified core variables. This process allowed the researcher to specifically examine how individuals learn. The coding provided an opportunity to reflect on various feedback of stakeholders.

Participant observations were completed second in the data gathering and analyzing process to gain a comprehensive idea of technology use in different classrooms within the school. For observations, there were three stages of coding. Open coding was primarily used for the observations to help summarize what was observed within each classroom. Axial coding was then utilized to identify relationships between classrooms, as well as connections between technology use and student learning. Selective coding was used last in order to synthesize the categories and identified relationships in prior coding processes. These analysis procedures fostered opportunity to examine how individuals learn. This coding provided the researcher an opportunity to reflect on administrator and educator experiences and practices.

Lastly, interviews were conducted and the data from them were analyzed. There were three stages of coding for the interviews. Initially, open coding was incorporated to place stakeholder feedback into various categories according to specific information. Axial coding

was then used to identify relationships and themes between those interviewed. Selective coding was then implemented to code data that specifically related to identified core variables. It allowed the researcher to examine how individuals learn. This coding provided an opportunity to reflect on all stakeholder input.

Summary

This qualitative research study was conducted to address the research questions regarding stakeholder perceptions of technology use in the Humanities classroom. The feedback and perspectives of the participants were the impetus behind the study. Through participant observations, in-depth interviews, and surveys, the researcher was able to gain a better understanding of stakeholder perceptions, as well as the potential applications of the research into schools and classrooms. The ultimate findings of this study will provide stakeholders with information and tools that can be applied within the classroom regarding technology use and the potential benefits of this use on student learning and engagement.

CHAPTER 4: FINDINGS

Introduction

The objective of this qualitative study was to examine and analyze the perceived impact of technology on student learning in the Humanities classroom, particularly focusing on student achievement and engagement. The gathered information detailed best practices in technology use that were utilized consistently, as well as perceived best practices for student achievement and engagement. This qualitative study collected data through surveys administered to 17 stakeholders, eight participant observations, and four individual stakeholder interviews. All data were collected from stakeholders at a rural high school in Southwest Louisiana. The surveys administered included six open-ended questions and 10 statements that utilized a 5-point Likert scale. The questions revolved around best practices of technology for student achievement and engagement and the Likert scale statements pertained to stakeholder perceptions of technology use and how it impacts student learning. Participants were chosen for observations based on their content areas, years of experience teaching, and consistent use of technology. Detailed notes were taken during each observation and videos or audio recordings were utilized when possible. In-depth interviews were conducted with stakeholders based upon survey responses and data gained from participant observations. The interviews ranged from 20 to 45 minutes in length and were recorded and transcribed for analysis purposes. Detailed notes were also taken by the researcher throughout each interview to note stakeholder attitudes, body language, and expressions. These extensive research methods allowed stakeholders to be active participants in the research process and provided a more open platform to gather data that was more honest and detailed.

Research methods were uses to answer the following research questions, which guided the study:

1. What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement?
2. What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement?

Presentation of Descriptive Characteristics of Participants

The school from which all participants were pulled was located in a rural area of Southwest Louisiana. The school served grades 9-12 and had an enrollment of 566 students. At the time of the study, 39% of the student body was considered economically disadvantaged and qualified for free or reduced lunch. According to data provided by the research district in the 2016-2017 school year, the student body consisted of 71% Caucasian, 25% African American, 3% Hispanic, and 1% Other. The graduation rate for the school was 83% in 2017 and the school scored consistently high in state standardized tests in the past five years. The faculty and staff at the school consisted of three male administrators, a female instructional coach, and 46 total faculty members (23 female; 23 male). The primary stakeholders incorporated into the study were administrators and Humanities teachers. The survey was a Google Form sent via e-mail to Humanities educators and the three administrators. After receiving the survey results, the researcher conducted the participant observations over the course of two weeks. Observations incorporated four different educators in varying Humanities content areas and were facilitated over the course of multiple lessons and days. The four interviewees were selected from the pool of participants after analyzing the survey responses and observation data.

Survey Data

Appendix A displays the survey questions and 5-point Likert scale statements administered to 25 stakeholders, which included administrators and educators. The survey was placed into a Google Form and e-mailed to all participants on December 3, 2018. All feedback was received by December 10, 2018, which was comprised of 17 responses for a 68% return rate. Of those 17 stakeholders, three were administrators and 14 were educators.

Figure 4.1 exhibits the varying levels of experience in education that each participant in the study held. The least experienced educator surveyed had five years of teaching experience and the most experienced participant reported 28 years in education. Among the stakeholder participants, 0% had less than 5 years of experience, 23% had 5-10 years of experience, 29% had 11-15 years of experience, 12% had 16-20 years of experience, 18% had 21-25 years of experience, and 18% had 26 or more years of experience in education. Experience in the classroom and as an administrator had a significant impact on one's positive or negative perception of technology use and its impact on student learning.

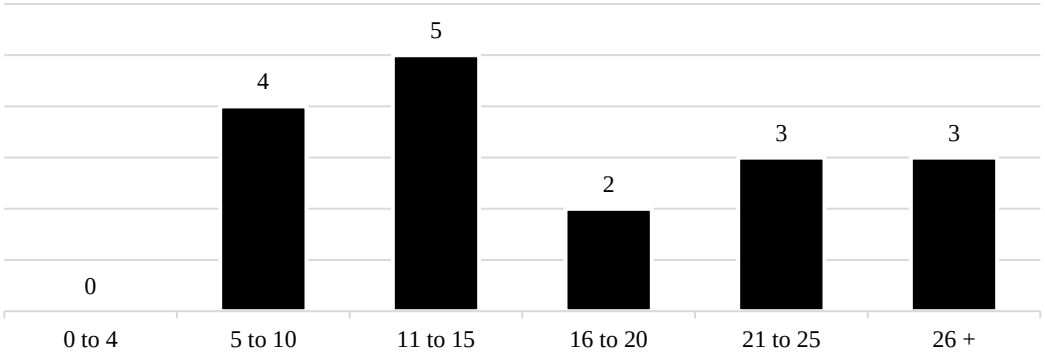


Figure 4.1 **Years of Experience**

Figure 4.1 exhibits stakeholder number of years of experience in education and the frequency of reported experience.

Figure 4.2 below portrays the best practices mentioned by stakeholders within the survey that have an impact on student achievement. One of the highest mentioned best practices was some form of online resources, with 12 of 17 stakeholders (71%) reporting it as a best practice

for student achievement. While responses differed in what type of online resources were utilized, access to such resources was emphasized by stakeholders. Online resource responses included: Teacher Tube, podcasts, webquests, E-mail, document storage and access, Blackboard, Office 365, online content area curriculum, and the Internet in general. With 11 of 17 stakeholders (65%) reporting laptops or computers, this was the second most reported best practice for impacting student achievement with technology. Among other best practices for impacting student achievement, stakeholders noted Promethean Boards, iPads, smartphones, projectors, SmartTVs, Quizlet, Plickers, and Google Classroom as effective technology tools. Within the "Other" category, best practices included Nearpod, audio and video recording devices, and microphones.

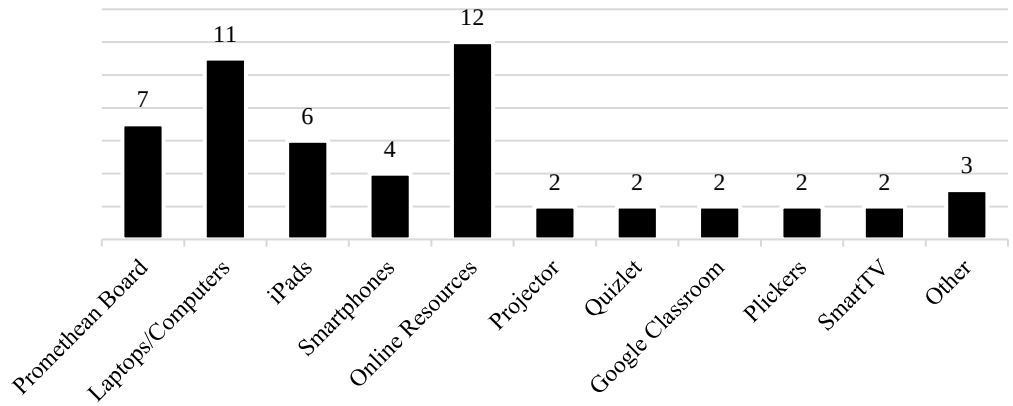


Figure 4.2 **Best Practices for Student Achievement**

Figure 4.2 exhibits the best practices for student achievement and the frequency of each best practice reported.

Several stakeholders made comments regarding best practices for student achievement that did not fall into specific best practice categories. Participant 1 stated, "I believe they all impact achievement equally." Participant 7 noted that best practices for student achievement included, "Visuals (videos, pictures) in my classroom and music." Participant 10 asserted that best practices improved student achievement as a result of "increased ease of research, [and]

overall availability of technology." In comparison, Participant 11 argued that, "All technology impacts achievement." Participant 13 noted that any technology that included, "resources that allow access to class materials, review of content, [and] participation in projects" would improve student achievement. Additionally, Participant 16 noted that the best practice for impacting student achievement in the classroom was, "Online tests that are immediately graded and students can retake the test one time to improve their score."

Figure 4.3 below details the best practices reported by stakeholders for using technology to increase student engagement. The primary best practice reported was laptops or computers (47%), followed closely by online study or quiz tools, such as Kahoot, Quizlet, or Plickers (41%). Additionally, 35% of stakeholders reported iPads and Promethean Boards as being best practice for increasing student engagement through technology. Roughly 18% of stakeholders surveyed also reported that smartphones, Office 365, and projectors were among the most effective best practices. Within the "Other" category for best technology practices for student engagement, stakeholders reported Classroom Screen, microphones, audio/video recording devices, webquests, and the Internet.

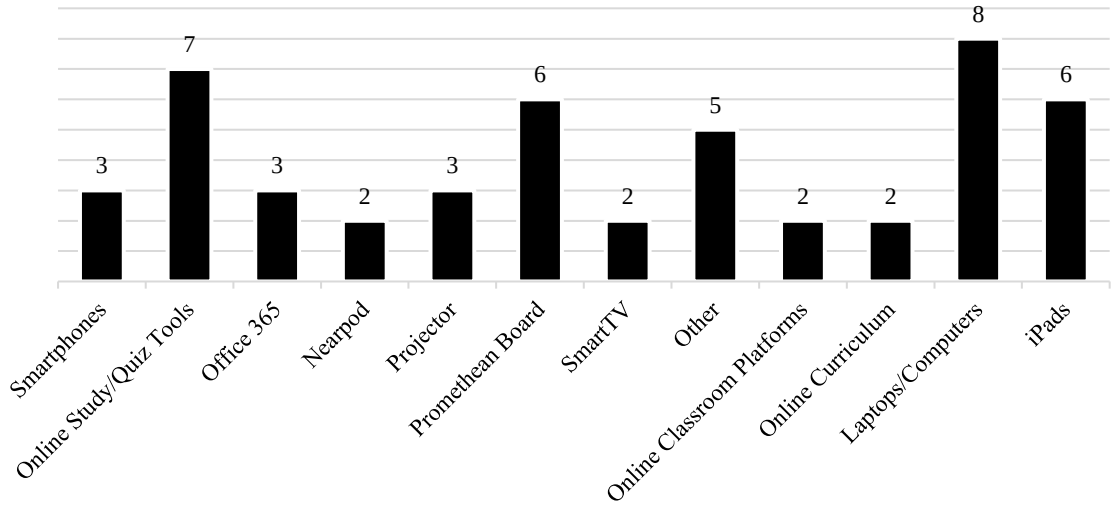


Figure 4.3 **Best Practices for Student Engagement**

Figure 4.3 exhibits the best practices for student engagement and the frequency of each best practice reported.

Various stakeholders reported comments regarding best practices for student engagement that did not fall into the specific best practice categories. However, several participants made the same comment for student engagement that they did for student achievement. Participant 1 stated, "I believe ANY technology will enhance engagement." Participant 7 noted that best practices for student engagement in the classroom included, "Songs, videos, [and] visuals." Participant 10 reiterated that best practices improved student engagement as a result of "increased ease of research, [and] overall availability of technology." Participant 13 noted that any technology that included, "resources that allow access to class materials, review of content, [and] participation in projects" would improve student engagement. Additionally, Participant 16 noted that the best practice for impacting student engagement in the classroom was by incorporating, "Anything that they [students] love to do."

As shown in Table 4.1 below, the percentage of stakeholder responses to each of the 5-point Likert scale statements within the administered survey from Appendix A. The majority of stakeholders agreed that technology use has a substantial impact on student engagement (see

Statement A). In comparison, the majority of stakeholders also agreed that technology use has a substantial impact on student achievement (see Statement B); however, more participants remained neutral in comparison to Statement A. According to the survey results, the majority of participants strongly agreed that technology plays a key role in keeping students' attention during lessons and involving them in the learning process (see Statement C). The majority also strongly agreed that technology is important in preparing students for post-secondary schools and career fields (see Statement D). Participants strongly agreed in Statement E that a teacher's perception of technology use has a significant impact on how technology is used in the classroom. A majority of stakeholders only somewhat agreed with the statement that technology incorporation should be required in the classroom (see Statement F). The majority of stakeholders remained neutral on whether or not teachers have enough resources to incorporate technology effectively (see Statement G). In response to Statement H, survey participants agreed that teachers should receive more training on technology resources available, and how they impact student learning. Respondents strongly agreed that an administrator's attitude or perception toward technology use impacted their faculty (see Statement I). Finally, in Statement J, stakeholders were neutral in response to whether science and math content areas receive more technology resources than Humanities courses.

Table 4.1

Likert Scale Survey Responses

Statement Letter	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A	0.0%	0.0%	11.76%	41.18%	47.06%
B	0.0%	5.88%	23.53%	29.41%	41.18%
C	0.0%	5.88%	23.53%	23.53%	47.06%

D	0.0%	5.88%	0.0%	41.18%	52.94%
E	5.88%	0.0%	0.0%	23.53%	70.59%
F	0.0%	17.65%	29.41%	41.18%	11.76%
G	17.65%	5.88%	41.18%	17.64%	17.65%
H	0.0%	17.65%	29.41%	41.18%	11.76%
I	5.88%	0.0%	5.88%	35.30%	52.94%
J	5.88%	23.53%	47.07%	11.76%	11.76%

Roughly 71% of stakeholders who participated in the survey chose to leave additional comments, opinions, or concerns regarding technology use in the classroom. Participant 1 argued, "I believe it [technology] is relied on too much." Participant 2 asserted that, "Current technology is essential to today's learning environment. We are at a point in our society where there are very few careers that do not use any type of technology." Comparatively, Participant 3 stated, "I think technology should be a tool/resource to enhance your lesson – in my opinion technology should not be your entire lesson. For example, students do need some lecture in their lessons. Students need to learn about technology and have lecture to prepare them for college." Participant 4 stipulated that, "Technology is awesome. I can be a powerful tool in the classroom. But it doesn't replace quality teaching. Its greatest impact in the classroom is probably with a dedicated, knowledgeable teacher who strives to consistently engage students. Technology in the classroom without quality instruction is just cute." Participant 7 reported, "I don't think technology only impacts student learning. It plays a major role because that's what students are hooked on in their personal life, but the teacher's skills, personality, etc. play a factor as well. I have observed classes where teachers use nothing but technology and the students aren't learning as much as in a "traditional" classroom. So even though it does engage them, it is not the only factor that impacts their learning." Participant 8 contended, "Technology can be a problem when the equipment is not working properly. It is also more pre-planning to make sure you are able to reserve the equipment in order to use the technology." In comparison, Participant 9 stated, "The

biggest issue is lack of resources in the classroom. The students who take the time to use the resources I make for them to use outside of class score consistently higher on assignments." Participant 10 argued that, "While I believe that technology is important, I believe that the most important factor that influences student achievement is the quality of the teacher. Good teachers were getting their students to achieve before computers. Conversely, putting computers in the classroom of a mediocre teacher, does not make that teacher better (they are just a mediocre teacher with more toys)." Participant 11 requested to, "Keep the computer training at the school level consistent." Another issue presented by Participant 12 was that, "Teachers often have fewer technology resources available to them." Participant 15 expressed, "I wish I had easier access to technology or had a classroom set of iPads." Participant 16 maintained that, "We need better internet service. Our administration has tried very hard to get us excellent internet service, but it still does not always work when you need it."

Participant Observation Data

The first participant observations were conducted on December 11, 2018 and December 13, 2018. The first participant used for observations was a Caucasian female with 13 years of teaching experience in World Languages. Two observations were conducted over two separate days. The first observation was of a Spanish 1 class and the second observation was of a Spanish 2 class. Detailed notes were taken throughout each observation of the participant and analyzed and coded after each observation.

The second participant observations occurred on December 12, 2018 and December 14, 2018. This participant was a Caucasian male with 21 years of teaching experience. The first observation was conducted during an AP U.S. History course and the second observation was

conducted during a standard U.S. History class. Each observation was audio recorded and detailed notes were also taken.

The third participant observations were conducted on December 17, 2018 and December 19, 2018. The third participant was a Caucasian female with 14 years of teaching and education experience. The first observation was done in a World History class and the second observation was done in an AP Human Geography course. Detailed notes and visuals were taken during each observation.

Finally, the fourth participant observations were conducted on December 10, 2018 and December 18, 2018. This participant was a Caucasian female with eight years of teaching experience in English. The first observation was done in an English I course and the second observation was completed in a Business English class. Detailed notes were taken throughout each observation.

Interview Data

The interviews were comprised of four different sessions with four different participants. The majority of the questions were open-ended and allowed the interviewee and researcher to create more in-depth discussions on the topic. All questions were created based upon the results of the survey and participant observations and centered around answering the aforementioned research questions. Each interview varied in length from 20 to 45 minutes. The interviews were recorded, and detailed notes were taken throughout each interview. Peer debriefing was utilized after transcribing the interviews in order to guarantee the fidelity of the data. To validate that all responses were recorded correctly, member checking was used. Member checking involved participants reviewing the notes to make sure that their answers were recorded and interpreted correctly by the researcher. Additionally, a peer reviewer read and assessed the data collection

methods and the reported findings to determine if the information was valid. With the interviews being conducted in the final step of the data collection process, triangulation of data was achieved.

In Appendix B, the interview questions used in each session are displayed. These questions were utilized as a guide for discussion in each of the interviews. The first interview was conducted on December 18, 2018. The interviewee had been in education for 12 years and had taught multiple world language. This interviewee was an African American female teaching Spanish 1 and Spanish 2. The second interview was conducted on December 19, 2018. The interviewee for the second session was an African American female who had seven years of teaching experience and was currently teaching World Geography. The third interview occurred on December 20, 2018. The third interviewee was a Caucasian male who had five years of teaching experience, but originally had a career in the technology field. He taught history courses, as well as career and technical education courses. The fourth interview was conducted on December 21, 2018. The final interviewee was a Caucasian female with five years of teaching experience who currently teaches English I and Business English.

Study Findings

Data analysis was conducted through three different types of coding processes – open, axial, and selective. Coding required categorizing and labeling the data to better analyze outcomes and answer research questions. Open coding involved labeling different concepts, defining categories, and developing those categories based upon various common characteristics (Khandkar, 2017). This allows the data to be categorized in a way that makes it easier to identify conceptual patterns within the data. Axial coding required the data to be analyzed by relating categories to their corresponding subcategories (Mills, Durepos, & Wiebe, 2010). Axial coding

provided the opportunity to make connections within each specific group of data. Ultimately, selective coding was the last stage in the data analysis process for this qualitative study. During this phase, identified categories and subcategories were further analyzed by forming additional connections between all aspects of the data and in relation to the core variable (Holton, 2010). Selective coding was the final step in analyzing the data before articulating the findings and conclusions drawn from the data.

In the open coding stage of data analysis, the raw data was broken down and divided into several categories of information. The data was grouped into open codes, or categories, based on having certain similarities, such as purpose or meaning. Open coding provided the researcher with the opportunity to conduct preliminary analyzation and begin to categorize the multitude of gathered data. During axial coding, the categories from the open coding step were further synthesized into broader concepts that could encompass all aspects of the components in each of the open codes. Finally, during the selective coding stage, these broader concepts were further analyzed to be detailed into selective codes by theme. In this qualitative study, the selective codes revolved around the themes that would specifically answer the research questions. To answer the first research question of the impact of technology on student achievement, coding revealed that stakeholder perceptions focused upon best technology practices for student achievement, the amount of student effort put forth, and the concepts of quality teaching and general teacher efficacy. To answer the second research question pertaining to the impact of technology on student engagement in the Humanities classroom, the data analyzation and coding process discovered that stakeholder perceptions revolved around best practices for student engagement, technology training, obstacles to technology, and available technology resources. Tables 4.2 and 4.3 below provides a visual to demonstrate the coding process during each stage.

Table 4.2

Data Sorted in Levels of Coding for Research Question One: What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement?

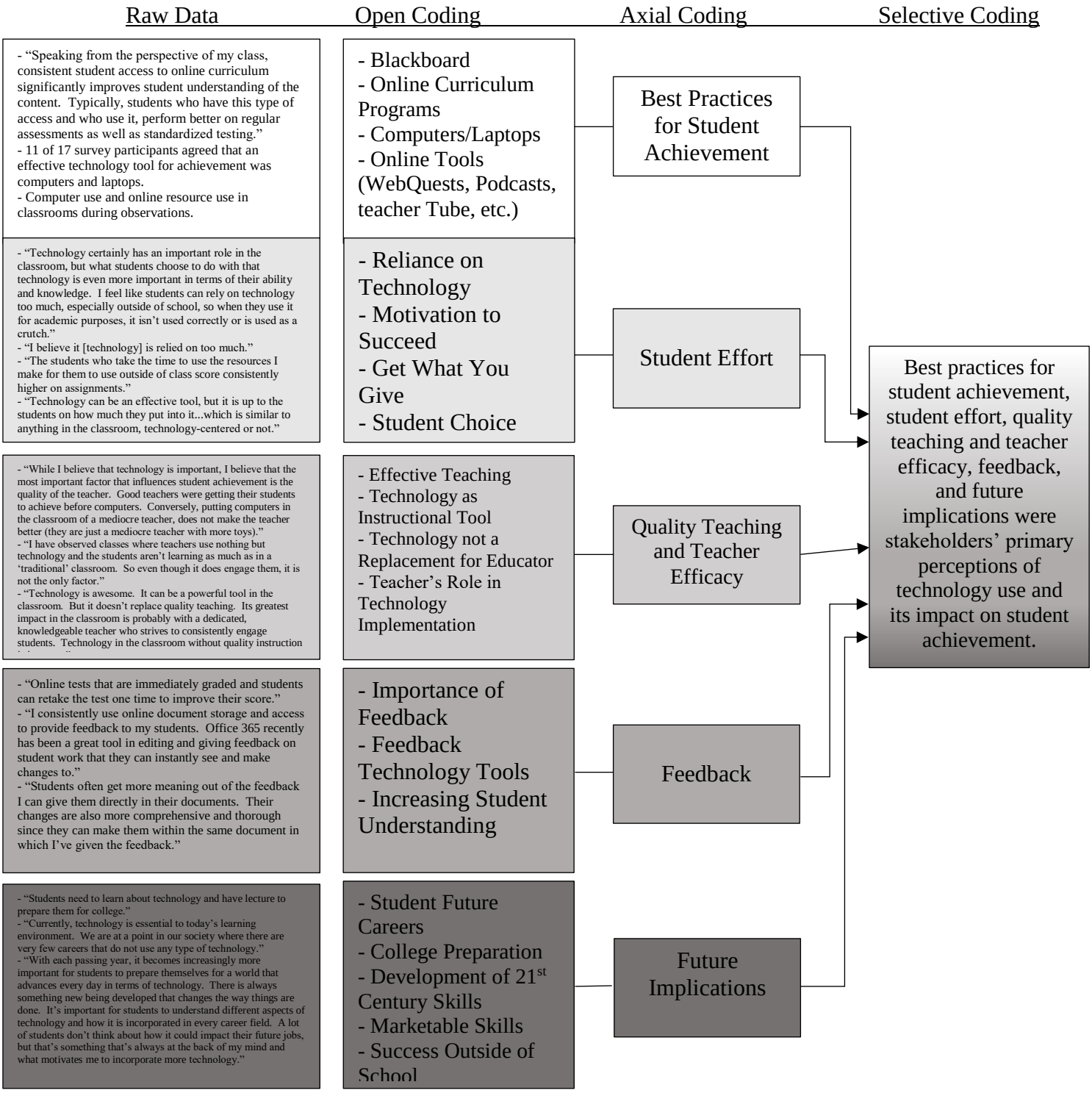
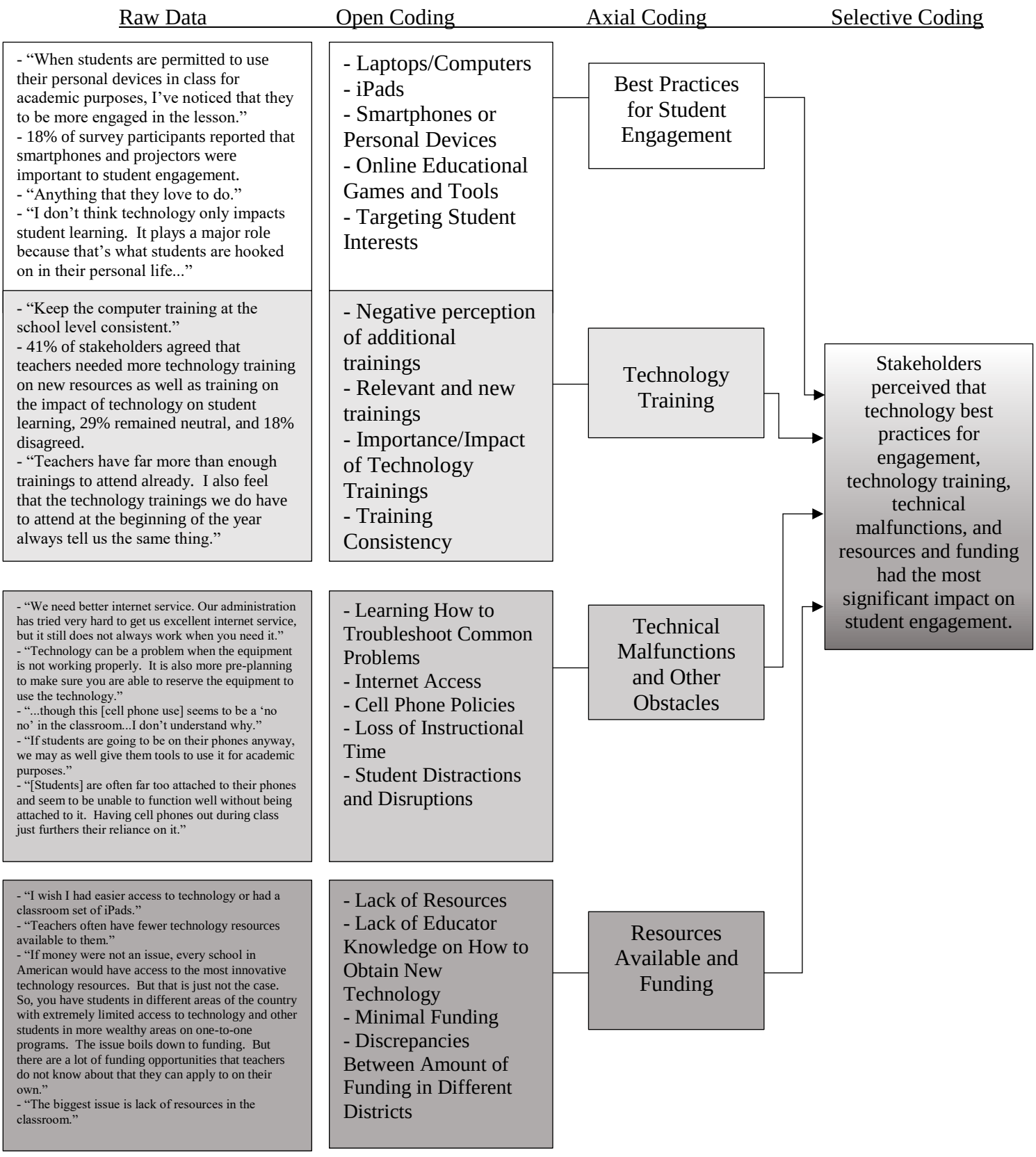


Table 4.3

Data Sorted in Levels of Coding for Research Question One: What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement?



Category One

After gathering and analyzing data from surveys, observations, and interviews, the following five sections detail the selective codes and essentially answer the first research question of this qualitative study: What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement? The subsequent themes were identified through analyzing and coding data from the surveys, observations, and interviews: Best Practices for Student Achievement, Student Effort, Quality Teaching and Teacher Efficacy, Feedback, and Future Implications

Best Practices for Student Achievement

From the surveys administered, participants identified online resources as one of the most effective practices to increase student achievement through the use of technology. Survey participants reported that online class platforms such as Blackboard, as well as other online curriculum tools were considered best practices. Interview Participant 3 and 4 both stipulated the importance of students having the ability to access online curriculum from their personal devices. Interview Participant 3 stated, "Speaking from the perspective of my class, consistent student access to online curriculum significantly improves student understanding of the content. Typically, students who have this type of access and who use it, perform better on regular assessments as well as standardized testing." According to survey results, other common online resources mentioned that would increase overall student achievement were specific enriching activities that utilized online tools such as WebQuests, Podcasts, and Teacher Tube. In all eight observations, some version of an online resource was being incorporated into the lesson, whether that was through Blackboard tools, videos from the Internet, or accessing online curriculum.

Another best practice that was frequently mentioned in increasing student achievement was student access to computers or laptops. Observation Participant 2 consistently utilized laptops to enrich and extend his students' learning during each lesson. The laptops served as an integral aspect of the lesson and students were also using critical thinking skills throughout the lessons as a result computer use. Furthermore, 11 of 17 survey participants agreed that an effective technology tool for achievement was computers or laptops. Moreover, classes taught by Observation Participant 4 were observed completing work within the computer labs.

Student Effort

At several points throughout the data collection, participants made comments regarding the impact of student effort on his/her achievement levels. Interview Participant 2 stated that, "Technology certainly has an important role in the classroom, but what students choose to do with that technology is even more important in terms of their abilities and knowledge. I feel like students can rely on technology too much, especially outside of school, so when they use it for academic purposes, it isn't used correctly or is used as a crutch." However, in comparison to other participants, Interview Participant 2 had an overall more negative perception of technology use on student achievement levels and did not necessarily agree with its consistent use, especially without the surveillance of an educator. Survey Participant 1 said, "I believe it [technology] is relied on too much." If the technology is doing all the work, no student effort is being made.

Additionally, Survey Participant 9 asserted that, "The students who take the time to use the resources I make for them to use outside of class score consistently higher on assignments." Students must be motivated to put forth the effort in order to gain the most out of using technology and learning the content. According to Interview Participant 1, "technology can be

an effective tool, but it is up to the students on how much they put into it...which is similar to anything in the classroom – technology-centered or not."

In both of the observations for Participant 1, students were given the option to utilize the technology available or complete the assignments without its use. It was observed that students who chose to incorporate the technology (in this case, iPads) were more focused on the content, had less questions, and were required to problem solve more than their non-technology using peers.

Quality Teaching and Teacher Efficacy

Several participants made it apparent that technology cannot replace quality teaching. The general consensus was that while technology can improve student achievement, it is not the only factor. Survey Participant 10 stated, "While I believe that technology is important, I believe that the most important factor that influences student achievement is the quality of the teacher. Good teachers were getting their students to achieve before computers. Conversely, putting computers in the classroom of a mediocre teacher, does not make that teacher better (they are just a mediocre teacher with more toys)." Technology has the power to create more effective teachers, but study participants were adamant that was dependent on the educator's perception of technology and how he/she used it as an instructional tool within the classroom.

Survey Participant 7 stated, "I have observed classes where teachers use nothing but technology and the students aren't learning as much as in a 'traditional' classroom. So even though it does engage them, it is not the only factor."

Survey Participant 4 stated that, "Technology is awesome. It can be a powerful tool in the classroom. But it doesn't replace quality teaching. Its greatest impact in the classroom is

probably with a dedicated, knowledgeable teacher who strives to consistently engage students. Technology in the classroom without quality instruction is just cute."

Feedback

Survey Participant 16 said that, "Online tests that are immediately graded and students can retake the test one time to improve their score," were most effective in increasing student achievement. Observation Participant 3 utilized student feedback through technology by incorporating review games and instant results for students to learn what they got wrong and to improve their knowledge on the subject.

Interview Participant 3 stated that, "I consistently use online document storage and access to provide feedback to my students. Office 365 recently has been a great tool in editing and giving feedback on student work that they can instantly see and make changes to." Interview Participant 4 also admitted to utilizing Office 365 as an effective tool for student feedback. She stipulated that in her English I classes especially, "students often get more meaning out of the feedback I can give them directly in their documents. Their changes are also more comprehensive and thorough since they can make them within the same document in which I've given the feedback." In general, interview participants agreed that feedback is imperative to student growth and achievement.

Future Implications

An important area that many stakeholders considered was how technology could not only increase student achievement in the classroom, but also increase students' achievement and success outside of school. Survey Participant 3 stated that, "Students need to learn about

technology and have lecture to prepare them for college." Observation Participant 2, in his AP U.S. History classroom, reiterated that students would not have as much assistance outside of school as they do in school and that it was important to understand the online resources and tools available to help them be successful. He also commented that it was important to prepare students to learn via technology.

Survey Participant 2 maintained that, "Current technology is essential to today's learning environment. We are at a point in our society where there are very few careers that do not use any type of technology."

Interview Participant 3 affirmed that technology skills contribute greatly to a student's preparation for the outside world. He stated that, "With each passing year, it becomes increasingly more important for students to prepare themselves for a world that advances every day in terms of technology. There is always something new being developed that changes the way things are done. It's important for students to understand different aspects of technology and how it is incorporated in every career field. A lot of students don't think about how it could impact their future jobs, but that's something that's always at the back of my mind and what motivates me to incorporate more technology."

Category Two

After gathering and analyzing data from surveys, observations, and interviews, the following four sections detail the selective codes and essentially answer the second research question of this qualitative study: What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement? The subsequent themes were identified through analyzing and coding data from the surveys, observations, and

interviews: Best Practices for Student Engagement, Technology Training, Technical Malfunctions and Other Obstacles, and Resources Available and Funding.

Best Practices for Student Engagement

Several best practices were identified in the surveys, during observations, and discussed within the interviews. According to survey results, the most reported best practices included the use of laptops, computers, and iPads. These tools can be used to further access even more technology resources online and through software programs. The results of this portion of the surveys were more widespread and particular than the results for student achievement. Approximately 18% of survey participants reported that smartphones and projectors were important to student engagement. Interview Participant 1 indicated that, "when students are permitted to use their personal devices in class for academic purposes, I've noticed that they tend to be more engaged in the lesson." Although the use of cell phones in school is a much-debated topic, many stakeholders agree that they can be extremely beneficial in keeping students engaged with the content.

Observation Participant 4 was observed in both sessions to implement engaging technologies such as online review games and quizzing tools to help prepare students for upcoming assessments. These types of technology incorporate a different and much more engaging spin on average flashcards or having classmates verbally quiz each other from notes. The technology observed was a program called Quizizz that allowed students to quiz themselves individually while also competing against classmates. The technology tool also provided immediate feedback to wrong answers and required students to start from the beginning to review the content.

Survey Participant 16 responded that the best practices for student engagement in relation to technology tools was, “Anything that they love to do.” Survey Participant 7 asserted that, “I don’t think technology only impacts student learning. It plays a major role because that’s what students are hooked on in their personal life...”

Technology Training

Updated and consistent technology training of educators was noted as a primary area of concern to maintain student engagement via technology. Survey Participant 11 suggested that schools and systems, “Keep the computer training at the school level consistent.” Overall survey results indicated that the majority (41%) of stakeholders agreed that teachers needed more technology training on new resources, as well as training on the impact of technology on student learning.

Interview Participant 2 expressed significant concerns with additional technology training explaining that, “teachers have far more than enough trainings to attend already. I also feel that the technology trainings we do have to attend at the beginning of the year always tells us the same thing.” Although the majority of survey participants agreed with the statement that teachers needed more technology training, rough 29% remained neutral and nearly 18% disagreed with the statement.

Technical Malfunctions and Other Obstacles

A valid concern for many teachers incorporating technology are the impending malfunctions that can occur during lessons. When technology malfunctions or refuses to cooperate, it can limit instructional time and lessen student engagement while the issue is fixed, or the lesson is modified to continue without the use of technology. The speed of internet service was problematic for Survey Participant 16, who stated, “We need better internet service. Our

administration has tried very hard to get us excellent internet service, but it still does not always work when you need it." Additionally, Survey Participant 8 admits that, "Technology can be a problem when the equipment is not working properly. It is also more pre-planning to make sure you are able to reserve the equipment in order to use the technology." Observation Participant 1 struggled consistently with some of her technology resources in her lesson. Her issue pertained to the Promethean Board and her laptop connected to it. While she was attempting to rectify the situation, students became distracted, bored, and disruptive to the point that instructional time was clearly disrupted by this technological issue.

Policies dictating student personal devices are often obstacles encountered by educators. This was a point of contention for several participants in the study. Interview Participant 4 admitted that cell phones were one of the best strategies to engage students with technology, but commented that, "though this seems to be a 'no no' in the classroom...I don't understand why." Interview Participant 1 agreed with the sentiments in this statement saying that, "If students are going to be on their phones anyway, we may as well give them tools to use it for academic purposes." Interview Participant 2 explained that students, "are often far too attached to their phones and seem to be unable to function well without being attached to it. Having cell phones out during class just furthers their reliance on them."

Resources Available and Funding

In order to keep students consistently engaged through technology, teachers must have substantial access to different technology resources. Survey Participant 15 admitted that, "I wish I had easier access to technology or had a classroom set of iPads." Considering that iPads were perceived as one of the more effective tools for keeping students engaged, it would be beneficial for schools and systems to invest money is adding additional resources. Survey Participant 12

argued that, “Teachers often have fewer technology resources available to them.” Although that may be true in some cases, the majority of stakeholders surveyed remained neutral on the concept of teachers having enough resources to incorporate technology effectively. However, throughout each of the observations, regardless of content area or teacher experience, it was easy to identify areas that if the right resources were available, technology could have easily and effectively been implemented.

Funding is a vital component to obtaining engaging technological resources. According to Interview Participant 3, “If money were not an issue, every school in America would have access to the most innovative technology resources. But that just is not the case. So, you have students in different areas of the country with extremely limited access to technology and other students in more wealthy areas on one-to-one programs. The issue boils down to funding. But there are a lot of funding opportunities that teachers do not know about that they can apply to on their own.” Increasing awareness of specific grants, scholarships, and fundraising programs can greatly increase the amount of technology resources located within a school. Survey Participant 9 contended that, “The biggest issue is lack of resources in the classroom.” If more awareness was raised on alternatives to technology funding and how easy it can be to access money for technology tools, more educators might become interested in taking increasing technology resources in their classroom or school in their own hands.

Summary

The coding process helped to focus the data into different steps of analyzation and helped to identify common themes throughout the research. While many different categories were present through the coding process, several led to themes that answered the first research question for this qualitative study: What are stakeholder perceptions of best practice technology

use in the Humanities classroom and its impact on student achievement? During axial coding, the following themes were revealed: best practices for student achievement, student effort, quality teaching and teacher efficacy, feedback, and future implications.

The same coding process helped to answer the second research question for the study: What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement? Open coding helped to break down the data into distinct categories. Axial coding then allowed the researcher to assign the categories into broader concepts and themes, including best practices for student engagement, technology training, technology malfunctions and other obstacles, and resources available and funding. Finally, with selective coding, each of the themes facilitated an answer to the overall research question.

Technology is a fluid component of education; it is continually changing and adapting to the world's needs. Implementing technology in education, while increasingly important, is a difficult battle for educators and school systems. Facing low funding and lack of resources, negative educator or administrator perceptions, and often minimal support, incorporating technology consistently can be a challenging feat. However, the benefits of technology cannot be ignored. Given the generally positive perceptions of technology, stakeholders seem more than willing to do what is necessary to help students become engaged with learning and increase their achievement in and out of school. The themes from the first category ultimately revealed that student achievement through technology is definitively connected to how it used by effective teachers. In comparison, the themes in the second category demonstrated that technology has the potential to increase student engagement when stakeholders are given the appropriate resources and trainings. Throughout this chapter, the findings from surveys, observations, and interviews

were presented. In the final chapter, conclusions are drawn from the data, implications are discussed, and recommendations for future studies are made.

CHAPTER 5: CONCLUSION

Summary of Study

The notion of teaching digital citizenship and 21st Century skills in schools today is becoming increasingly imperative to student success outside of school. While skills such as technology, financial, cultural, and civic literacy would seem standard for success in reality, the current education system is consistently failing to truly prepare students for the world. Presently, college graduates are faced with competing against technology for jobs. Over the course of the past decade alone, wages for new graduates have steadily declined as a result of technology being able to do the same job more efficiently and cost effectively. Nearly 50% of these new college graduates are being forced to take positions and careers that do not require a higher education degree (Ford, 2015). As a result of these statistics, educators at the secondary level and in higher education need to make technology skills and knowledge, specifically related to career area content, an integral part of preparing graduates for a continually technologically advancing world.

Technology has the power to significantly impact student learning in more ways than one, including, but not limited to, accessibility of resources, learner motivation, language acquisition, and reading comprehension (Murphy, 2016; O'Hara & Pritchard, 2014). Technology has the ability to connect students with others from all over the world and further extend their knowledge, understanding, and appreciation of other cultures and languages different from their own. Multiple studies have also shown that students typically perform better when they are given the opportunity to utilize technology tools. Regarding content areas and reading comprehension, studies have shown that students perform better when given the opportunity to utilize technology (O'Hara & Pritchard, 2014). With each new published study, it

becomes progressively more apparent that technology is proven to be a more effective avenue of instruction and facilitation of student learning.

The primary purpose of this qualitative study was to analyze stakeholder perceptions of the impact technology on student learning, including student achievement and student engagement, in the Humanities classroom. Educator and administrator perceptions of best practices in using technology increase achievement and engagement were also collected and analyzed. Data were gathered from stakeholder surveys, classroom observations, and interviews. Technology tends to be incorporated more in the math and science content areas; therefore, the primary focus of this study was on classrooms and stakeholders from different subject areas within the Humanities. This qualitative study revealed stakeholder perceptions concerning the effectiveness of technology use in the Humanities classroom in relation to student learning.

Statement of the Problem

In general, the area of improving student learning is an often-discussed topic within education, regardless of technologies and content areas. There are new techniques, methods, and resources being developed constantly that have the potential to improve student learning in the classroom. Developments in technology are a significant portion of this discussion, especially with additional innovative technological tools entering classrooms each school year. Significant research has been conducted regarding technology's role in math and science subject areas. However, there is limited research regarding the use of technology in the Humanities classrooms and the significant impact it can have on student learning and engagement, particularly in these subject areas. This research study sought to determine and analyze the effectiveness of technology use in the Humanities classroom, as well as the best technological practices that proved to be successful.

The purpose of this study originates from the relevant problem of access (or the lack thereof) to technology in public schools in the United States and how it impacts student learning. Without sufficient access to technology in many public schools, it becomes difficult to ensure that all students are is receiving a well-rounded and consistent education that completely prepares them for life after high school. While technology has brought challenges to education, especially for teachers and administrators, the benefits of using technology far outweigh any negative components. Stakeholder perceptions are important in determining the effectiveness of technology incorporation and how much it can impact student learning.

Research Questions

Stakeholder input was examined in relation to the following research questions:

1. What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student achievement?
2. What are stakeholder perceptions of best practice technology use in the Humanities classroom and its impact on student engagement?

Discussion

As a result of this research study, the aforementioned research questions were answered through stakeholder surveys, observations, and interviews. Detailed notes were recorded during the observations and interviews to aid in data collection and analysis. The interviews and several of the observations were audio recorded and transcribed. All data collected from the surveys, observations, and interviews were coded using open coding, axial coding, and selective coding. The following sections are a discussion over each of the categories created through the data analyzation and coding process.

Category One

Studies show that students typically perform better when given the opportunity to utilize technology. According to these studies, students taught using technology showed a higher increase in student achievement in comparison to students taught without technology (O'Hara & Pritchard, 2014). The first research question regarding student engagement was answered through open coding, axial coding, and selective coding. The coding process revealed the following themes: best practices for student achievement, student effort, quality teaching and teacher efficacy, feedback, and future implications. Category one, discovered through the coding process, detailed stakeholder perceptions concerning the impact of technology on student achievement. The information discussed in this section connects the findings with the themes revealed in the first category.

In terms of Best Practices for Student Achievement, stakeholder perceptions varied regarding what was considered best practices for student achievement. Among those highest reported best practices were online class platforms, online curriculum tools, and other miscellaneous online tools. The observations demonstrated that the most used and consistent best practice for student achievement was some form of online technology tool. Perceptions of best practices for student achievement also included student use of computers or laptops. Had the observed lessons occurred without the use of laptops, the amount of learning would have substantially less meaningful. During the observation, students were practicing necessary and crucial 21st Century skills, as well as extending their knowledge of the content, which subsequently increases student achievement.

Regarding Student Effort, the general consensus was that stakeholders perceived that technology and student achievement were reliant on the amount of effort put forth by the student using the technology. While technology tools were presented, several stakeholders admitted that if students did not use provided tools appropriately, or at all, their achievement would not be as high as their technology-using peers. A few negative perceptions of student effort in connection to technology were revealed within this theme. Whether the stakeholder believed that technology was excessively relied upon, it was evident that the majority of stakeholders agreed that students would be rewarded accordingly based on their work habits, technology-related or not. From the observations, it can be inferred that the achievement levels and understanding of the content of the students using technology would be higher than those not using the technology tools available.

In regard to Quality Teaching and Teacher Efficacy, stakeholder perceptions were relatively similar in regard to the connection between quality teaching and technology use. The sentiment that technology use typically only increases student achievement when incorporated by an effective teacher was standard among stakeholders. If teachers were ineffective prior to integrating technology into their classrooms, they would continue to be ineffective with the use of technology. Simply because technology exists, it should not replace quality and effective teaching. Therefore, while technology can certainly enhance student learning and achievement levels, general effective teaching is a major contributing factor to student achievement. In observations of Participant Four's classes, the educator would have been more effective in circulating the room and checking for understanding amongst the students. However, a more hands-off approach was taken and student understanding of the content was not as high as it could have been with teacher involvement. The presence of technology in the classroom does

not negate the teacher's role in education. Even when technology is being incorporated, teachers still have a vital role to play in impacting student achievement.

In terms of Feedback, the benefits and importance of delivering feedback via technology was reiterated by a few stakeholders. Feedback is how students grow the most and technology can expedite that feedback process. A meaningful portion of technology tools provides feedback resources for teachers and students to further learning and understanding of skills or content. The overall perceptions of feedback through technology were positive in the sense that stakeholders were appreciative of this resource, and in some cases, hopeful to use it more in the future for their students. These stakeholders perceived that the best way for their students' achievement levels to increase was to provide consistent and expedited feedback so that students could learn from mistakes and grow. Without consistent and specific feedback, it is more difficult for students to improve their skills and expand their content knowledge. Technology can greatly assist in this effective teaching strategy of formative and summative student feedback.

Regarding Future Implications, several stakeholders voiced the concept that technology incorporation in classrooms would prepare students for achievement both inside and outside of school. Given the rising number of technology-centered careers, stakeholder perceptions emphasized the importance of preparing students for future success in college and careers. Survey participant responses support the concept that student achievement extends far beyond the school doors. If students are not being prepared for a technological society, it can be argued that schools are in a way, failing their students. The purpose of schools, specifically secondary schools, is to prepare students for the real world. A crucial aspect of that preparation is consistent targeting of technology knowledge and skills in all content areas. The implications of

consistent technology practice can have a significant impact how well students are prepared for college and the career field. This perception of the future implications of technology incorporation in school and the impact it can have on students' future career achievements is imperative to spread amongst educators in the coming years.

Category Two

The concept of student engagement is a primary focus of a majority of professional development opportunities in education. One of the most notable advantages to technology use in the classroom is its impact on student engagement (Wantulok, 2015). The second research question regarding student achievement was also answered through open coding, axial coding, and selective coding. The coding process revealed the following themes: best practices for student engagement, technology training, technical malfunctions and other obstacles, and resources available and funding. The second category, ultimately revealed through the coding process, discovered stakeholder perceptions regarding the impact of technology on student engagement. The information detailed below relates the findings from data to the themes in the second category.

In relation to Best Practices for Student Engagement, the perceived best practices to increase and maintain student engagement were laptops, computers, and iPads. Other best practices mentioned in the surveys and interviews, and documented in observations, were online review games and quizzing tools. Stakeholder perceptions of best practices also included incorporating technology pieces in relation to tools, content, or activities that students prefer. In general, it was perceived that if students enjoy the technology being used with the content, they are more likely to stay engaged throughout the lesson. With technology, it is easier and more

effective to target student interests and adapt to individual learning needs. When teachers tap into student interests and motivators, students are much more likely to be engaged in class.

In regard to Technology Training, the quality and consistency of educator training was a valid perception regarding the impact of technology on student engagement. While the majority of educators admitted that more training was needed, there were general apprehensions on the types and consistency of those trainings. Interviewees and survey participants admitted that appropriate trainings would reduce malfunctions and distractions while increasing student engagement. Taking these survey and interview comments into consideration, it may be beneficial for administrators and technology coaches to arrange trainings that are more meaningful and targeted toward newer resources with which the majority of teachers are unfamiliar. In order for educators to effectively implement technology to engage students, they all must be trained on it, preferably with everyone being trained in the same way as to eliminate confusion.

In terms of Technical Malfunctions and Other Obstacles, stakeholder perceptions in the surveys and interviews indicate that technical malfunctions greatly impact student engagement during lessons. Observations supported these perceptions that when technology malfunctioned, students became restless and disruptive, making it more difficult to refocus the class once the issue had been remediated. When the internet, which is a crucial component in online resources, is not available, it can lead to student distractions and frustrations on everyone's part. Regarding other obstacles, several stakeholders admitted that restrictive cell phone policies impeded the ability to use resourceful technology devices that are at the constant disposal of students. Students' personal devices are an issue in every classroom around the world, but there should be a compromise to showing them how to use the technology tools that are in their hands every day.

Regarding Resources Available and Funding, a primary concern for stakeholders was the availability of engaging technology resources and the funding required to update current technology. The general perception of the available technology resources for student engagement was neutral, but it was clear in observations and throughout the interviews that there were areas where significant improvement could be made in lessons to engage students more with the content through the use of technology. Typically, stakeholders perceived that funding was a consistent issue in keeping students engaged with innovative technology tools and updated programs.

Conclusions

This study investigated stakeholder perceptions of the impact of technology on student learning, particularly focusing on student achievement and student engagement. Stakeholder surveys, observations, and interviews were used as the sources of data for this study. The perceptions of stakeholders varied in response to questions that gauged their attitudes and approaches toward technology in the classroom. Common perceptions included that technology was a positive attribute to student learning and that it should be incorporated when resources allow. In connection to the identified themes revealed in the data coding process, stakeholder perceptions of technology's impact on student achievement included: Specific best practices for student achievement should be incorporated into the classroom to increase student understanding of the content; The amount of effort a student invests in an assignment or activity significantly contributes to the effectiveness of the technology on increasing his/her achievement levels; Technology cannot replace quality teaching and does not necessarily always make a teacher more effective; Providing prompt and consistent feedback to students is a meaningful use of technology to ultimately increase student achievement; Consistent technology use can have a

profound impact on the future implications for student success in and out of school. In relation to the identified themes discovered in the data coding process, stakeholder perceptions of technology's impact on student engagement included: Certain best practices for student engagement should be included in classroom instruction and curriculum in order to increase student interaction with the material; Technology training for educators and administrators needs to be more consistent and incorporate new technologies that would further engage students; School-based restrictive technology and technical malfunctions are substantial contributing factors that negatively impact student engagement in relation to technology; It would be significantly easier and more effective to engage students using technology if additional resources and funding were readily available to stakeholders.

In order to provide students with a more comprehensive education that truly prepares them for college and careers, it is important for stakeholders to perceive technology as a positive contributing factor to curriculum and instruction. In order for educators and administrators to appropriately accommodate student achievement and engagement through technology, there must be the suitable technology resources to fulfill the necessary requirements and meet student needs. It was determined that the majority of stakeholders believed that with consistent use of best practices in technology, students would have more effective and comprehensive educational experiences that would ultimately prepare them for college and future careers.

Implications

Overall, this study indicated that stakeholders believe that technology use has a generally positive impact on student learning. Teachers who incorporated certain best practice technology strategies discerned significant increases in student achievement and engagement, specifically depending upon the specific tools utilized. Student effort and motivation plays an important role

in determining levels of achievement and engagement. While technology is an essential tool within the classroom, it cannot replace quality teaching. For technology to be truly effective in increasing student learning, educators must continue to be an integral part of the instructional process. Assessment and feedback are essential to student growth; technology resources can significantly help in these areas. The incorporation of technology is imperative to students' college and career readiness as a direct result of cultivating 21st Century skills. Appropriate and updated technology trainings are important to continually developing teachers' skills and knowledge regarding innovative technological approaches to education. While technical malfunctions are inevitable, teachers should be aware of potential obstacles and trained on how to correct them should they occur. Restrictive technology policies are commonplace in secondary schools, but it continues to be extremely beneficial to educate students on the readily-available resources accessible to them every day. Finally, it is imperative to increase and cultivate educator and administrator knowledge on available technology resources and funding opportunities to expand the amount of technology in schools and classrooms.

Limitations

One of the limitations of this qualitative study is the time period in which the data was collected. Given a longer time period of data collection, a more in-depth study could be conducted that incorporates a larger and more diverse sample size. The participants all originated from one geographic location in Southwestern Louisiana, which limits the diversity of the group of participants in the research study. The population was also limited to the Humanities content areas and could be extended to other subjects to compare responses.

Recommendations for Further Study

There are several areas in which further study would be recommended. A comparative study using students who have learned a skill with technology and those who have learned the same skill without technology would be an informative research study. This type of study would allow readers to visualize concrete research on the true impact and effectiveness of technology on student learning. A similar qualitative study would be appropriate to complete at all levels of education, from elementary schools to post-secondary classrooms. Research studies such as this would also be beneficial in schools with substantial amounts of technology as opposed to schools with minimal technology.

Further studies in relation to this topic could also involve students' input and perspectives on how technology impacts their education. A similar format to study could be used to gauge student perceptions on the impact of technology on their own achievement and engagement. Additionally, future studies should also be conducted using a larger and more diverse participant pool. Participants for that study should originate from different geographic locations, especially to compare responses from schools located in urban areas compared to rural areas. It would be informative to conduct studies that compare stakeholder perceptions using participants from various subject areas, rather than strictly using educators within the Humanities content areas.

Summary

Research consistently proves the technology has a positive impact on student learning, including but not limited to student achievement and engagement in the classroom. Stakeholder perceptions typically emulated this notion, despite often overwhelming obstacles that may deter technology use on a consistent basis. This study proved that the perception among stakeholders on technology use and its impact on student learning was generally positive. Stakeholders typically agreed that given the right resources and an increased ease of access, more technology

could certainly be incorporated more consistently. It was also perceived by the majority of stakeholders that students who use technology more frequently are also more likely to be successful on standardized tests as well as in college and future careers. Additionally, this study revealed best practices for increasing student achievement and engagement through the use of technology. By incorporating technology into aspects of instruction, assessment, and feedback, more effective educators can be developed. When teachers are given the appropriate resources, training, and supports, they are more likely to incorporate technology effectively. Subsequently, this would increase student achievement and engagement, while also cultivating necessary 21st Century skills that are essential to college and career readiness.

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Appendix A

Survey Questions and Statements

1. How many years of teaching experience and/or administrative experience do you have?
2. What technology resources do you use (or have seen used) on a consistent basis to increase student achievement?
3. What technology resources do you use (or have seen used) on a consistent basis to increase student engagement?
4. In your experience/opinion, what technology resource have the most significant impact on overall student achievement?
5. In your experience/opinion, what technology resources have the most significant impact on overall student engagement?
6. Use the following scale to respond to the statements below:
   1 – Strongly Disagree
   2 – Disagree
   3 – Neutral
   4 – Agree
   5 – Strongly Agree
   a. Technology use has a substantial impact on student engagement.
   b. Technology use has a substantial impact on student achievement.
   c. Technology plays a key role in keeping students' attention during lesson and involving them in the learning process.
   d. Technology is important in preparing students for post-secondary schools and career fields.
   e. A teacher's perception of technology use has an impact on how and when technology is used in the classroom.
   f. Technology incorporation in the classroom should be required.
   g. Teachers do not have enough resources to incorporate technology effectively.
   h. Teachers should receive more training on technology resources available and how they impact students.
   i. An administrator's perception toward technology use impacts their faculty.
   j. Science and math content areas often receive more technology resources than Humanities courses.
7. What are any additional comments, opinions, or concerns you have regarding technology use in the classroom?

Appendix B

Interview Guiding Questions

1. Elaborate on some of the best practices technology tools that you currently use.
    a. For what types of projects or assignments are these tools most often used?
    b. How often are these tools used in class?
    c. How do you gauge the effectiveness of these tools?
2. What about technology makes learning engaging?
3. What about technology might increase student achievement?
4. How do you think other teachers perceive technology?
    a. Why do you think this influences their use of technology in the classroom?
    b. How do you think we can change negative perceptions of technology?
5. Do you feel that your own perceptions of technology have changed over the years?
    a. If so, what was this change a result of?
6. Would you agree or disagree that science and math content areas have more technology resources at their disposal than humanity content areas?
7. What can be done to provide more technology resources that are accessible to all teachers?