HOW A GLOBAL PANDEMIC AFFECTED INSTRUCTIONAL TECHNOLOGY

by

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Table of Contents

CHAPTER 1

INTRODUCTION

Introduction

The speed at which innovations in technology have occurred has increased exponentially in the last century. Innovations especially accelerated beginning in the 1980s with the proliferation of the personal computers. Personal computers have become smaller, increased in functionality, and have reduced in price; all factors that contribute to the ease of adding digital devices to more settings. Over the last twenty to thirty years, we have watched credit cards evolve from being swiped using a carbon copy paper to being swiped on a person's smartphone or tablet. Restaurant staff have moved from writing down orders to tapping them in on tablets, with several chains allowing patrons to skip interactions all together and place orders and pay on tablets at the tables. As the business world evolves, so does the educational world. The student-to-computer ratio has increased from 153:1 in the early 1980s to 5.3:1 by 2010 (Carver & Todd, 2016). By 2016, many school systems had reduced the ratio to 1:1 with either one-to-one or bring your own device (BYOD) policies in place (Selwyn & Bulfin, 2016).

As school computer access has increased, teachers have not integrated technology into their curriculum at a proportional rate (Cuban, Kirkpatrick, & Peck, 2001; Perotta, 2015; Zhao & Frank, 2003). The teachers who would have reported rejecting technology in the 1980s and 1990s when technology was not as available should be nearing retirement age if not already retired (Perotta, 2015). These teachers have been replaced by younger teachers who are more flexible in their instructional methods and more proficient in their technology use to enter the classroom setting. These younger teachers are members of the net generation, individuals who have never known life without Internet access (Tapscott, 1998; Wang, Hsu, Campbell, Coster, & Longhurst, 2014). This actually points to a more interesting idea: Radical Change Theory (RCT), which posits that the net generation needed to be able to connect, interact, and access content to fully understand it (Dresang, 1999). What makes this theory interesting is that the learners RCT referred to are today's teachers; however, these teachers are still reporting that they are not reluctant to integrate technology (Perotta, 2015). According to the literature, these teachers still feel

inadequate when it comes to their abilities to integrate technology into their classrooms, asserting a fear that technology will replace teachers (Perotta, 2015) or in finding adequate time and support to learn new instructional technology methods (Baek, Jones, Bulger, & Taliaferro, 2018). This results in a current trend of learners rejecting pursuing STEM careers, even though the current batch of K-12 learners are assumed to be natural users of technology since they have never known life without the iPhone (Wang et al., 2014).

In early 2020, the introduction of COVID-19 close many schools, keeping students and teachers at home for an unprecedented amount of time. In many instances, the various state departments of education ended the school year in March, keeping physical school systems closed while requiring that school systems still find means through which to continue educating students. For many, this meant moving to online teaching formats.

Statement of the Problem

The problem that this study intends to address is a lack of technological integration in student learning (Akay, 2018; Carver & Todd, 2016; Kolikant, 2010; Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2016). During the COVID-19 global pandemic, schools were closed but instruction was required to continue. With no initial plan in place, teachers were left scrambling to create plans to facilitate learning while being ordered to social distance and stay at home. At the conclusion of the required social distancing period when teachers and students return to schools, I anticipate that the general attitude towards technological integration will change. Teachers should be prepared in the future should the COVID-19 follow the pattern of influenza pandemics of the past by either relapsing or further mutating to a new form.

Statement of Purpose

The study will examine the stories of teachers' experiences before, during, and after the required quarantine period, especially pertaining to the perception and usage of available classroom instructional technology. The study seeks to track the changes that occurred due to COVID-19.

Significance of the Study

This study will explore how teacher perceptions and usage of instructional technology changed due to COVID-19. Teachers will complete a survey to get a baseline of information to determine self-efficacy, what technologies are utilized in the classroom, and the level of integration practiced before, during, and after school closures associated with COVID-19. In addition to survey data, high school teachers will be interviewed to ascertain individual experiences during all three stages – before school closures happened, during school closures, and after a return to a "normal" classroom setting during the 2020-2021 academic year.

Framework

The framework for this research will combine postmodernist thought with radical change. Postmodernist theory traditionally holds that only the oppressive culture holds access to the information, thus setting the standards by which knowledge has been attained (Voithofer & Foley, 2002). This sets the stage for questioning the traditions. In terms of education and instructional technology, postmodernism seeks to uncover inequalities that arise in learning in order to bring more access to learners, as such flipping a culture of analog classroom instruction to put digital tools into the grasp of those who may not normally have appropriate digital access.. My expectation in this research is that the COVID-19 pandemic will cause educators to put into question their traditional methods of teaching. This is not to say that they will completely abandon traditional teaching methods but will be more willing to make changes and incorporate digital methods that will allow for more flexibility in learning.

The second framework works in conjunction with postmodernism. Radical Change Theory (RCT) states that the onset of the digital age has caused changes in the way students learn (Dresang, 1999). This theory proposes that students need to connect, interact, and access content in order to fully learn. Learners should be able to make connections between the content, themselves, and the world. They should be able to engage with the content, interacting with the content and with others. Learners also need to be able to access the content, whether that means accessing knowledge that was not previously accessible to them or changing the way in which they access the content. In interviews with educators, I will seek educator's stories on how students interact and learn with different types of assignments in order to determine the

validity of RCT. Again, the changes that I expect to be a result of COVID-19 should stem from some level of evidence of different types of learning that will come about by using more digital learning options during social distancing and school closures. In teachers who have used more digital technology, I will be able to compare and contrast the effectiveness of traditional teaching methods versus digital methods.

Methods

The methodology of this study will be qualitative in nature. Initial data collection will be completed with a survey that establishes a baseline for general perceptions and practices regarding instructional technology. Teachers in various high schools within the state of Alabama will receive a request to participate in the survey. From survey respondents, volunteers will be randomly selected to take part in interviews. The interviews will be transcribed and coded to determine changes in instructional technology perception and usage before, during, and after the school closures due to COVID-19.

Research Questions

The overarching research question for this study is: How did forced school closures due to COVID-19 change high school teacher perceptions and integration of instructional technology? Sub-research questions include the following:

1. How were high school teachers integrating instructional technology before COVID-19 forced school closures?
    a. What reasons did teachers have for or against integration?
    b. What were teachers' personal experiences regarding instructional technology integration before COVID-19?
2. What methods were high school teachers expected to utilize to continue instruction during the quarantine period caused by COVID-19?
    a. What were teachers' personal experiences regarding choice of instructional delivery methods during the quarantine period?

3. What changes, if any, did high school teachers make to the way they integrated instructional technology following the quarantine period caused by COVID-19?

   a. What were teachers' personal experiences regarding instructional technology choices after the quarantine?

4. Is there a change in high school teachers' perceptions and/or integration of instructional technology beginning in the 2020-2021 academic year?

Summary

Chapter two of this prospectus will review the literature that supports background information on this topic. The subtopics include a history of instructional technology integration, teacher reluctance to instructional technology, an argument for radical change theory, and analyzing past pandemics and educational changes. Chapter three will detail my proposed qualitative methodology, including the proposed setting, participants, and data collection and analysis methods.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

In the last 120 years, technological innovation has accelerated in a way we never would have imagined. Even to think back 20 years ago, when the latest and greatest technology was a cell phone that flips opens, and there was a move from sending an alphanumeric message to a pager to alphanumeric text messages from cell phone to cell phone. Today, almost everyone has a smartphone, capable of communicating with the rest of the world or accessing information. We have seen changes as small business owners can swipe a credit card on their tablet or cell phone instead of making copies on carbon paper.

In December 2019, a novel strain of the coronavirus designated COVID-19 manifested in China and quickly spread throughout the country. International travel quickly spread COVID-19 globally. By mid-March 2019, public school systems across the United States closed along with most non-essential businesses. Teachers were asked to scramble to put together information and work for students, especially as decisions were made to postpone the return to school. Many states cancelled physical school for the remainder of the 2019-2020 school year. Teachers were tasked with providing instructional resources, providing instruction remotely, and finding means to connect with parents and students that had previously been un- or underutilized.

History of Instructional Technology Integration

So pervasive is technology in our society that not even the realm of education can remain untouched. In 1983, the student-to-computer ratio was 153:1 (Carver & Todd, 2016). The Preparing Tomorrow's Teachers to Use Technology or PT3 was an initiative begun by the federal government to encourage putting increasing educational technology in schools as well as provide appropriate professional development to ensure that teachers were able to use the new

technology (Brenner & Brill, 2016). The student-to-computer ration rose to 5.3:1 by 2010 (Carver & Todd, 2016), with many school systems implementing Bring Your Own Device or one-to-one device initiatives that provide every student with some level of technological access both at school and at home (Selwyn & Bulfin, 2016).

In their personal lives, today's students have only experienced a life that not only includes digital devices, but they have never known life without a smartphone or tablet in existence (Wang et al., 2014). While this fact may not reflect that they are as proficient in using technology as many may believe, it does show that they have always had some level of connectedness that had rewired how their brains function and learn (Thompson, 2013). These students thrive on small chunks of information, visual stimuli, interactive lessons instead of long lectures or sessions of notetaking and memorization.

Digital technology has the ability to create a sense of freedom for learners (Postman, 1992). Computers have an infinite number of possibilities for their usage. Postman notes several things that were possible with 1992's technology, from creation of items for entertainment like innovative water park slides to adding graphics to add in the retention of information in members of a courtroom jury. Imagine how the technology of 1992 has evolved to the current time. If a member of a 1990s jury could more easily recall details of a case presented over days, technology should assist the retention rate of students in today's classrooms.

Teacher Reluctance to Technology Integration

By 2010, the annual budget allocated to schools to purchase new technology equated approximately $400 per student (Johnson, 2011). With increase funding, the variety of digital devices has also increased; however, many of those devices go unused, providing a missed opportunity for transformative instruction (Brenner & Brill, 2016; Carever & Todd, 2016;

Perrotta, 2015; Turel, 2014). With the high occurrence of digital technology outside of the schools, one would imagine that there would be an ease in integrating technology into the curriculum (Cuban et al., 2001).

With a low number of available digital devices, it made sense during the 1980s for only 10% of teachers use computers at least once per week (Cuban et al., 2001). Almost two decades later, only 19% of teachers surveyed reported that they had made significant changes in their presentation methods. Time had not improved the reported self-efficacy with technology; teachers instead only replaced old methods. The overhead projector with wet erase markers has become a document camera with a projector. The large television and VCR wheeled in on the bulky cart has become DVDs and streamed content shown with a laptop and a projector. Presentation software has replaced the repetitious action of writing content on the board for students to copy. At a time when most students have access to a digital device, not using those devices seems like missed opportunities to truly transform education and engage students.

There are many reasons that teachers give as to why they are reluctant to fully implement technology. Teachers lament the lack of time as well as insufficient training on the use of instructional technology (Baek et al., 2018). Some teachers have cited a lack of support from their administration (Cuban et al., 2001) as well as a lack of feeling that instructional technology actually benefits the learning process (Zhao & Frank, 2003). Teachers also report a feeling of not being proficient enough in their own technological abilities to be able to teach students how to use the devices. Research has noted this is baffling when considering that current students are touted as those with high technological proficiency (Wang et al., 2014). Teachers further fear that moving from teacher-centered to student-centered to classrooms is completely contrary to the goals of education (Zhao & Frank, 2003). Postman posed that teachers had been part of the

"knowledge monopoly" proliferated for hundreds of years by printed materials, further suggesting that teachers were watching as television moved to significantly change the way we teach (1992). There is a feeling that teachers will one day be replaced by technology (Perotta, 2015; Postman, 1992). All of these fears conspire to create teachers who are unable to see any immediate positives to instructional technology integration (Zhao & Frank, 2003; Patall et al., 2017).

In an effort to encourage teachers to integrate technology, discussions about how teachers should teach have increased. The International Society for Technology in Education (ISTE) created a set of standards as a guide to assist teachers in seeing opportunities for including technology in their content lessons. These standards should have shifted classroom instruction to a more student-centered, hands-on learning environment, allowing students to be more active participants in their own learning (Brenner & Brill, 2016). Technological integration allows learners to become fully vested in their own learning with the content applied to their interests and needs (Dresang, 1999; Kolikant, 2010).

One study (Zhao & Frank, 2003) noted that teachers would have to give up control to their students in that they would have to take time out of their curriculum in order to teach the students how to use the technology. In this study, the researchers compared technology to a new species invading an ecosystem. Zhao and Frank gave four possibilities for the future of teachers and technology. (1) The technology would replace the teacher and completely take over the classroom. (2) The teacher and the technology would cohabitate peacefully without including the students in the equation. (3) The technology would not be liked or used. (4) The teacher would adapt well to integrating the technology in the classroom, using it to better facilitate the learning

process with students. The hope is to eventually see the fourth option – technology will be a natural part of classroom instruction.

When determining teacher perceptions and usage of instructional technology or even reasons why instructional technology is not as well received as it could be, the literature includes surveys and interpretation of survey results with a limited number of appropriate responses. The use of more than basic technological functions – email, Internet, presentation software, and word processing software – is generally not addressed. The literature also does not delve into personal stories of the educators to get more in-depth reasonings for the lack of instructional technology.

Effects of Teacher Motivation on Students

Secondary school graduates may not be truly college and career ready if they are not prepared to use technology after high school (Wang et al., 2014). Teachers are the primary technological users in the modern classroom and often do not allow students to make use of classroom technology even in schools that are considered highly innovative (Perrotta, 2014). Many teachers feel that students already know how to use technology, giving no necessity for teaching students how to appropriately integrate technology into their lives with different software applications, email, and devices (Wang et al., 2014). Teachers are often hesitant to deviate from their tried and true methods instead of seeking innovative approaches that will enhance the students' educational experience and make them more active learners (Perrotta, 2015).

The literature shows a decline in student motivation and classroom engagement that gets progressively decreases further as the academic year moves forward (Patall et al., 2017). A similar decline in students' desire to pursue careers in STEM-related fields although these same fields are increasing in need in the work force. STEM areas allow students to experiment and

discover how the world works with a hands-on approach, building student experience with creativity, critical thinking skills, innovation, problem-solving, and interest. Losing in these areas by not allowing students some autonomy in their educational experiences disengages them from their learning and develops feelings of apathy towards education (Wang et al., 2014). Students feel that teachers who must maintain complete control at all times lack a sense of caring whether or not the students are learning, leading to deeper disengagement in learning (Patall et al., 2017). Today's students want to feel that their voices are heard, and that voice makes them a valuable contributor to learning. When students use technology to have autonomy in directing their personal learning experiences, they are not only engaged but also feel that the teacher's ability to teach is more effective (Gebre, Saroyan, and Bracewell; 2014).

To allow students to transform and internalize the information presented to them, technology cannot be treated as though there is only one way it can be used – teachers must transcend the traditional teaching methods and activities (Tondeur et al., 2016). Limiting how technology is incorporated and using the same activities and applications will only leave students who are frustrated and unwilling to keep using the technology. Such boredom with digital devices and applications can have a detrimental effect on their post-secondary technological experiences. Recalling that students have constant access to digital devices outside of school should remind teachers that students need the technology to be able to interact with the content in the same way that they interact with life. Students can use social media to connect with professionals to learn more about those professionals' areas of expertise, and all in the same manners in which they connect daily with friends and family members. Students also are more accustomed to engaging with information that is presented quickly and in small amounts (Thompson, 2013). Today's students are more visually oriented, preferring videos and graphics

to plain text, leading to disengagement when these components are missing from information presented to them.

Again, the literature lacks in the representation of personal stories that address this information more deeply. This could include how teachers feel that students are affected by less usage of digital devices at school than at home, or how students may be effected in their futures without using technology at school.

An Argument for Integration: Radical Change Theory

While access to available technology has increased to allow everyone access, the adequate incorporation of that technology has not risen at a proportional rate (Cuban et al., 2001; Perotta, 2015; Zhao & Frank, 2003). According to the literature, as access has increased, there has been little to no change in the general attitude of teachers to the incorporation of educational technology. The teachers of the 1980s and 1990s who rejected instructional technology due to low self-efficacy are near or at retirement age (Perotta, 2015). Teachers who began their careers in the 2000s and 2010s fit into Don Tapscott's definition of "Net Generation" – those born between the years 1977 and 1997 (1998, p. 22). During the childhood of this generation, in-home computer ownership increased from 7% to 44%, with this figure reaching 60% if children were in the household. By 1996, 10% of those who were on the Internet were under the age of 16. The Net Generation is the generation who built online communities and moved technology from static to personalized devices (Tapscott, 2009, p.34). The world has changed from a business model of one-make-fits-all to allowing consumers to customize the products to individual wants and needs (Tapscott, 2009, p. 77-79).

In answer to Tapscott's Net Generation, Eliza Dresang proposed that a radical change was needed for books (1999). According to Dresang, because the Net Generation grew up with

some device or technology present at home or at school, the way that text is presented to students in the form of books needed to change. Digital formatting creates content that is fluid, making it easier for the minds of the Net Generation to jump through content in a non-linear format. This lays the foundation for Dresang's Radical Change Theory (RCT) which states that users need to be able to connect, interact, and access content. Content users need to be able to make connections that go beyond the text, whether they are able to find additional resources to learn more or need to be able to make personal or real-world connections (Dresang, 1999, p. 12). Content needs to be interactive not only in the way the user approaches it but also through achieving interactivity with other users (Dresang, 1999, p.12). Accessibility comes through making the content accessible by means of breaking down barriers that made such content previously inaccessible to those users (Dresang, 1999, p.13). These factors work together to allow students to become active learners and customize their goals for their learning progress (Brenner & Brill, 2016; Tapscott, 2009, p. 161). Learners want to be able treated as individuals and to enjoy their work (Tapscott, 2009, p. 161 & 165).

RCT is focused on static books instead of digital content, and presents the idea that, because of the onset of digital life, media has evolved (Dresang, 1999). This presents the question – if media and the means by which teachers can present the content has evolved, why hasn't the attitude of teachers towards using that evolved media? This then circles back to the knowledge that Dresang focuses RCT on the learners Tapscott defined as the Net Generation and how those learners should be approached. Two decades later, the Net Generation are the teachers. Today's teachers fit the definition of Net Generation (Tapscott, 1998). Even though identified as people who grew up with constant access to digital content (Tapscott, 1998;

Tapscott, 2009), new teachers have reported low-proficiency and integration with technologies as a means for students to exhibit content mastery (Brenner & Brill, 2016).

Analyzing Past Pandemics

Likely the most well-known global pandemic is the Spanish influenza outbreak of 1918. The name is a misnomer, as it is thought to have originated in Kansas (Adams, 2020; Johnson, 2018). Whether it began as a respiratory infection in a group of farmers (Johnson, 2018) or in the soldiers stationed at Fort Funston (Adams, 2020), the 1918 pandemic devastated the world as the flu or the bacteria pneumonia that was its side effect caused the deaths of over 50 million worldwide or over 3% of the population, making it the most deadly event in nature (Liu, Bi, Wang, & Gao, 2018; Mamelund, 2017). The Spanish flu ravaged the world in three waves: spring 1918, fall 1918, and early 1919 (Johnson, 2018). The flu was not understood as a virus at the time, and the quick spread was due to a lack of immunity to the flu as well as other prolific diseases, like tuberculosis, which may have contributed to the high mortality rate (Mamelund, 2017).

In an attempt to combat the Spanish flu, schools were closed, and social distancing was encouraged (Mamelund, 2017). One school that felt the effects of the Spanish flu was the Haskell Institute, a large boarding school for Native American youths (Adams, 2020). The Haskell Institute, run at the time by Superintendent Hervey B. Peairs, was located in Lawrence, Kansas, approximately 100 miles away from Camp Funston. The Native American youths were frequently visited by military recruiters, facilitating an easy transfer of the Spanish flu virus from soldiers to students.

The school was significantly affected by two of the three waves of the Spanish flu (Adams, 2020). Although after students began showing symptoms of flu at an alarming rate in March of 1918, Peairs' appeals for help went unanswered because the flu was considered a standard illness with no significant presence. At the time, the flu was called La Grippe and was considered to have been caused by environmental factors such as dust in the air. A few of the students succumbed to the secondary pneumonia infection, and by May, life at the school had returned to normal. While students were

celebrating the June graduations and visiting families, soldiers carried the virus to the European front lines of the first world war. In France, the virus mutated and began to spread like wildfire.

In October, Haskell dealt with the second wave of the now mutated virus (Adams, 2020). Peairs had ramped up student enrollment fearing the school would not have enough federal funds to stay open without inflated enrollment numbers. The dormitories were overcrowded, and close quarters allowed the Spanish flu virus to spread more rapidly than the non-mutated version had during the spring. Peairs had a better idea of how the virus spread. Recommendations stated that the school should have a steady temperature with good air flow throughout the buildings. The recommendation that students should not come in contact with students who were sick was also made, but Peairs did not feel that he could close the school as he felt the lost funding would cause a situation that the school would not be able to recover from – if the school closed, he feared that it would never reopen. Within a month, almost half of the student population fell ill. While the school stayed open, classes were cancelled as the teachers had to become nurses to care for the sick students. By the end of the year, Peairs placed Haskell under quarantine, allowing no students to leave and no outsiders to come inside the school. Adams attributes this decision to quarantine the school as the factor that prevented the third wave of the virus from affecting the school in 1919.

The Spanish flu is today known to be an H1N1 flu strain, designated by the variant of haemagglutinin (H) and neuraminidase (N) genes that are present in the virus (Johnson, 2018). While the Spanish H1N1 of 1918 may have been the deadliest, it has not been the last flu to cause issues. 1957 saw the Asian H2N2 flu pandemic that mutated from H1N1 and caused millions of deaths (Liu et al., 2018). In 1968 came the H3N2 Hong Kong flu, followed by the Russian flu 1977 pandemic that brought a mutation of the H1N1 strain. The H1N1 virus mutated again by 2009 to cause the Mexican swine flu pandemic.

Reviewing literature related to the flu virus allows us to track that the virus does mutate, and, in knowing that the flu virus is prone to mutation, preparations should be made in the case that a strain mutates and causes issues on the scale of the 1918 pandemic. Such an outbreak should be considered

inevitable (Haber et al., 2007), especially with some of the influenza viruses becoming zoonotic, able to mutate and transfer from animals to humans (Liu, et al., 2018).

More recent studies have looked at the measures taken for a high occurrence of seasonal influenza or in speculations for future pandemics, specifically analyzing data in relation to the 2009 H1N1 flu pandemic. The World Health Organization (WHO) does not have a specific policy to enforce school closures, instead relying on each individual country's government to decide the procedures and reasonings for school closures as a part of their national pandemic plans (Cauchemez et al., 2014). Four types of school closures have been defined – reactive, or closing a school when too many of the staff or students are absent due to illness; gradual, or closing a single classroom or grade when a certain percentage of the students or staff are absent due to illness; county, or closing all of the schools within a community or system because one has been closed due to illness; or national, or closing when a national illness threshold has been met (Cauchemez et al., 2014; Fumanelli, Ajelli, Merler, Ferguson, & Cauchemez, 2016). Before considering total school closure, policymakers have to consider more than just the health and well-being of the students and staff of the school but also the socioeconomic impact that closing the schools could cause (Fumanelli et al., 2016). For example, closing schools may cause difficulties for working parents to find childcare for children, causing those parents to miss work. Also, consideration must be taken into how much loss of learning will take place when schools are closed for an extended period of time.

Over 700 public K-12 schools in the United States closed during the 2009 H1N1 flu epidemic (Klaiman, Kraemer, & Stoto, 2011). Most of these schools closed for between seven and fourteen days, with schools that identified cases of the 2009 H1N1 flu choosing not to close at all. The reasoning for closures was identified as attempting to slow the spread of the flu within the affected communities. Children, especially young children, were not only generally more vulnerable to the virus but were also less likely to adopt necessary clean social and safety practices, such as social distancing or frequent hand washing. This study also noted that school closure was meant to be a social distancing measure with less negative societal impact than stay-at-home measures would have, but students were reported to gather in

other public locations once the schools were shut down, questioning the effectiveness of closing schools on slowing the spread of a virus.

One area missing from the research is what to do if a school has to close longer than one or two weeks, even when the greatest factor in slowing down the transmission of a virus is longer school closures (Fumanelli et al., 2016). One study addressed perceptions of social distancing practices within schools with the intention of slowing down future influenza outbreaks (Faherty et al., 2019). The study consulted focus groups consisting of school staff and faculty members to determine in-school social distancing perceptions. Participants noted the negative mental affect social distancing measures can have on students as well as the importance of safety and security, noting the possibility of outdoor classes needing appropriate security measures. The participants expressed that the primary function of schools is to educate, and education must go on during a public health emergency.

There is a need to understand how these previous pandemics prepared policy makers and educators for current and future issues. The literature does not address how instructional technology could be used to ensure that education continues when schools have to close due to mass illness.

Summary

The world has become increasingly digital. Even though the amount of classroom technology has increased by leaps and bounds, there is a disparity between the amount of available classroom technology and the use of that technology by teachers. Regardless which of the many reasons that teachers give for their unwillingness to integrate technology into their curriculum, their students are losing engagement. Digital culture has restructured the way their brains work, and the lack of technology in the classroom is not playing to the strengths of that changed brain structure. The Radical Change theory helps to address why and how these educational changes should be made.

To further complicate the issue, the 2020 COVID-19 pandemic sent teachers and students home. Education, seen as an essential function, needed to continue in the best means possible. The 1918 Spanish Influenza pandemic resulted in the loss of millions of lives and promoted practices such as social distancing; however, one boarding school neither sent students home nor kept them distanced within the

school complex, result in a shutdown of classes as teachers became caregivers. As influenza has mutated and additional pandemics have threatened society, policy makers have had a need to define procedures for educational practices, including a plan for when and how to shut down schools. However, none of the literature addresses how education should continue when no one can meet in the physical space of the classroom, especially when previous social practices have only led to extremely short school closures when compared to the 2020 closures – typically seven to fourteen days. Even in the short time, there needs to be a way to address keeping education from coming to a complete halt.

<center>**CHAPTER III**</center>

<center>**METHODS**</center>

Introduction

The purpose of this study is to explore how COVID-19 affected teacher perceptions of instructional technology usage. This study will use qualitative research methods to examine the stories of teachers' experiences before, during, and after the required quarantine period.

Setting

The setting for this study will vary. I will seek out different high schools within the state of Alabama to share their experiences. My intention is to gain experiences from teachers in rural and urban school systems that have students of differing socioeconomic status, as their access to resources and how they were asked to handle this situation may be different.

Participants

The participants for this study will be high school teachers within the state of Alabama.

Instrumentation

The initial study instrument will be a survey. This survey will ask questions about their perceptions and usage of instructional technology before, during, and after the school closure period required by COVID-19. Interviews will then be conducted with volunteers from different school systems to analyze results further and get more comprehensive answers to some of the questions posed by the survey.

Data Collection

Postmodernist theory leads researchers to question traditional educational methods in order to put knowledge in the hands of those who have traditionally been denied access (Viothofer & Foley, 2002). This study will use surveys and interviews to track changes in instructional technology usage around the COVID-19 pandemic. The surveys and interviews will be used to determine if there is a shift in perceptions through the stories of teachers and their experiences.

Survey participation requests will be sent out to teachers in different high schools within the State of Alabama. High schools will be chosen based upon statistics available on the Alabama State Department of Education website. The statistics will be used to find high schools from rural and urban settings that service students of different socioeconomic status. Once high schools have been chosen, emails will be sent to teachers within those high schools. Participants will voluntarily complete the survey, which will mostly consist of Likert-scale questions where participants will report their self-efficacy and usage of instructional technology. The survey will be completed in an online format that will help in the dissemination of the provided data. Survey participants will be asked if they would be willing to participate in an interview to share their personal experiences. Interviewees will be randomly selected from survey participants who indicate their willingness to participate in the interview process. Interviews will take place in person when they can but may need to take place via an Internet service such as a Zoom conference meeting or Skype phone call.

Data Analysis

The analysis of the data gained will seek to track changes from traditional instructional methods, as postmodern theory explains changes in educational practice as a change in the beliefs that those practices are based upon (Pipatpen, 2015). The survey data will be analyzed to gain an overall ranking of teacher perceptions and usage of instructional technology. After interviews are conducted, they will be transcribed and coded to seek out similarities and patterns. Survey data and interview transcripts will be used to gain a fuller picture of how COVID-19 changed teacher perceptions of instructional technology. Survey data and interviews will be used to build a narrative to show the transition from before COVID-19 to after, tracking the full scope of changes to instructional technology usage and integration in Alabama high schools as well as to identify deficiencies that may further hinder or assist instructional technology usage in the future. The analysis of teacher's experiences should serve to build a greater understanding of how teachers adjusted their beliefs about instructional technology to address issues such as maintaining an active learning environment during a time of school closure.

References

Akay, C. (2018). Digital drama versus digital story: Do they really affect pre-service EFL

    teachers' attitudes towards instructional technologies and material developing skills.

    Croatian Journal Educational / Hrvatski Casopis Za Odgoj I Obrazovanje, *20*(2), 431–

    462. https://doi-org.libdata.lib.ua.edu/10.15516/cje.v20i2.2636

Adams, M. M. (2020). "A very serious and perplexing epidemic of grippe:" The influenza of

    1918 at the Haskell Institute. *American Indian Quarterly*, *44*(1), 1.

    https://doi.org/10.5250/amerindiquar.44.1.0001

Baek, J., Jones, E., Bulger, S., & Taliaferro, A. (2018). Physical education teacher perceptions of

    technology-related learning experiences: A qualitative investigation. *Journal of Teaching*

    in Physical Education, 37(2), 175-185. doi:10.1123/jtpe.2017-0180

Brenner, A., & Brill, J. (2016). Investigating practices in teacher education that promote and

    inhibit technology integration transfer in early career teachers. *TechTrends: Linking*

    Research & Practice to Improve Learning, 60(2), 136-144. doi:10.1007/s11528-016-0025-8

Carver, L., & Todd, C. (2016). Teacher perception of barriers and benefits in K-12 technology

    usage. *INTED2016 Proceedings*. doi:10.21125/inted.2016.1845

Cauchemez, S., Van Kerkhove, M. D., Archer, B. N., Cetron, M., Cowling, B. J., Grove, P.,

    Hunt, D., Kojouharova, M., Kon, P., Ungchusak, K., Oshitani, H., Pugliese, A., Rizzo, C.,

    Saour, G., Sunagawa, T., Uzicanin, A., Wachtel, C., Weisfuse, I., Hongjie Yu, & Nicoll, A.

    (2014). School closures during the 2009 influenza pandemic: national and local

    experiences. *BMC Infectious Diseases*, *14*(1), 1–25. https://doi.org/10.1186/1471-2334-14-

    207

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high

school classrooms: Explaining an apparent paradox. *American Educational Research

Journal, 38*(4), 813-834. doi:10.3102/00028312038004813Ertmer, P. A. (2005). Teacher

pedagogical beliefs: The final frontier in our quest for technology integration? *Educational

Technology Research and Development, 53*(4), 25-39. doi:10.1007/bf02504683

Dresang, E. (1999). *Radical change*. Wilson.

Faherty, L. J., Schwartz, H. L., Ahmed, F., Zheteyeva, Y., Uzicanin, A., & Uscher-Pines, L.

(2019). School and preparedness officials' perspectives on social distancing practices to

reduce influenza transmission during a pandemic: Considerations to guide future work.

Preventive Medicine Reports.

Fumanelli, L., Ajelli, M., Merler, S., Ferguson, N. M., & Cauchemez, S. (2016). Model-based

comprehensive analysis of school closure policies for mitigating influenza epidemics and

pandemics. *PLoS Computational Biology*, *12*(1), 1–15.

https://doi.org/10.1371/journal.pcbi.1004681

Gebre, E., Saroyan, A., & Bracewell, R. (2012). Students' engagement in technology rich

classrooms and its relationship to professors' conceptions of effective teaching. *British

Journal of Educational Technology, 45*(1), 83-96. doi:10.1111/bjet.12001

Haber, M. J., Shay, D. K., Davis, X. M., Patel, R., Jin, X., Weintraub, E., Orenstein, E., &

Thompson, W. W. (2007). Effectiveness of interventions to reduce contact rates during a

simulated influenza pandemic. *Emerging Infectious Diseases*, *13*(4), 581–589.

https://doi.org/10.3201/eid1304.060828

Johnson, D. (2011). Stretching your technology dollar. *Educational Leadership,* (4), 30.

Retrieved from EBSCOhost.

Johnson, N. A. (2018). The 1918 flu pandemic and its aftermath. *Evolution: Education and Outreach*, *11*(1), 1–3. https://doi.org/10.1186/s12052-018-0079-5

Klaiman, T., Kraemer, J. D., & Stoto, M. A. (2011). Variability in school closure decisions in response to 2009 H1N1: a qualitative systems improvement analysis. *BMC Public Health*, *11*(1), 73–82. https://doi.org/10.1186/1471-2458-11-73

Kolikant, Y. B.-D. (2010). Digital natives, better learners? Students' beliefs about how the Internet influenced their ability to learn. *Computers in Human Behavior*, *26*(6), 1384–1391. https://doi-org.libdata.lib.ua.edu/10.1016/j.chb.2010.04.012

Liu, W. J., Bi, Y., Wang, D., & Gao, G. F. (2018). On the centenary of the Spanish flu: Being prepared for the next pandemic. *Virologica Sinica*, *6*, 463. https://doi.org/10.1007/s12250-018-0079-1

Mamelund, S.-E. (2017). Profiling a pandemic: Who were the victims of the Spanish flu? *Natural History*, *8*, 6.

Patall, E. A., Steingut, R. R., Vasquez, A. C., Trimble, S. S., Pituch, K. A., & Freeman, J. L. (2018). Daily autonomy supporting or thwarting and students' motivation and engagement in the high school science classroom. *Journal of Educational Psychology, 110*(2), 269-288. doi:10.1037/edu0000214

Perrotta, C. (2015). Beyond rational choice: How teacher engagement with technology is mediated by culture and emotions. *Education and Information Technologies, 22*(3), 789-804. doi:10.1007/s10639-015-9457-6

Pipatpen, M. (2015). A New Alternative for Community-Based Education: A Look at Education with a Postmodernism Paradigm. *International Journal of Behavioral Science*, *10*(1), 67–76.

Postman, N. (1992). *Technopoly: The surrender of culture to technology.* New York: Vintage

    Books.

Selwyn, N., & Bulfin, S. (2016). Exploring school regulation of students' technology use - rules

    that are made to be broken? *Educational Review, 68*(3), 274-290.

    doi:10.1080/00131911.2015.1090401

Tapscott, D. (2009). *Grown up digital*. McGraw-Hill.

Tapscott, D. (1998). *Growing up digital*. McGraw-Hill.

Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to

    learning. *Computers & Education, 65*, 12-33. doi:10.1016/j.compedu.2012.12.022

Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2016). Understanding the

    relationship between teachers' pedagogical beliefs and technology use in education: A

    systematic review of qualitative evidence. *Educational Technology Research and*

    Development, 65(3), 555-575. doi:10.1007/s11423-016-9481-2

Turel, V. (2014). Teachers' computer self-efficacy and their use of educational technology.

    Turkish Online Journal of Distance Education, 15(4). doi:10.17718/tojde.81990

Voithofer, R. & Foley, A. (2002). Post-IT: Putting postmodern perspectives to use in

    instructional technology — A response to Solomon's "Toward a Post-Modern Agenda in

    Instructional Technology." *Educational Technology Research and Development*, *50*(1), 5.

Wang, S., Hsu, H., Campbell, T., Coster, D. C., & Longhurst, M. (2014). An investigation of

    middle school science teachers and students use of technology inside and outside of

    classrooms: Considering whether digital natives are more technology savvy than their

    teachers. *Educational Technology Research and Development, 62*(6), 637-662.

    doi:10.1007/s11423-014-9355-4

Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools: An ecological

perspective. *American Educational Research Journal, 40*(4), 807-840.

doi:10.3102/00028312040004807