Old Dominion University

ODU Digital Commons

OTS Master's Level Projects & Papers

STEM Education & Professional Studies

Summer 2020

Teachers' Perceptions of Educational Technology

Matthew Joseph Fugere
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/ots_masters_projects

Part of the Curriculum and Instruction Commons, and the Educational Technology Commons

TEACHERS' PERCEPTIONS OF EDUCATIONAL TECHNOLOGY

by

Matthew Joseph Fugere
B.A. December 2012, Old Dominion University

A Master's Action Research Paper Submitted to the Faculty of Old Dominion University in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE IN EDUCATION

INSTRUCTIONAL DESIGN AND TECHNOLOGY

OLD DOMINION UNIVERSITY
August 2020

Approved by:

Michael F. Kosloski, Jr. (Director)

ABSTRACT

TEACHERS' PERCEPTIONS OF EDUCATIONAL TECHNOLOGY

Matthew Joseph Fugere
Old Dominion University, 2020
Director: Dr. John Baaki
Co-director: Dr. Mickey Kosloski

Technology integration in modern classrooms continues to be an important aspect of teaching. However, even if long standing barriers to technology like access and funding are lifted, teachers do not always integrate technology in their classrooms. This action research study collected interview data from a single high school English Language Arts (ELA) department. Teachers were interviewed over Zoom using an interview protocol that contained 14 semi-structured questions. The interview questions asked teachers questions about how they perceive the technology they use in their day-to-day work and if that technology provides their students with meaningful learning experiences. The results of the study showed that the interviewed teachers generally had positive perceptions of how useful technology was for their jobs, but they also showed that the choices they have for technology tools makes it very challenging to find the right tool for their specific classrooms' needs. Teachers also explained that their students sometimes expressed that technology integration was at times exhausting. This sentiment led to some teachers designing more lessons and activities that intentionally did not use modern technology tools in order to create more variety compared to lessons that relied on technology.

DEDICATIONS

This work is dedicated to Alpha and Logan.

ACKNOWLEDMENTS

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Despite varying degrees of accessibility and necessary funding, 21st century education calls for the use of 21st century technology. These tools come in many forms. From hardware tools like Chromebooks, cell phones, and tablets to software tools like learning management systems, gamified software, and social media applications, modern education utilizes a great variety of 21st century technology. These tools are common elements of modern learning and provide learners with transferable skills that can be applied to various learning situations (Saavedra & Opfer, 2012). However, implementing these tools can sometimes be a challenging or even daunting task for many teachers. There are several barriers that can often make the incorporation of educational technology tools seem more challenging than rewarding (Kormos, 2018). Furthermore, these barriers can affect the overall perception teachers have on educational technology tools, leading to teachers being unable or unwilling to implement them consistently and meaningfully (Kormos, 2018). Conversely, perceptions of these tools could be influenced by positive experiences with educational technology. When teachers are given the right supports, or see firsthand the benefits of educational technology through their students' experiences, perception of these tools changes for the better which can lead to teachers feeling as though these tools are more accessible in their own classrooms (Dine, 2019). Regardless, how teachers perceive educational technology ends up being an influential aspect of 21st century learning as the implementation of these tools is dependent on these perceptions (Davis et al., 1989). Furthermore, observations of how teachers perceive educational technology could lead to a better understanding of how teachers could be supported by their department, schools, or district.

Purpose of the Study

The purpose of this action research study is to examine how teachers in a single Virginia public high school's English language arts (ELA) department view the technology they use in their day-to-day work, including how these teachers believe these tools affect their students' learning.

Research Questions

1. How do the teachers of a single high school ELA department perceive the usefulness of the modern technology tools they use in their day-to-day work?

2. In what ways do teachers in a public high school's English Language Arts (ELA) department believe modern technology tools affect their students' learning?

Background and Significance

Modern classrooms have become more dependent on the effective use of 21st century educational technology. There have long been barriers to successfully implementing technology in the classroom. For example, broad access to technology has always been an issue that research has explored for decades (Lowther et al., 2008). However, even when barriers to technology are removed in educational settings, the array of possible tools in a classroom must be used to be effective. Ertmer et al. (2012) explained that merely having access to modern educational technology did not necessarily affect the practices of classroom teachers when it came to technology integration. Many factors go into influencing a teacher's use of technology in the classroom, including their existing attitudes, support from administrators, and familiarity with technology.

How teachers generally perceive technology is another crucial determiner for whether or not they will use a technology tool. Deslonde and Becerra (2018) explained that there are many

ways in which perception of technology and how it is related to acceptance of technology have been modeled and described, but one of the most commonly used models is the Technology Acceptance Model (TAM). TAM connects elements of perception like how one sees the usefulness or ease of use of a tool to how likely one is to use that tool. Teo et al. (2012) used TAM to show how educators perceive technology plays a significant role in how likely they are to utilize technology.

Teachers' perceptions are a crucial factor in determining if and to what extent technology is used in the classroom. Those perceptions can determine whether or not a teacher sees that an educational technology tool is suitable for the curriculum that is being taught. Badia et al. (2013) explained that when technology barriers like access and support are not a major concern, teachers tend to perceive technology tools as useful if those tools support their overall teaching objectives. This finding revealed that the next step of technology integration in classrooms is less about the technology itself and more about teaching practices, lessons, and learning activities. Lowther et al. (2008) found that when technology is fully integrated in a classroom, students can have more engaging learning experience like hands-on activities, independent research, and cooperative learning. Furthermore, the use of technology helps student hone their abilities to use technology tools similar to those they will continue to use throughout their lives.

For this action research study, members of a single English Language (ELA) department in a Virginia high school were interviewed regarding how they perceive the technology they use in their day-to-day work. In the context of the study, many barriers to technology have been removed. The school in which the study was conducted has a one-for-one technology initiative that ensures every student has access to a Chromebook device. Furthermore, the school provides

training sessions for teachers on the use of the technology made available to them. Trainers and technology specialists are available for teachers to seek advice from whenever needed. With access becoming a much lesser issue, there is still a possibility that teachers are not always integrating technology in their classrooms. Even if teachers are using technology every class period, there is also a chance that it is not being used in a meaningful or productive manner for students and teachers alike.

Observing how teachers in this department perceive technology could provide more insight on how successful technology integration in one high school ELA department is. These insights could also lead to better understandings as to what teachers need in order to provide more meaningful instruction through technology integration. With better technology integration, these teachers would be able to design and implement engaging lessons and activities more efficiently.

Assumptions and Limitations

The researcher assumed the interviewees responded to interview questions with complete honesty regarding their personal opinions and experiences. The researcher also made assumptions about certain traits of all participants. For one, the researcher assumed that the participants are professionally licensed teachers. The researcher also assumed the teachers were all currently employed at the same sample school.

A limitation of this study was the composition and size of the sample. Though the sample of this action research is a single department from the sample school, not all members were participants in the study. This could lead to some trends, themes, or issues remaining unknown to the researcher. Furthermore, this study was not designed to be generalized to any other sample population, including other departments, schools, or teachers. Another limitation of this study is

the potential tools that are used by the teachers interviewed. Not all teachers will be using the same tools, and this will affect how each teacher ultimately perceives modern educational technology. Finally, the findings of this study could be limited by the researcher's interviewing experience and skills.

Definitions

For the purpose of this study, modern educational technology tools were defined as any electronic and/or digital tool that is used by a teacher or a student within the classroom that has educational capabilities, even if it is not used for educational purposes by its user (e.g. cell phones).

Overview of Chapters

This action research study will begin by detailing a review of current literature in the areas of educational technology and teacher perception of it. This review will also briefly cover action research studies in general. After establishing the current relevant literature, the study will present a chapter detailing the researcher's approach to the sample used for the study. This chapter will include the researcher's rationale for the selected sample and how it relates to other elements of the study. The next chapter will go into greater detail about the study's design, measures, and analytical approach, detailing the researcher's intent and rationale for each of these elements. Finally, the researcher will share the results of the conducted study and draw conclusions.

CHAPTER II

LITERATURE REVIEW

Modern Educational Technology

The tools used for modern education are vastly different compared to those used in the previous years, the age and degree to which young learners have access to the types of tools used in modern education make for an ever-evolving landscape of technology for educators to navigate. This has been understood by educators and researchers for quite some time, but knowing that this landscape changes regularly does not make it any simpler to navigate for teachers. Lambert and Cuper (2006) noted that modern students have access to digital tools that provide them with "instant communication locally and globally" (p. 265). Teachers face the challenge of not only understanding these tools but also guiding students in their use and understanding of these tools (Lambert & Cuper, 2006). However, being able to do so is critical for educators and learners alike as the skills and processes involved in effectively using these tools has long been commonly accepted as workplace skills that are vital to success in the 21st century (Olds & Lightner, 1995).

To understand these tools, however, educators must begin by identifying them and their educational uses. There are countless modern digital tools that can be used by teachers to enhance their instructional practices and classroom engagement. For example, social networking as a digital education tool has a great deal of potential if used carefully and thoughtfully. Using tools like Facebook, Twitter, and Instagram in educational contexts requires students to engage with "critical-thinking skills and the ability to integrate and evaluate real-world scenarios and authentic learning skills for validation" (Boholano, 2017, p. 21). Though there are many

concerns with these kinds of tools, they are already being used by modern learners inside and outside of the classroom (Simonson, 2017, p. 71)

There are also examples of traditional classroom strategies that are made easier and more approachable by modern digital tools. For example, gamification, or the use of games for educational purposes, is much more approachable with digital tools and offers learners a far less stressful environment in which to make mistakes crucial for learning and find motivation for learning (McGregor et al., 2019).

The structure of a classroom can be changed or enhanced through the use of online and digital learning tools. Mandernach (2006) noted that one of the key benefits of online educational tools is the ability to move "lower-level learning tasks" (p. 43) outside of the classroom, leaving more time during class for deeper critical thinking learning opportunities. The potential change in a traditional classroom's structure and organization can give teachers and students the time they need to ensure more meaningful activities are being conducted during in-class time. This change can even affect how educators can consider the physical space in which a class is conducted as often the traditional classroom setting does not cater to the physical needs of students who work in an "inter-connected virtual world" (Fisher, 2010, p. 3).

The use of mobile phones show that students already use technology for educational purposes outside and inside of the classroom. Data derived from research conducted by Thomas and Orthober (2011) about how students in secondary classes used mobile phones suggested that students were "highly engaged by and motivated to use their mobile phones" (p. 67). Phones offer instant access to an array of communication media that students and educators can use to foster collaboration and discussion. Personal devices go beyond mobile phones, however, and many modern schools create initiatives to provide access to a personal device to every student.

These initiatives often involve laptops and other types of personal computers and they require extensive training, planning, and problem solving to successfully implement (Murphy et al., 2007). However, access to technology has been, and will likely continue to be, a critical issue to consider when discussing its use for educational purposes. Many of the possibilities that come along with theoretical access to technology in educational settings become extremely difficult to implement when the reality of access is discussed.

Teacher Perceptions of Technology

The greatest tool in the world is pointless without a user. How often and to what degree modern educational tools get used by educators has a lot to with how tools are generally perceived by users or potential users. Davis (1989) clearly defined two elements that helped predict how likely someone is to use a piece of information technology. One element of that prediction is called "perceived usefulness" (p. 320), or how much the potential user believes the technology will enhance some element of their daily duties and processes. The other element of this prediction is called "perceived ease of use" (p. 320) or how much effort might be required to use the technology as seen by the potential user. Davis et al. (1989) developed these two elements into the Technology Acceptance Model (TAM). The TAM model theorized that intentional behavior regarding technology usage is largely influenced by a person's attitude toward that technology, which in turn is influenced by a combination of that person's perception of usefulness and ease of use regarding the technology. The TAM model can be useful in helping determine how likely someone is to adopt a new technology. Teo et al. (2012) applied the model to pre-service teachers, finding that while the model still functions well in its predictions, it is limited by the ever-changing nature of a person's perception due to future barriers that person might encounter. For example, if a teacher does not continually seek professional development

related to current technology, that teacher might fall behind on current educational technologies. Deslonde and Becerra (2018) also applied the TAM model to qualitative research that determined why a group of school counselors chose to use or not use a piece of computer software. Deslonde and Becerra used TAM to perform a thematic analysis on survey data collected from the school counselors.

The level of expertise a teacher has with technology can affect perception, too. Badia et al. (2013) found that a teacher's use of a modern educational tool within a technology-rich environmental context are most affected by how useful the tool is perceived to be. Conversely, when technological expertise is lacking in a culture of teachers, teachers can perceive technology incorporation as a frustrating and difficult experience. O'Neal et al. (2017) conducted research using interviews with elementary school teachers that revealed frustrations with a lack of training opportunities even in the face of access to technology. These ideas regarding expertise and experience go along with the findings that beliefs and attitudes teachers have regarding technology generally align with their practices (Ertmer, et al. 2012). That is, if a teacher perceives value in a tool, that teacher is likely to actually use that tool in the classroom.

Barriers to Technology and Teacher Perception

Barriers to technology (in terms of funding and access) go a long way in affecting an educator's perception of modern educational tools. Kormos (2018) showed that teachers in suburban, urban, and rural areas end up having varying perceptions and degrees of use of modern educational technology. Kormos' research indicated that urban teachers tended to fall behind in frequency of use and perception of usefulness in terms of educational technology. These findings are related to the gap of funding and technology access that occurs between urban, rural, and suburban schools.

Access to technology can also affect how pre-service teachers perceive technology. Regarding pre-service teachers, Mitchell (2019) noted that the availability of technology made one pre-service teacher's experience more meaningful, implying that a lack of technology in another experience detracted from the impact of that field experience. When technology is unavailable, perception of a teaching experience is affected, generally in a negative manner (Mitchell 2019).

Barriers in technology and how they affect perception can go beyond access and funding. Dine (2019) studied pre-service teachers and their perceptions of technology and possible barriers to technology integration in classrooms. The pre-service teachers noted that some of the barriers they expected to experience in their future teaching professions related to parents of students and security. As internet privacy continues to grow as a concern in general, pre-service teachers noted that there is a potential that security and privacy could lead to parents of students not wanting technology to be integrated into classrooms (Dine, 2019).

Barriers to technology are such a critical part of perception because they are so frequently encountered in educational settings. However, when they are removed there is evidence that suggests that technology integration has significant positive effects. Lowther et al. (2008) found that when technology barriers were removed, schools had success with "student engagement, higher-order learning, and importantly, preparation for using technology skillfully as a tool" (p. 206). However, teachers often find that these barriers are a part of their jobs, and as these barriers remain an aspect of 21st century learning, so do their effects on how teachers perceive modern educational tools.

CHAPTER III

METHODS

Purpose Statement

The purpose of this action research study is to describe the perceptions of high school teachers have on the use of modern digital technology in their classrooms and day-to-day work in the context of the ELA department of a single Virginia high school. This study approached this idea by addressing the following research questions:

1. How do the teachers of a single high school ELA department perceive the usefulness of the modern technology tools they use in their day-to-day work?

2. In what ways do teachers in this department believe modern technology tools affect their students' learning?

Research Focus

How teachers perceive the use of technology in their classrooms is influenced by several extrinsic and intrinsic factors. Access, experience, and many other factors go into shaping a teacher's perception of modern digital technology in the classroom (Kormos, 2018). This action research study aims to further investigate these perceptions in the department of a single Virginia school. This study utilized interviewing methods to address the research questions. The interview questions asked teachers about their use and perception of modern technology tools. The researcher also used questions about the students' uses and perceptions of modern technology tools.

Design

Action Research Studies

Action research in education is a form of study that gives educators the ability to better understand and act upon their own instructional circumstances (Yan, 2017). The practice

involves a series of "spiraling steps of planning, acting, observing, reflecting, and replanning" (Yan, 2017, p. 704). Action research has developed into a flexible practice that has been adapted in various models that often incorporate similar elements (Brown et al., 2015). Brown et al. (2015) demonstrated that the flexibility of action research can be used to develop new models for specific educational problems and situations. Teachers can engage with professional learning and development through action research as it provides structure for work that they could already be doing (Brown et al., 2015).

This action research study explored how public-school teachers in the English Language Arts (ELA) department of a single Virginia public school perceived the use of modern technology in their classrooms. The study's subjects were from a convenience sample of six language arts teachers with a variety of demographics and teaching experiences. A series of semi-structured interviews were conducted with subjects to collect data. Initial close-ended questions determined demographics of the subjects including teaching experience and teaching assignment. The rest of the questions were open-ended and focused on the use of and perception of modern technology in the classroom (modern technology tools were defined for interviewees before the interview).

The interviews constructed for this study focused on how modern technology is used in each teacher's classroom and how each teacher perceives and feels about this use. After basic demographic questions, the interview was divided into four sets. In the first set of questions, the researcher asked interviewees what kind of modern technology tools they use and how frequently they use these tools. The questions were to establish what kind of modern technology is currently used by each teacher interviewed.

The second set of questions asked the participants to explore their perception of the modern technology tools they use. These questions were designed to have the teachers reflect on how they feel about the modern technology tools that are part of their daily operations. These questions were not limited to instructional use as these modern technology tools are used in a variety of processes for teachers.

A third set of questions asked the teachers about technology usage among their students. These questions asked the participants to gauge the tools their students' use of technology in the teachers' classrooms. The final set of questions again focused on the participants' students. These questions asked the teachers to consider how their students might perceive the use of technology within the classroom. The teachers were also asked to consider the degree to which these tools affect learning in their class, for better or for worse. Appendix B provides the full list of questions used in the interviews.

During the interviews, the researcher addressed responses with follow-up questions to obtain clarification and examples.

Sampling

The sample of this study was a single ELA department from a Virginia high school. This sample contained 6 individuals. The researcher selected the sample through non-probability convenience procedures. The participants were teachers who work in the same school as the researcher. The researcher sought permission from the assistant principal of the overseeing the department in order to contact and request participation from the teachers of the department. The researcher conducted the requests for participation through email communication with potential participants. Retention would likely not be a major issue for the study as the design would ensure that participants would not need invest extended or multiple periods of time to participate. The

researcher informed potential participants that the time investment of the study would be limited and likely not be a burden on the participants. The participants were also informed that they would not be compensated for their time. The researcher provided an informed consent document to the potential participants (Appendix A).

Interview Protocol

These interview questions are meant to be semi-structured (Appendix B). These questions led to further similar questions depending on the interviewees' responses and reflections. The researcher began interviews by first defining modern technology tools (hardware and software: Chromebooks, laptops, cellphones, cloud storages like Google Drive, learning management systems like Schoology, SMART boards, any other digital and/or interactive piece of technology). The researcher then asked the interview questions and allowed for interviewees to respond.

Measures

The main instrument used in this research was an interview protocol. The interview protocol was made up of 14 total questions divided into five different sections. The first section contained two demographic questions, and each section that followed contained three total questions. The initial section was made up of close-ended demographic questions. These questions asked the interviewees about their teaching experience and current assignments. The second section pertained to the interviewees' use of technology in their daily tasks and processes. The section that followed pertained to the interviewees' perceptions of their use of the tools mentioned in the previous section. The last sections took a similar structure as the previous two, but instead of focusing on the interviewees' perceptions and uses of technology, the focus of the questions shifted to the interviewees' students. Questions for sections 2 through 5 were designed

to be open enough to allow interviewees to reflect on their use and their students' use of technology in several different ways. It was expected and encouraged that the researcher allowed interviewees to reflect on these questions however they see fit, and it was expected and encouraged that the researcher asked additional and similar follow-up questions based upon individual interviewee's responses. To help with reliability, the interview protocol was piloted with an ELA teacher outside of the department used for the sample of the research. The researcher asked the pilot interviewee about their impression of the questions and how related to the research question they were. The pilot interviewee indicated that the interview questions were easy to understand in the context provided (teachers within an ELA department).

Procedures

The researcher began by seeking permission from the department's administrator to conduct interviews with teachers involved in the department. After gaining permission, the researcher contacted the department members, requesting their participation in the study and interviews. Included in this request will be a brief description of the study and what the participants can expect from the interviews, the study, and the researcher's methods of collection and storage of the data. The researcher developed a digital sign-up sheet to begin making a schedule with teachers who agreed to participate.

The researcher conducted the interviews as close to the agreed schedules as possible. With permission from the participants, the researcher recorded the interviews so that they could be transcribed after the fact. Interviews were conducted over a telecommunication application (Zoom). Interviews were intended to be roughly 15-20 minutes. Participants were made aware of the researcher's position in the study: a colleague with similar job descriptions and experiences

as the participant. After interviews were conducted, the researcher manually transcribed the audio of the interviews using a word processing application.

Analytical Approach

The researcher used the thematic analysis process detailed by Clark and Braun (2013). This process begins with familiarization of the data. To accomplish this first step, the researcher transcribed and read the interviews conducted. After transcribing, the researcher ensured further familiarization with the data by reading the transcriptions multiple times. During these readings, the researcher began to observe common ideas and phrases used between different interviews. The researcher then used a manual coding process. The researcher began manual coding by first identifying common phrases, ideas, and subjects between the interviews. These labels changed over time as the researcher explored more of the data. The researcher then used organized samples of the interview data by various coded labels. Using the coded data, the researcher began to put together possible themes that applied to the data. Once these themes began to become clear through the analysis, the researcher named and defined the themes, providing the details needed to construct the final write-up of the data.

CHAPTER IV

RESULTS

Teachers' Perceptions

The first research question of this action research study sought to address how teachers in a single high school ELA department perceive the technology they use for their jobs. The following results were gathered to address the first research question.

Demographic Questions

The demographic questions showed that the teachers interviewed ranged considerably in terms of years of teaching experience. Of the six teachers, one was a first-year teacher and one had been teaching for over 20 years. Another teacher had 17 years of teaching experience while the three other teachers had four, eight, and nine years of teaching experience.

Teacher Technology Usage

Every teacher interviewed expressed a daily use of modern technology tools to perform their day-to-day tasks. Teachers related experiences of daily job processes that utilized technology that included lesson planning, collaborating with colleagues, communicating, and building relationships with students. One teacher guessed that out of a roughly seven-hour workday, at least five of those hours were spent using some kind of technology tool, be it hardware or software. When asked if the teachers could still do what they do without the technology made available to them, all of them claimed that they could, but the technology makes many processes much more viable and approachable given the limited time for preparation and implementation of instruction teachers have. One teacher explicitly mentioned that she would need to completely change her style of teaching if she did not have access to the technology she currently has access to.

Frustrations

The most common frustration that teachers expressed regarded the overwhelming modern technology options compared to the limited guidance available for these tools. One teacher reported that when searching for a tool that would suit her specific classroom needs, it was often difficult to find a specific tool that would be beneficial to her class's subject and grade level. The teacher claimed that this difficulty was rooted in the sheer volume of possible tools. She went on

to express a want for more guidance when it came to pinpointing modern technology tools that applied to her and her students' needs.

One teacher described a lack of uniformity of technology tools possibly being an issue for her students. She explained that students could be using very different technology tools while they moved from class to class, and she expressed concerns that this could lead to students feeling overwhelmed or exhausted by a barrage modern technology tools.

Another teacher described how overly complex technology made some parts of her job. In her example, the teacher described a scenario that required her to collect data about her students. She explained that the tools she had available to her to find and share such data were often difficult to navigate and manage. Furthermore, she explained that those tools frequently changed, requiring that she learned new processes to find the same kind of information from year to year.

An Advanced Placement (AP) teacher mentioned that she and her students often found frustration in how the AP end-of-course tests did not use modern technology tools. She explained that her AP junior students had to take tests at the end of the year that were done with paper and pencil. These tests required the students to write long form essays by hand. Though she ensured her students took time to practice writing these kinds of essays with paper and pencil throughout the year, she explained that her students demonstrated a lack of proficiency when it came to paper and pencil essay writing because they had spent so much of their academic career typing. The teacher went on to say that she believed the AP tests needed to catch up with modern times and find ways to implement modern technology, citing a lack of solutions for cheating as a possible reason for why AP tests were not using modern technology tools.

Transitioning to a new tool was a subject that many of the teachers described. The most common transition was a move between two different learning management systems (Google Classroom to Schoology). While all teachers interviewed expressed that it could be frustrating to have to learn a new tool that did a similar process to an old tool, they also claimed that they were able to successfully transition from tool to tool.

Collaboration is Key

When it came to learning about new tools, every teacher mentioned the importance of collaborating with colleagues within their own department. Though the teachers did mention the use of district and school-based training for learning about new technology tools, there was a much larger emphasis on relying on other teachers. This was largely attributed to how accessible other teachers were when it came to help and guidance. Where trainings are offered sporadically, the help of another teacher is often very immediate and gives teachers opportunities to work out technology problems together. One teacher claimed that she relied on another teacher almost every time she needed to solve a technology problem. When other teachers were unavailable, she relied on search engines rather than school-based technology experts.

An 11th grade teacher detailed an example of her and Professional Learning Community (PLC) having to write test questions in a new assessment software. The software the PLC was using was new to the school, and because of this, there were no pre-built testing materials for the PLC members to rely on. The teacher explained that she was able to do her share of test building only because of the patience and help of her PLC members.

Students' Experiences and Learning

The second research question of this action research study sought to address how teachers felt the technology they use in their classroom affect their students' learning. The following results were gathered to address the second research question.

Student Technology Usage

Much like the teachers themselves, every teacher claimed that their students used modern technology tools in their classrooms every class period. How much time was spent on these tools in a single class period ranged quite a bit from teacher to teacher. One teacher claimed that, while most of the year saw daily student usage of modern technology, there were times in the year in which students did not use modern technology at all for weeks at a time. However, most teachers explained that students were using some kind of modern technology tool, particularly their personal Chromebooks, anywhere from 20 minutes a class period to the entire length of a class period.

The tools students generally used ranged broadly from teacher to teacher. Several different software applications were mentioned, but there were some software applications and hardware that were consistently mentioned by all teachers. The hardware most mentioned by teachers was the Chromebook. At the sample school, all students are provided with a personal Chromebook, and every teacher described how frequently their students relied on this device. Another common technology tool mentioned by every teacher was the learning management system Schoology. Every teacher described that large portions of their class activities, learning objectives, and communication tools, were housed in Schoology. Students relied on this tool during class time and outside of the classroom.

How Students Feel about Technology

   Though only one teacher mentioned that she formally gave her students a survey to gauge their feelings about technology use in her class, all the teachers interviewed mentioned informal conversations with students regarding how they felt about and perceived technology in their classrooms. It was clear that teachers see that their students are very accustomed to using modern technology tools. One teacher mentioned that her students use of Chromebooks was habitual, and opening their devices was the very first thing they did upon entering her classroom.

   However, despite modern technology tools being an integral part of these students' academic lives, teachers described several ways in which students were not always excited about using these tools. One teacher described a scenario in which she had to begin giving a student paper and pencil assignments because the student had lost computer access for discipline reasons. When other students in the same class noticed, they, too, began to ask for paper and pencil assignments so that they could take a break from their Chromebook. The same teacher mentioned that she had several students claim that they often found themselves distracted by the internet available on their Chromebooks whereas paper and pencil assignments allowed them to solely focus on the assignment.

   These feelings are also mirrored in how these teachers designed activities that are not reliant on modern technology tools. Teachers who did this often described that such activities allowed for a break for students from the use of modern technology. One teacher described activities that did not rely on modern technology tools as ways to get her students out of their seats and moving around her classroom. Another teacher mentioned that her students had deeper learning experiences by being able to physically manipulate or interact with something during an activity rather than interact with it digitally.

Student Learning Experiences

Most teachers claimed that they always tried to use technology in their classroom to create deeper learning experiences for their students. Though every teacher had a slightly different idea as to what was meant by a deeper learning experience, there was were some common elements. Most teachers cited the ability to collaborate and communicate through modern technology tools as a major contribution to deeper learning experiences. Teachers also described the creation of a new product that would be difficult to replicate without modern technology tools as part of creating deeper learning experiences.

Another important element contributing to deeper learning experiences that teachers mentioned was freedom to explore. Multiple teachers described that modern technology tools gave their students more time and capabilities to explore a new subject at their own pace and in their own way.

However, one teacher did claim that she did not believe she was using modern technology tools in a way that contributed to deeper learning experiences. She explained that often the technology she used was merely substituting for another tool. For example, she explained that many of the activities her students do on their Chromebooks and through Schoology could just as easily be done with paper and pencil.

<div align="center">

CHAPTER V

CONCLUSION

Summary

</div>

This study aimed to address how teachers in a single Virginia public high school's English Language Arts (ELA) department view the technology they use in their day-to-day work,

including how these teachers believe these tools affect their students' learning. To engage with these ideas, the researcher proposed two research questions:

1. How do the teachers of a single high school ELA department perceive the usefulness of the modern technology tools they use in their day-to-day work?

2. In what ways do teachers in this department believe modern technology tools affect their students' learning?

Though similar studies have been conducted with preservice teachers, fewer studies have used professionally licensed and working teachers to examine how they and their students perceive the technology that has become a regular part of their lives. These observations could lead to a better understanding of how best to support teachers and students when it comes to the use of modern educational technology.

One of the limitations of the study was regarding assumptions the researcher made about the subjects of the study. The researcher assumed all subjects involved in the study were completely honest about their demographic data and experiences with teaching and educational technology. The researcher also did not design the study to be generalizable to any other sample population. That is, the results from this study can only be applied to the specific population of the study (a single high school ELA department in Virginia).

The sample population used for the study was made up of six actively employed teachers from an ELA department in a Virginia high school. The researcher works within the same department as the subjects of the study. The teachers involved all teach English language arts classes at various grade levels. The subjects' teaching experiences ranged from first-year teachers to teachers who have been working for over two decades. Subjects volunteered to be involved in the research after the researcher supplied them with a consent form.

The instrument used to collect data was an interview protocol. The interview protocol was comprised of 14 semi-structured questions. The first two questions were demographic questions about the subjects' teaching experiences. The next six questions focused on what technology the teachers used in their daily work and how they felt about that technology. The final six questions were about how the teachers' students used and perceived technology. The researcher informed the teachers that other questions not pre-written might be asked to obtain further information based off the teachers' initial responses.

To begin collecting data, the researcher first obtained permission from the department's assistant principal. After receiving permission, the researcher used the school's email system to send the department a Google Form that gauged teacher interest. The researcher used the form to gather subjects for the study and organize a schedule. The researcher conducted interviews over the telecommunication application Zoom. The researcher informed all subjects that the interviews were to be recorded and later transcribed. The researcher also ensured the teachers that the time investment would be roughly 10 to 15 minutes.

The researcher engaged in a thematic analysis process detailed by Clark and Braun (2013) after the interviews were completed. The first step the researcher took was familiarization through transcribing and reading. Afterward, the researcher began to code the data by looking for common ideas, phrases, and experiences mentioned between interviews. The researcher applied developed codes to interviews by reading and rereading interview transcriptions. The researcher then began to identify, define, and describe the emerging themes evident in the data. Finally, the researcher used the themes to write out a narrative of the data.

Conclusions

The researcher drew conclusions based off the following research questions:

1. How do the teachers of a single high school ELA department perceive the usefulness of the modern technology tools they use in their day-to-day work?

2. In what ways do teachers in this department believe modern technology tools affect their students' learning?

For the first research question, there was a consensus among teachers that modern technology use was a necessary element of their daily work. Every teacher described a workday that required hours of work with modern technology tools. Teachers generally expressed that these tools were helpful with many elements of their job, including instruction. However, the use of modern technology has not come without frustrations. Several teachers reported that the number of tools available to them could be overwhelming. The sheer volume of possible tools made it difficult for teachers to know exactly what would work for their classrooms, and finding the right tools involved major time investments that teachers often did not have. Though teachers reported that training was usually accessible for some common tools, they explained that training for the variety of specific tools that could be useful for their individual classrooms' needs was limited and they often relied on their own internet research and their colleagues' expertise to find solutions they needed. This finding is consistent with what Mitchell (2019) found about the likelihood of a pre-service teacher's use of a technology tool based off the availability of training for the specific tools used in their environment. Ultimately, though, teachers generally explained that much of what goes on in their classrooms, instructionally or otherwise, was made possible with the use of modern educational technology. Mitchell (2019) showed similar positive perceptions with pre-service teachers, even pre-service teachers who identified themselves as educators who felt challenged by technology. Dine (2019), too, found that pre-service teachers had positive perceptions of technology and how it supports instruction and student learning.

The data revealed that teachers in this specific ELA department find a great deal of use in the technology they use every day for their jobs. However, there is still work to be done when it comes to meeting the specific needs of each teachers' individual classrooms. Without knowing what tools are best for their classrooms' needs, teachers will be unable to take full advantage of modern technology tools. This issue relates to the importance of how technology is supported at the school where these teachers work. Ertmer et al. (2012) explained that support and professional development was a key component to meaningful technology integration in classrooms.

For the second research question, most teachers explained that their students were able to have more meaningful learning experiences with modern technology because of the depths of collaboration, creation, and communication that these tools made available to students. Badia et al. (2013) found similar results with teachers in technology rich environments. Most teachers reported that their students used modern technology tools to create new artifacts that demonstrated learning and to communicate with one another during and after class sessions. Teachers explained that students generally favored the used of these technologies and were quick to understand the use of these tools in the classrooms. However, not all teachers explained that their classrooms were always using modern technology tools to create meaningful learning experiences. One teacher even described that her use of technology was almost always substitution and that technology only made most of her work easier rather than more meaningful. Though substitution for the sake of efficiency was only mentioned by one teacher, most teachers did spend time describing various scenarios of technology usage that would be defined as substitution. These scenarios usually described traditional tools being replaced with modern technology. For example, one teacher described how the use of digital worksheets lessened the

time she spent at the department's copier machine. Some teachers also reported that their students felt fatigued by the constant use of technology throughout their school days. Teachers also revealed that there were times when the absence of modern technology tools made for more engaging lessons because they presented students with less common styles of learning for their experiences.

The relationship between teachers' perceptions and their years of teaching experience was inconsistent. For example, the teacher who had the most teaching experience was the most vocal about using new technology tools to foster creation and communication in her classroom. Comparatively, the teachers who specifically mentioned not using technology for the sake of variety in lesson implementation were the teachers who had less than ten years of teaching experience. Also, the only teacher to specifically mention technology as mere substitution had less than ten years of teaching experience. There are not enough data in this study to draw a thorough conclusion about this relationship, but that there is not a consistent trend between years of teaching experience and perception is notable.

Generally, the data showed that teachers felt like their students were having more meaningful learning experiences through modern technology tools. However, teachers should still ask themselves how much their technology integration is contributing to their students' learning.

Recommendations

The sample population of this study demonstrated the importance of continued technology support for teachers. Modern educational technology is constantly changing and updating, and the teachers of this study indicated that it was often difficult to pinpoint exactly what technology would best suit their classrooms. This is not to be confused with more training.

Teachers showed that they are generally able to work with the training provided accompanied by collaboration. Rather, this issue has more to do with curation. With so many tools to choose from, teachers need an effective curator of modern education technology. This might be made possible by designating a teacher or technology expert per department to find and curate useful technology tools on a regular basis.

Teachers should also consider formally gauging their students' uses and perceptions of technology in their classroom. Though all teachers mentioned informal conversations with students about how they felt about technology in their classrooms, only one mentioned that they used a survey tool to gauge students' feelings. Having a better understanding of these perceptions could lead to teachers knowing when more or less technology integration is needed in their classroom to engage their students.

References

Badia, A., Meneses, J., & Sigalés, C. (2013). Teachers' perceptions of factors affecting the educational use of ICT in technology-rich classrooms. *Electronic Journal of Research in Educational Psychology*, *11*(3) 787–807. https://doi-org.proxy.lib.odu.edu/10.14204/ejrep.31.13053

Badia, A., Meneses, J., & Sigalés, C. (2013). Teachers' perceptions of factors affecting the educational use of ICT in technology-rich classrooms. *Electronic Journal of Research in Educational Psychology*, *11*(3) 787–807. https://doi-org.proxy.lib.odu.edu/10.14204/ejrep.31.13053

Boholano, H. B. (2017). Smart social networking: 21st century teaching and learning skills. *Research in Pedagogy, 7(*1), 21–29. https://doi-org.proxy.lib.odu.edu/10.17810/2015.45

Brown, B., Dressler, R., Eaton, S. E., & Jacobsen, M. (2015). Practicing what we teach: using action research to learn about teaching action research. *Canadian Journal of Action Research, 16*(3), 61–78.

Clarke, V. & Braun, V. (2013) Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist, 26*(2), 120-123.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319. doi:10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982–1003. https://doi:10.1287/mnsc.35.8.982

Deslonde, V., & Becerra, M. (2018). The Technology Acceptance Model (TAM): Exploring school counselors' acceptance and use of Naviance. *Professional Counselor, 8*(4), 369–382. https://doi-org.proxy.lib.odu.edu/10.15241/vd.8.4.369

Dinc, E. (2019). Prospective teachers' perceptions of barriers to technology integration in

    education. *Contemporary Educational Technology, 10*(4), 381–398.

    https://doi.org/10.30935/cet.634187

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012).

    Teacher beliefs and technology integration practices: A critical relationship. *Computers*

    & Education, 59(2), 423–435. https://doi-

    org.proxy.lib.odu.edu/10.1016/j.compedu.2012.02.001

Fisher, K. (2010). Technology-enabled active learning environments: an appraisal. CELE

    Exchange. *Centre for Effective Learning Environments, 2010*(6–10), 1–8.

    http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=641

    38451&scope=site

Lowther, D. L., Inan, F. A., Strahl, J. D., & Ross, S. M. (2008). Does technology integration

    "work" when key barriers are removed? *Educational Media International, 45*(3), 195–

    213. https://doi-org.proxy.lib.odu.edu/10.1080/09523980802284317

Kormos, E. M. (2018). The unseen digital divide: Urban, suburban, and rural teacher use and

    perceptions of web-based classroom technologies. *Computers in the Schools, 35*(1), 19–

    31. https://doi-org.proxy.lib.odu.edu/10.1080/07380569.2018.1429168

Lambert, J., & Cuper, P. (2008). Multimedia technologies and familiar spaces: 21st-century

    teaching for 21st-century learners. *Contemporary Issues in Technology & Teacher*

    Education, 8(3), 264–276.

    http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=508

    037368&scope=site

Mandernach, B. J. (2006). Thinking critically about critical thinking: Integrating online tools to

promote critical thinking. *InSight: A Journal of Scholarly Teaching,* 1, 41–50.

http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=329

17497&scope=site

McGregor, K. K., Marshall, B. A., Julian, S. K., & Oleson, J. (2019). Learning while playing: A

randomized trial of serious games as a tool for word mastery. *Language, Speech &

Hearing Services in Schools, 50*(4), 596–608. https://doi-

org.proxy.lib.odu.edu/10.1044/2019_LSHSS-VOIA-18-0121

Mitchell, C. C. (2019). Cultivating future 21st century literacy teachers: An examination of the

perceptions of pre-service teachers and technology integration. *Journal of Literacy &

Technology, 20*(3), 75–102.

http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=139

152690&scope=site

Murphy, D. M., King, F. B., & Brown, S. W. (2007). Laptop initiative impact: Assessed using

student, parent, and teacher data. *Computers in the Schools, 24*(1/2), 57–73. https://doi-

org.proxy.lib.odu.edu/10.1300/J025v24n01_05

Olds, A., & Lightner, R. (1995). Technology as a tool for learning. *Technology Teacher,* 54, 23–

28.

http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=508

552247&scope=site

O'Neal, L. J., Gibson, P., & Cotten, S. R. (2017). Elementary school teachers' beliefs about the

role of technology in 21st-century teaching and learning. *Computers in the Schools,

34*(3), 192–206. https://doi-org.proxy.lib.odu.edu/10.1080/07380569.2017.1347443

Rosefsky Saavefra, A., & Opfer, V. D. (2012). Learning 21st-century skills requires 21st-century teaching. *Phi Delta Kappan, 94*(2), 8–13. https://doi-org.proxy.lib.odu.edu/10.1177/003172171209400203

Simonson, M. (2017). Social media and online learning: pros and cons. *Distance Learning, 14*(4), 71–72.

Teo, T. Ursavaş Ö. F., & Bahçekapili, E. (2012). An assessment of pre-service teachers' technology acceptance in Turkey: A structural equation modeling approach. *Asia-Pacific Education Researcher (De La Salle University Manila), 21*(1), 191–202. http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=74731082&scope=site

Thomas, K., & Orthober, C. (2011). Using text-messaging in the secondary classroom. *American Secondary Education, 39*(2), 55–76. http://search.ebscohost.com.proxy.lib.odu.edu/login.aspx?direct=true&db=eue&AN=508200222&scope=site

Yan, C. (2017). 'You never know what research is like unless you've done it!' Action research to promote collaborative student-teacher research. *Educational Action Research, 25*(5), 704–719. https://doi-org.proxy.lib.odu.edu/10.1080/09650792.2016.1245155

Appendix A – Informed Consent Document

INFORMED CONSENT DOCUMENT

OLD DOMINION UNIVERSITY

<u>**PROJECT TITLE:**</u>
Teachers' Perceptions of Modern Educational Technology
INTRODUCTION
The purposes of this form are to give you information that may affect your decision whether to say YES or NO to participation in this research, and to record the consent of those who say YES. The name of this project is Teachers' Perceptions of Modern Technology. Research will be conducted within classrooms or offices of Kempsville High School.

<u>**RESEARCHERS**</u>
Matthew Fugere (Graduate Student, Old Dominion University, Instructional Design and Technology)

<u>DESCRIPTION OF RESEARCH STUDY</u>

Several studies have been conducted looking into the subject of technology use in the modern classrooms and how it affects teachers and students alike. Several studies have also considered how preservice teachers generally perceive the usefulness and effectiveness of modern technology in classrooms. However, fewer studies have taken the time consider professional teachers' perceptions on these subjects. The purpose of this study is to determine how professional secondary teachers perceive the technology that is a part of their daily classroom procedures and planning

If you decide to participate, then you will join a study involving research of teachers' perceptions on modern technology in their classrooms and daily procedures. You will describe your perceptions on these subjects through a brief interview using pre-determined questions. If you say YES, then your participation will last for the duration of one interview session (roughly 10-20 minutes) at an agreed upon classroom or office location at Kempsville High School. Approximately 3-6 teachers from your department will be participating in this study.

<u>EXCLUSIONARY CRITERIA</u>

You should have completed a brief interest form before beginning this process. You must be a professionally licensed teacher at Kempsville High School to participate in this study.

<u>RISKS AND BENEFITS</u>

RISKS: If you decide to participate in this study, then you may face a risk of losing time that could be used for your own professional interests and endeavors. The researcher tried to reduce these risks by designing interview protocols that will minimize the amount of time needed for a subject to participate and by defining a schedule for these interviews ahead of their implementation. And, as with any research, there is some possibility that you may be subject to risks that have not yet been identified.

BENEFITS: There are no foreseeable benefits for participating in this study.

COSTS AND PAYMENTS
The researcher is unable to give you any payment for participating in this study.

NEW INFORMATION

If the researcher finds new information during this study that would reasonably change your decision about participating, then they will give it to you.

CONFIDENTIALITY

The researchers will take reasonable steps to keep private information, such as interview responses and analysis, confidential. The researcher will remove any real names or key identifiers from interview responses. The results of this study may be used in reports, presentations, and publications; but the researcher will not identify you. Of course, your records may be subpoenaed by court order or inspected by government bodies with oversight authority.

WITHDRAWAL PRIVILEGE

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study -- at any time.

COMPENSATION FOR ILLNESS AND INJURY

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of any physical or mental injuries arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact Tian Luo at 757-683-5369, Dr. Laura Chezan the current IRB chair at 757-683-4520 at Old Dominion University, or the Old Dominion University Office of Research at 757-683-3460 who will be glad to review the matter with you.

VOLUNTARY CONSENT

By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. The researchers should have answered any questions you may have had about the research. If you have any questions later on, then the researchers should be able to answer them:

Researcher: Matthew Fugere (757-739-3972 OR matthewfugere@gmail.com)

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. Laura Chezan, the current IRB chair, at 757-683-4520, or the Old Dominion University Office of Research, at 757-683-3460.

And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.

Subject's Printed Name & Signature	**Date**
Witness' Printed Name & Signature (if Applicable)	**Date**

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws, and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during the course of this study. I have witnessed the above signature(s) on this consent form.

Investigator's Printed Name & Signature	Date

Appendix B – Interview Protocol

The researcher will give the participants predetermined scheduled meeting time to conduct interviews. Interviews will be conducted through a telecommunication application (Zoom). The researcher will ask follow-up questions to these questions depending on participants' responses. The researcher will ensure participants consent to interviews being recorded and later transcribed. The researcher will inform participants that these questions were originally written **before the events of Covid-19.** For the purpose of this interview, modern educational technology tools will be defined as any electronic and/or digital tool that is used by a teacher or a student within the classroom that has educational capabilities even if it is not used for educational purposes by its user (e.g. cell phones that students have). In terms of hardware, these tools include but are not limited to: computers, Chromebooks, interactive whiteboards, mobile phones, and tablets. In terms of software, these tools include but are not limited to: web browsers, learning management systems like Schoology, mobile applications, school or district specific software, gamified software, and social media applications.

Demographic Questions (close-ended)

1. How many years have you been teaching?

2. What is your current teaching assignment(s)? (Grade level, subject)

Current Teacher Use of Technology in the Classroom

1. What modern technology tools do you use the most in your day-to-day work (be it instructional or otherwise)?

2. During a given workday, how frequently do you use these tools?

3. What do you generally use these tools for?

Perceptions of Teacher Use of Technology in the Classroom

1. Have you ever had trouble understanding a technology tool that you were required to use for your job? If possible, please provide an example.

2. Do you feel like modern technology tools ever hinder your ability to perform any element of your job, instructional or otherwise?

3. Do you feel it is useful to continually learn new modern technology tools for your job?

Current Student Use of Technology in the Classroom

1. What modern technology tools do your students use the most in a given class period?

2. During a given class period, how frequently do your students use these tools?

3. What do your students generally use these tools for?

Perceptions of Student Use of Technology in the Classroom

1. Have you ever gauged how your students feel about modern technology usage in your class? If so, please describe how. If not, please describe why.

2. In what ways do you feel like your students have lesser or deeper learning experiences in your class because of these tools?

3. How do you go about teaching modern technology tools to your students? If you have not, do you believe you could?

Vita

Matthew Joseph Fugere

Education

- Bachelor of Arts (December 2012) in English, Old Dominion University, Norfolk,

  Virginia

Professional Experience

- Secondary English Teacher (2013-2014), Norfolk City Public Schools, Norfolk, Virginia

- Secondary English Teacher (2014-Present), Virginia Beach City Public Schools, Virginia

  Beach, Virginia

Certification

- Collegiate Professional License (July 2017)