NORTH CAROLINA PRIVATE SCHOOL EDUCATORS' PERCEPTIONS OF BYOD

IMPLEMENTATION AS A LIVED EXPERIENCE: A TRANSCENDENTAL

PHENOMENOLOGICAL STUDY

by

Alexander Randolph Grey

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2019

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APPROVED BY:

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ABSTRACT

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educators' perceptions of the implementation of a Bring Your Own Device (BYOD) program as a lived experience. This research study utilized the theoretical lenses of the technological pedagogical content knowledge (TPACK) model and the technology acceptance model (TAM) frameworks to determine the perceptions of each educator participating in this research study in relation to BYOD integration into their classroom settings. Institutional Review Board (IRB) approval was secured from both Liberty University as well as the private school site. Participants in the study were asked to complete two assessment questionnaires containing 10 questions each regarding the participants' level of TAM, complete three reflection journal posts, and also participate in a face-to-face interview to determine an accurate measure of their individual TPACK level at the time of BYOD implementation. A purposeful sampling procedure was used to select educators from private schools in North Carolina who met the study criteria and have implemented BYOD programs in their classrooms. Data collected included a questionnaire, an individual interview, and journals. Data were analyzed to produce codes and themes using the modified Stevick-Colaizzi-Keen method advocated by Moustakas. Data were analyzed and stories of the participants were told in a manner that developed a complete description of the essence of the participant experiences.

Keywords: BYOD, technological knowledge, technology acceptance

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Dedication

This dissertation is dedicated to my Lord and Savior Jesus Christ, my spouse and soul-mate

Kimberley Grey, and my three lovely children: Jamie, Hunter, and Chance.

Acknowledgements

I would like to acknowledge my chair, Dr. Tierce, Dr. Michael from Liberty University, and all

of my study participants and the schools in which they are employed.

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List of Abbreviations

Bring Your Own Device (BYOD)

Electronic Learning (ELearning)

Information Technology (IT)

Internal Review Board (IRB)

Information Systems (IS)

North Carolina Independent Schools Association (NCISA)

Technology Acceptance Model (TAM)

Technological Pedagogical Content Knowledge (TPACK)

CHAPTER ONE: INTRODUCTION

Overview

Scholars note the primary purpose of education is to instruct students in a manner that allows them to learn to their full potential (Emery, 2012). Achieving this goal involves consistent use of current technology to create independent, critical thinkers in school (Belland, 2009). Educators must take advantage of strategies that challenge students' minds, and keep them engaged in their learning (Cole, 2006). Education as a discipline must evolve beyond traditional, comfortable teaching methods, and incorporate appropriate technology tools to educate students (Dede, 1996). John Dewey (1915) noted, "If we teach today as we taught yesterday, we rob our children of tomorrow" (p. 6).

One strategy that has been attempted by many private schools to increase consistent technology use in the classroom is the use of a one digital device to one student ratio (Hew, 2007). This practice allows students to have access to a digital device all day at school. Known as Bring Your Own Device (BYOD), students have access to WiFi networks, a school network server, and other information technology (IT) resources while using their own personal digital device.

BYOD is especially useful at the high school level, where the majority of students bring some form of digital device to school each day already (Adams, 2014), and the majority of parents are willing to allow their child to BYOD for educational purposes (Kiger & Herro, 2015). However, the reluctance of educators often comes from their hesitance to put technology in the hands of students. Researchers note this hesitance mainly springs from a tradition of not allowing students to use digital devices during the school day, which becomes a constant struggle, because students want to use their own devices during school and will access them

whether approved or not (Yu, 2013). Research indicates that to fully utilize these available laptops, tablets, and cellular phones, there must be consistent and ongoing quality professional development focused on using educational technology tools in instruction, and willingness of educators to put BYOD programs into place to become an essential part of the established practices within the BYOD classroom (S. Davis, 2003). The present research study was conducted to examine the perceptions of high school educators in private schools who have employed a BYOD technology integration program.

Background

The role of education technology is ever-changing due to massive technological advances that have changed overall acceptance levels and perceptions regarding technology in the schools (Means, Olson, & Singh, 1995). Implementation of a one digital device per student policy, otherwise known as a 1:1 computer program, allows all students regular access to educational technology, but is expensive if the schools provide and support these devices (Penuel, 2006).

Historical Context

One answer to the problem of the costs faced by schools and school systems is implementation of a BYOD program that allows students to bring digital devices, such as smart phones, tablets, or personal laptop computers, from home for student use in the classroom. Potential issues, problems, and objections typically center around the expense of the program, network security, device security, Internet safety concerns, and even how curriculum will be affected by addition of educational technology devices for students (Prensky, 2001). BYOD allows schools to "stop managing the device, and now simply manage the service" (Ullman, 2013, p. 30) for the network itself, which helps keep down costs. Another benefit that comes from BYOD is the ability to store data and assignments in the cloud, which takes away the

common argument of draining all storage space on school servers (Ullman, 2013). Programs like

Google Drive and many other online applications allow students to store their data in the cloud

and not on the school's network (Bruder, 2014).

Many problems in BYOD classrooms are not technologically-based, but instead are

related more to the acceptance levels educators have regarding technology, levels of professional

development training regarding technology use, and willingness to implement technology into

their classroom through the BYOD program (Miller et al, 2012). All these components impact

the educators' perceptions of the BYOD process (Garba et al, 2015). The best way to explore

current trends of developing a BYOD technology program into high school settings is through

perspectives from educators already using BYOD. There are varying opinions and ideas about

what BYOD should look like at the classroom level, which creates a need for research on best

practices (Singh, 2012). For example, educators are divided on the usefulness of social media

applications to the BYOD process in the classroom (Burns, 2013). Another aspect of BYOD

division would be the always-on versus sometimes-on model to ensure students are focused on

the lesson at hand and not surfing the web or checking their email accounts (Hew, 2010).

Social Context

Evidence of the educators' acceptance level is demonstrated in their lesson planning,

lesson delivery, and curriculum choices (Astani, Ready, & Tessema, 2015). For example,

BYOD can replace traditional pencil-and-paper notetaking with a digital device to take notes

while in class (Norris & Soloway, 2010). Digital notetaking allows students to share notes,

highlight the important areas for studying purposes, and allow them to access the notes on

various digital devices instead of physically having written notes on hand. Technology devices

should contribute much more than simply being an electronic manner of notetaking, but

advanced uses of devices are often not properly applied in the classroom for several reasons (Venkatesh, 2000).

Theoretical Context

The technological acceptance model (TAM) was designed to determine the level of which educators feel comfortable with utilizing technology in their lesson planning and in their use of that technology in actual classroom lessons. TAM is useful to researchers to determine each educator's level of technology acceptance based upon individual beliefs, opinions, and attitudes (F. D. Davis, 1989), regarding the usefulness of technology in education. TAM was used in the present study to augment the theoretical framework of technological pedagogical content knowledge (TPACK). TPACK is designed as a framework to measure the knowledge level of the educator on aspects of pedagogy related to technology use in the classroom. Many teachers who have low technological acceptance will often have low levels of TPACK as well, and will have to overcome this technological deficiency to implement technology successfully into their classrooms. Additionally, TAM actively "proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use" (F. D. Davis, 1989a, p. 983). The TAM also suggests that higher information accessibility, whether through professional training or personal hands-on experience, leads directly to higher rates of understanding and a higher perception of usefulness of the process (Park, 2009).

The theoretical framework of TPACK, in relation to overall BYOD, depends on a basic knowledge of the TAM and its applications to gain an accurate understanding of acceptance levels educators will need regarding BYOD. Chuttur (2009) stated that although many models have been used in attempts to predict usage of technology systems, only the TAM has been

vetted and accepted by the IT systems community. Acceptance by the leaders in the field clearly

shows the value that the TAM has, both to the technology and education communities, and

justifies inclusion of information from this model into this research study. Used in combination

with the newly developed TPACK model, an extension of Shulman's (1986) idea of pedagogical

content knowledge, to determine acceptance levels of study participants, the TPACK model is a

theoretical framework in its own right that "identifies the nature of knowledge required by

teachers for technology integration in their teaching, while addressing the complex, multifaceted

and situated nature of teacher knowledge" (TPACK.org, 2012 p. 3). The TPACK model also

served to assess the interplay between the Moroney & Haigh (2011) TPACK study participants'

personal knowledge of technology, content knowledge, and pedagogy to determine acceptance

levels of each individual. These models serve to further the trend of e-learning, which is defined

as learning both inside and outside the classroom through technology (Westera, 2012).

However, Bestwick and Campbell (2010) saw the need for advanced training and encouraging

staff use of technology in order to advance and enhance teaching in a technologically rich

environment for students. A focus on educator training is important to this current research

study, because the main issue facing the placement of BYOD programs into high school

classrooms is not the overall cost of the program, but is primarily educators' acceptance levels,

access to professional development opportunities, and actual implementation of BYOD into the

classroom (Chuttur, 2009). Educators' acceptance of the BYOD process is vital to the success of

the program, and research on manners of improvement for this process is imperative to

determine best practices for promoting BYOD.

Situation to Self

I chose to examine this subject matter due to a decision by the school association in my teaching area to implement BYOD technology into every school in the association over a 5-year period. There was considerable anguish and angst among the instructors upon receiving this news and it became my goal to find out exactly what could be done to help smooth the process of utilizing technology in the classroom to help every student reach their full academic potential in the classroom. The philosophical assumption for the study is ontological. Utilizing this philosophical point of view allowed me to see what the true nature of reality was in this BYOD mandate (Creswell, 2013). Interviewing the educators allowed me to see the multiple realities of the situation through the point of view of each individual educator. Just as every educator has their preferred manner of lesson planning and teaching, they also have their own perspectives on their personal reality and this philosophical assumption allowed me to document this.

The guiding paradigm for this study was social constructivism (Creswell, 2013). My primary reason for conducting this study was to examine the basic points of view of each educator and how their biases and assumptions colored their feelings about BYOD and implementing it into their classroom. The interactions that I had while interviewing other educators exposed me to the different points of view on the subject and what motivates the individuals to feel the way that they do. As I talked to people and we worked together to understand the world of education where they work, I documented, compiled and graphed data in a manner that was easily understood and able to be applied to the field of education. This research will go a long way toward alleviating the stress placed on educators who find themselves less than confident in applying technology into their classrooms daily.

Problem Statement

The problem addressed in this study was North Carolina private high school educator perceptions of BYOD program implementation as a lived experience. The addition of BYOD technology into classrooms is intended to bring about many differentiated, collaborative learning opportunities for students to explore while under the instructor's guidance (Dahlstrom, 2013). BYOD can accomplish that goal in most cases, but also creates a myriad of challenges and concerns for both students and educators (Dahlstrom, 2013). One of the issues is that not enough is known about what successful BYOD programs look like to create a standard course of action in education. BYOD has not yet reached its potential for a variety of situations focused on the topics of educator training, educator acceptance, and educator buy-in to the importance of the BYOD program. More specific issues include lack of proper educator training in technology usage, low levels of acceptance of technology by instructors, and vague and confusing expectations of what BYOD consists of at various classroom levels (Burns, 2013). While BYOD technology can be put into place in both public and private school settings, this study was focused on applications of BYOD in private high school settings. The rationale for this decision was primarily because the private schools in the North Carolina Association have requested implementation of BYOD technology into member schools over a 5-year period of adoption (Foulger, et al 2013).

Purpose Statement

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. Perceptions and experiences of the participants were collected and analyzed regarding three key areas of BYOD implementation: participant perceptions of the

overall implementation experience; participant perceptions on preparation for BYOD implementation through professional development; and participant perceptions of the impact of BYOD on student learning. Perceptions regarding overall processes of BYOD were generally defined as opinions and feelings of educators regarding technological implementation of BYOD through the lens of the TAM and TPACK. Both the TAM and the TPACK frameworks have proven to be reliable theoretical models for predicting and often explaining behavior of educators regarding technology in the classroom (Ligris, Ingraham, & Collerette, 2003). Use of the TAM and TPACK were instrumental in the process of discovering educators' feelings, perceptions, and beliefs in relation to their actual use of educational technology devices into their classrooms (Park, 2009).

Significance of the Study

The study was significant primarily because it could potentially assist educators as they implement BYOD programs in their classroom settings. Additionally, the enhancement of student educational experiences through application of the BYOD program provide needed differentiated instruction methods. The perceptions of educators provided valuable data on how different educators had varied experiences throughout the BYOD implementation process; these data were studied, and the data recovered were utilized to impact student learning. The researcher sought to explain the personal reasons that educators accept or reject new technology, based on attitudes, opinions, and perceptions of usefulness to themselves (F. D. Davis, Bagozzi, & Warshaw, 1989). In addition, the study built on concepts found in both the TAM and TPACK, while also providing empirical research to strengthen BYOD programs in North Carolina private high schools. Usefulness of BYOD is addressed by Zhu, Valcke, and Schellows (2010), who determined that the introduction of technology into each educator's classroom is

related directly to how the educator personally views technology applications. Resulting data

from this current study provided different perspectives and strategies regarding BYOD

technology, BYOD in classrooms, and educators' unique applications of digital devices into

lesson plans for each of their classes. Research must be conducted to find out how educator

perceptions play a role in the entire process of implementing BYOD technology properly into the

high school-level classroom. The study added to the base of knowledge in teacher education

through the recording, coding, and presentation of the stories of educators who have already

implemented BYOD into their classroom for at least a 1-year period. This study served to

identify common experiences and components of BYOD that will assist future educators in their

process of implementing BYOD into their classroom at a later date.

Research Questions

This phenomenological study of North Carolina private high school educator perceptions

of a BYOD program implementation as a lived experience was guided by one central research

questions and two research subquestions.

Central Research Question

What are North Carolina private high school educator perceptions of the implementation

of a BYOD program into their classrooms as a lived experience?

The central research question was used to discover and understand overall participant

perceptions of the use of a BYOD as a lived experience. Researchers note that changes in

classroom management and overall learning after the implementation of BYOD into the

classroom were viewed as positive by most teachers surveyed (Parsons & Adhikar, 2016).

Research Subquestions (SQs)

SQ1. What are North Carolina private school educator perceptions of the ways professional development impacts their preparation for implementation of BYOD in their classroom?

The first research subquestion identified various training and professional development classes, seminars, workshops, and other forms of continuing learning that are in place to assist the educator's ability to utilize BYOD technology once the program is implemented. Researchers note that an inexpensive, readily available form of professional development for educators implementing BYOD technology into their classrooms are massive open online courses (MOOCs), which are used to instruct on various topics related to BYOD, such as using social media as a learning tool to augment lessons (Vivian, Falkner, & Falkner, 2014). The answers the educators provided addressed the importance of quality professional development programs in relation to developing educator's acceptance level and familiarity with educational technology devices, software, and applications to further ease of use regarding BYOD.

SQ2. What are North Carolina private school educator perceptions of the ways the implementation of a BYOD program impacts student learning?

Research SQ2 was used to examine and explore how educators personally view and value the use of technology in the classroom, specifically a BYOD program, and its impact on student learning. Studies show that the BYOD approach toward student learning in the area of foreign language adds a measurable benefit to the long-term transfer of learning for students (Pao-Nan, Chi-Ching, & Ching-Hsin, 2017).

Definitions

1. *3G and 4G* - The terms *3G and 4G* stand for the third and fourth generation data

networks for mobile communications technology. The *G* is short for generation (Mishra & Koehler, 2006).

2. *Bring Your Own Device (BYOD)* - This is a term used in technology for describing the practice of students utilizing their personal digital devices in the classroom for technological learning activities (Dahlstrom, 2013).

3. *Electronic Learning (E-learning)* - E-learning is a term used for describing learning that takes place through some form of electronic media delivery system (Afshari, 2009).

4. *Information Systems (IS)* - Information systems (IS) are complete computer systems that process, distribute, collect, and create hardware and software (Scheer, 1994).

5. *Information Technology (IT)* - Information technology (IT) describes the study of computer systems and how these systems store, send, and retrieve information (Shelley, 2004).

6. *Mobile Learning (ML)* - Learning completed through the platform provided by portable digital devices like tablets and smart phones is known in the field of education as ML (Laouris, 2005).

7. *Software Application (SA)* - Software applications (SAs) are more commonly known as apps. These apps are computer programs on a digital device that can perform coordinated activities, functions, or tasks (Greenfield, 2003).

8. *Technology Acceptance Model (TAM)* - The TAM was developed by F. D. Davis in 1989. The TAM is a measuring tool used to determine the level to which educators utilize and accept technology in their lesson planning and delivery methods (F. D. Davis, 1989a).

9. *Technological Pedagogical Content Knowledge (TPACK)* - The TPACK is a

framework that can be utilized to measure the knowledge level and aspects of pedagogy

that are related to technology usage (Moroney & Haigh, 2011).

10. *WIFI* - WIFI is also called a wireless local area network (WLAN), and it provides

high-speed Internet through radio waves (Krishnamoorthy, 2013).

Summary

The purpose of this transcendental phenomenological research study was to understand

North Carolina private high school educator perceptions of the implementation of a BYOD

program as a lived experience. Perceptions of the educators involved in the BYOD process play

a large role in the usefulness of the overall BYOD adaptation into the classroom setting. These

perceptions were collected and analyzed to understand educator perception of BYOD

implementation as a lived experience.

Chapter One was a presentation of the background of the study and introduction to the

topic of BYOD implementation. Standard language and terms regarding BYOD were introduced

and defined to provide basic working knowledge of the subject matter discussed in this chapter.

The role of educators in the process was also discussed.

Chapter Two includes reviews of the theories that framed the study and the overall body

of literature related to the topic of BYOD programs. The review of literature serves to further

clarify the gap in extant literature, thus justifying a need for the study. Chapter Three contains a

detailed description of the methods that were used to conduct this transcendental

phenomenological study.

CHAPTER TWO: LITERATURE REVIEW

Overview

As education has progressed in recent years, technology use in the classroom no longer is the exception, but increasingly is becoming an expected component of the educational process for both educators and their students. The literature repeatedly indicates that the predominant causes of technological shortfalls in schools are the excessive costs of providing laptop computers or other technological devices to every student during the school day (Intel Education, 2013) and that insufficient professional development opportunities are being offered to educators. In response to the cost issue, much of the literature now indicates that many schools are implementing a BYOD program and policies, instead of one-to-one computer initiatives, to provide students with access to technology while at school. However, moving from the schools providing all devices to individuals bringing their own devices has created several issues. One issue related to the professional development problem is the attitudes and feelings of the educators themselves regarding technology use in the classroom. The success of the BYOD program is directly tied into the personal feelings and opinions of the educator regarding technology familiarity (Brinkerhoff, 2006) and the value placed upon utilizing it in their daily lessons. Another problem that has arisen during the transition, hindering the effectiveness of the program, is that BYOD policies and procedures vary from school to school. As a result, there is a lack of standards explaining what policies for BYOD should be or how the effectiveness of the BYOD program should be measured (Demetriadis et al., 2003).

Much of the ineffectiveness of current BYOD trends was exposed when the TAM was utilized during interviews with educators (F.D. Davis, 1989a). The perceptions and attitudes held by these educators individually toward the use of technology in classrooms should have an

enormous impact on the students' buy-in regarding the BYOD program. The educators' acceptance level of the BYOD program should affect the quality and applicability of the overall education that the students receive in the classroom which, in turn, affects the institution's ability to provide a quality educational experience for every student. This educational experience is vital in the competitive field of college admissions and later in the job market as well (Benigno, Caruso, Ravicchio, Repetto, & Trendin, 2014). As a result, administrators and educators must observe, evaluate, and assess the BYOD concept fully (Farley et al., 2015) before forming their overall perceptions toward the program, as a positive or negative experience. Further research is needed in this area to confidently connect the level of the TAM displayed by the educators, to determine how the BYOD program impacts the educator's acceptance of the entire process. This acceptance can vary depending upon the age of the educator and the culture of the school regarding the introduction, implementation, and use of devices into the overall curriculum.

Theoretical Framework

This study utilized a theoretical framework that addresses teacher fears and concerns regarding technology and change. Technology is a component of the educational process that can be challenging for administrators, educators, and their students, because it changes the traditional model of lesson delivery in the classroom setting. However, change is a necessary component of forward movement and must be actively embraced in order to provide the quality form of education that students expect and deserve (Baylor & Ritchie, 2002). The two theories used to provide context and guidance for this study included the TAM and the TPACK.

TAM

The first theory used to support this study was that of the TAM which was developed by F. D. Davis (1989a). In order to face the fear and anxiety associated with change, professional

development and continuing education are mandatory components in the licensing and

relicensing of educators in schools across the country. Even though steps are taken to enable

educators to progress and learn new techniques that develop in the field of education, different

individuals respond to this training in different manners and on varying levels of proficiency.

Younger educators who have grown up in a technology-filled environment are typically able to

adapt to using technology and importing technology into the classroom at a much higher rate

than the majority of older educators (Cuban, 2001). However, in many cases, the older, more

experienced educators are able to bring the technology into the classroom in a manner that

enables students to have a technology-filled educational experience as long as the educator's

level of technology buy-in is fairly high (Cuban, 2001). One problem that arises is that the

evaluations of educators' abilities to incorporate technology into the classroom are often vastly

different (Afshari et al, 2009). As computers became more prevalent in the world for personal

and business use, a reliable education tool was needed to determine an individual's potential to

utilize software and hardware programs that were being developed to enhance the computing

power of employees for business purposes. Out of this need came the technology acceptance

model, which was developed by F. D. Davis (1989a).

The TAM was developed to determine the individual's intention to utilize a technological

system based on the individual's perceptions of the systems usefulness and ease of use (BYU,

2014). The TAM demonstrates that an individual who perceives the value of the technology will

be much more likely to utilize the product because the positive perception enables action (Cuban,

2001). As the TAM is an adaptation of the established theory of reasoned action (BYU, 2014),

similar assumptions can be applied to the TAM based on the conclusions of the theory of

reasoned action regarding the individual's intention to act without limitation. In reality, the

TAM is governed slightly by "constraints such as limited ability, time, environmental or organization limits, and unconscious habits" (BYU, 2014, p. 8), all of which limit the individual's ability to interact with the technology in question. However, the TAM has been shown to be effective in evaluating the users' technology acceptance while still being justified theoretically (F.D. Davis, 1989a).

In the original article on the user acceptance of computer technology, from which the TAM theory was derived, F. D. Davis (1989a) examined why many computer programs that were intended to enhance the computer user's experience and productivity were primarily complete failures, and were not utilized, despite the program's obvious potential for use. Prior to the development of the TAM, the rejection of computers and new computer software was quite confusing to the technology developers. Despite the obvious benefits to the user of the system, user acceptance was curiously inconsistent. At first, the rejection was attributed to the newness of the computer and the discomfort people have in accepting change. Once the technical novelty disappeared and familiarity with computers became common, technology developers realized that their customers' perceptions of the usefulness and ease of using the product became a division in users and reformed the individual's ability to use or not use created applications (F. D. Davis, 1989a). These twin aspects comprising the perceived ease of use and perceived usefulness of the technology for the user, directly apply to educators in the 21st century, just as they applied to businessmen in 1989 when F. D. Davis developed the TAM. The concepts work together to establish the user's behavioral intention to use the product (W. R. King & He, 2006), which is also factored into the TAM for the individual being evaluated. The TAM is one of the prominent models utilized in information systems (IS) studies, for the most part due to its

simplicity and ease of understandability (W. R. King & He, 2006), but also for the accurate results that the utilization of TAM provides for the researcher.

Evaluations of the TAM have determined that the best results are often achieved when the original TAM is utilized, instead of the upstart version of the revised technology acceptance model (Szajna, 1996), that was developed in 1996, but both methods show a high level of accuracy. Studies comparing the TAM with other technological assessments show that the TAM results can vary somewhat when ordinary business settings are compared with professional settings (Chau & Hu, 2001), but with the realization that IT systems typically have a low success rate and are very costly (Legris et al., 2003), a model that is accurate most of the time is extremely useful.

F. D. Davis's (1989a) theory behind the TAM suggested three basic conclusions, all of which are applicable to the current trend of BYOD technology in the field of education:

1. People's computer use can be predicted reasonably well from their intentions.

2. Perceived usefulness is a major determinant of people's intention to use computers.

3. Perceived ease of use is a significant secondary determinant of people's intentions to use computers. (F. D. Davis, 1989a, p. 18)

These conclusions can be applied to the educators' perceptions of the BYOD program in their classrooms as well; if they do not feel personally comfortable using a computer or comfortable with a particular software program, they most likely will not use it in the classroom. The common standard in education right now centers on the development of the 21st century classroom and what it should look like when it is implemented. In order to achieve the goal of providing a 21st century education for those students, many schools and school districts are implementing one-to-one computer initiatives to allow each student to have access to a computer

during the school day. The main problem with this approach is that the program is very

expensive, and many schools and school districts simply do not have enough money in their

budgets (Bruder, 2014).

One new alternative to the one-to-one computer initiative is a concept taken from the

business world called BYOD (Astani, Ready, & Tessima, 2013). The BYOD program only

requires the school or school district to provide enough technical support and secure bandwidth

on their computer network for the program to be effective. Often, the cost of BYOD is much

less than providing a computer for every student, helping the schools achieve their goal of being

able to provide a 21st century education for all of their students, while still remaining within

budget restraints (Astani, Ready, & Tessima, 2013). Although BYOD is not a perfect system

and may result in some issues and problems, the greatest problem will still be related to the

educators' perceptions of the technology programs and BYOD itself in relation to its use in the

classroom. The TAM is an applicable measure to help determine the educators' perceptions of

the BYOD program and to determine each educator's acceptance level of technology overall.

TPACK

In addition to the TAM measure of technology acceptance by the educators participating

in this research study, the theoretical framework of TPACK was also utilized to indicate the

acceptance level of educators regarding their use of technology in the classroom. TPACK

identifies the knowledge level that is required by teachers for impactful technology integration in

their teaching. This theoretical framework can be used as a lens to examine the roles that

technology knowledge and acceptance, content knowledge, and pedagogy all play in the

educator's use of BYOD technology in the classroom (Moroney & Haigh, 2011). While the

TAM can be used to explain the varying levels of educator acceptance, TPACK serves to

identify why the educator has a specific level of technology acceptance and what can be done to augment that acceptance level through knowledge and professional development.

Technology acceptance can be measured by a general questionnaire that was administered to educators teaching in K-12 levels (Moroney & Haigh, 2011), when they report at the beginning of the new school term. The questions can be adapted from questions found in the established survey of preservice teacher's knowledge of teaching and technology (Archambault & Crippon, 2009), in order to identify areas that may need to be adjusted throughout the year regarding technology in the classroom. Many types of challenges faced by educators can be traced back to the following seven specific factors identified by Meneses and Momino (2010) that are common in educators' reluctance to adopt technology components for use in their classrooms:

1. Lack of sufficient facilities,

2. Lack of administrative support,

3. Lack of time,

4. Perceived ease of use,

5. Low mastery,

6. Others' attitudes, and

7. Perceived usefulness.

Any of these factors can be overcome in time, but during the initiation of a BYOD program in the school, it is imperative that the TPACK framework has an influence on educators as they plan their lessons for the school year (Koh, Chai, & Tay, 2014). Growth in the pedagogical knowledge of educators must improve and adapt to meet the instant-gratification-based society in which we currently live. No longer are we in the year 1875 when the top four items educators

needed to know were based on written and mental math and written and oral grammar, even though the pedagogical standards and content area knowledge exams for educators were much more involved and difficult then they are currently (Shulman, 1986). However, just as education changed and adapted as society advanced technologically through the 1900s and 2000s, it must adapt again to accept and utilize the benefits provided by implementing a technology-enhanced education. Education must adapt, gain, accept, and utilize the benefits provided by implementing a technology enhanced educational environment into the school (Moroney & Haigh, 2011). The TPACK framework accomplishes this by measuring the educators' pedagogical and subject content area knowledge in order to develop and enhance the educators' current level of TPACK, through professional development, in-service programs, and university education department standards (Mishra & Koehler, 2006).

Related Literature

Education has evolved throughout history and must continue to evolve. The addition of BYOD technology into the classroom is one new topic of discussion in the field of education. The BYOD program necessitates the students bringing their own technological devices, such as personal computers, to the classroom to access the internet for other educational information. Such programs can help smaller school systems develop technology integration in the classroom without incurring up-front costs that can be prohibitive for the school. However, there are some drawbacks to implementing a BYOD program, according to the literature.

Some educators have expressed concerns about Internet access, online safety and prevention of theft of the student's devices, and software costs associated with the technology. These concerns all have played a role in many different BYOD processes, hindering the effectiveness of the program overall and negating the positive aspects in the eyes of many school

stakeholders. The literature shows that educators disagree about whether the BYOD process is beneficial to the overall educational experience of the students. However, there is a gap in the literature regarding studies focused on the perceptions of educators involved in the process of the BYOD program regarding the role of professional development plays. This study addressed that gap of judging the BYOD programs and how the level of professional development factors into the equation from the perspective of those involved in the day-to-day use of the technology and will help to achieve a true assessment of the program.

History of BYOD

The roots of BYOD come from the business world in which the computer manufacturing and development company Intel completed a research study and realized that many of its employees were using their own devices while at work (American Federation of Schools, 2014). In 2009, based on this in-house study, Intel began using the phrase *BYOD* to describe the trend of utilizing personal computing devices that the owner of the device was expected to provide for work purposes. As shown by Ullman's (2013) study of employees and technology, those in the business world understood that if employees brought in the personal computing devices with which they were familiar, they would not be as likely to lose or break the device and would be able to access the information they needed at any time due to the company's only managing the service instead of the device itself (Ullman, 2013). In research on BYOD use in the corporate world, Hudson (2012) discussed the value that companies gain from having employees utilize their personal IT resources to complete their work. Hudson determined that the added worth to the company through the value creation and the encouragement of entrepreneurial activity by the employees should be promoted by the company. The official, commonly known definition of BYOD is, "a business policy of employees bringing personally owned mobile devices to their

place of work" (CISCO, 2012).

Nelson (2012) has studied many implementations of BYOD into the arena of K-12 school systems such as Project Copernicus in the Osseo area of Minneapolis, Minnesota schools; as a result, the official definition has expanded to include schools by acknowledging that BYOD can be utilized in both the workplace and in K-12 education. This approach is attractive to many school systems because budgets are getting tighter every year and the inclusion of a BYOD process leverages the costs of placing devices in the hands of the students, increasing access to compliant devices at school, to provide a positive result in both aspects (Fiorenza, 2013). Shuler (2011) explained how creating a shared wireless network in the school setting allows for a learning environment that is not limited to the computer lab and can be accessed in every classroom to enhance the learning experience for the students, as learning is the primary purpose of education in the United States. The difficulty of creating the learning atmosphere advocated by Shuler lies in convincing the educators of the worth of the BYOD program in relation to their classrooms and the assignments they can then utilize to receive the full benefit of the students having constant access to technology during the school day.

Weighing the Advantages and Disadvantages of BYOD

The question becomes whether the impact of technology on student achievement and attitude toward the educational process overall is positive or negative. Inan, Lowther, Ross, and Strahl (2010) indicated that the simple act of implementing the BYOD program, in and of itself, does not guarantee success and that the instructor in charge plays a large role in the effectiveness of the program. Successful implementation of technology into the pedagogical strategies of the instructor was found to be predictive of a positive relationship between technology and student achievement. Inan et al. also determined teacher classroom practices and teacher utilized

technology applications showed a distinct correlation with educator buy-in, which led to more student-centered practices being introduced into the classroom. However, the educational technologies should not be considered unique entities in the learning process, but rather as "a broad variety of modalities, tools, and strategies for learning, [whose] effectiveness, therefore, depends on how well [they] help teachers and students achieve the desired instructional goals" (Inan et al., 2010, p. 27).

Enhanced learning. Studies have shown that BYOD programs offer increased learning by allowing students to foster knowledge about network pattern development and also increased decision-making and problem-solving skills when applied in an effective manner (Livingston, 2012). Livingston (2012) also pointed out that the development of 21st century skills by the student, parental support for a more student-centered learning experience through technology, the impact that electronic devices have in the lives of the students, and the importance of collaborative learning by the students through a BYOD program all are important in the education of the students. They also found that computer simulation fills an important role in the educational field by optimizing classroom learning opportunities (Chen & Levinson, 2006). Results also showed this type of computer simulation activity aided and enhanced the ability of students to develop in-depth understanding about real life problem solving, decision-making, and the ability to make correct judgments on a level that was not found before (Livingston, 2012). Other successes are referenced by Argueta, Huff, Tingen, and Corn (2011) who explained that many evaluators report laptops have been helpful in addressing digital literacy and concepts of self-directed learning models. Also, Livingston (2012), reported how many people now see that learning is enhanced with a digital device, which shows the importance of integrating technology into the classroom setting.

Reduced cost to schools. Some professional administrators and educators might question what the best reasons for implementing technology into the classroom setting would entail. On a purely cost-influenced basis, the case could be made for the BYOD model alone. German (2013) confirmed that when compared with the 1:1 computer initiative plan, BYOD is increasingly the desired model, due to the growth in popularity of smart phones, tablets, laptops, and other mobile devices that students already own. German also examined how BYOD is not merely a passing fad, but is strategically important in the field of higher education. The reluctance of educational leaders to change tactics regarding technology is discussed in depth and German determined that the positive changes and lower costs resulting from adopting BYOD are worth training educators to look at the issue objectively and overcome their reluctance to change for the sake of the students' educational needs. Lacey and Murray (2013) explained how BYOD programs in the schools are an adaptation of similar programs found in the business world which consummate IT to fit the needs of the education community by utilizing educational technology devices students already have in their possession. Integrating technology into the educational landscape is vital to providing the students with a quality education, according to Nelson (2012), who stated that BYOD allows for a vast repository of educational opportunities for the students which would be inaccessible without it.

The Educause Center for Applied Research determined that of the 515 million smart phones and 131 million tablets sold in 2012, "over half of these were used for educational purposes" (Dahlstrom, 2013, p. 20). Dahlstrom's (2013) research shows the large number of available devices for use in a BYOD program. The high number of devices demonstrates how Costa (2013) showed public schools that implement a BYOD program often increase actual learning immediately. With almost 80% of schools predicting flat or decreased IT budgets each

year, the desirability of BYOD becomes apparent (District Administration, 2013). Ray (2013) showed that among the benefits of BYOD programs are personal responsibility and additional citizenship, as students and educators will be responsible for bringing their devices to school on a regular basis which, in the case of most middle and high school aged children, is already being done without school permission. Chadband (2012) showed that as a result of these factors, BYOD technology is becoming a required component in many states in the United States. In addition, Chadband determined that as schools potentially will receive less funding designated for technology in the majority of school districts across the country, students and parents need to step in and bridge the gap by providing their student with their own technology for use in the classroom. Chadband also found that with information being always available, learning can occur even in moments when students typically would be idle in the classroom.

Now that BYOD has been set into motion, several computer manufacturers have developed low-cost computers that can be specifically tailored to school educational programs and marketed to parents and students (Norris & Soloway, 2012). According to Norris and Soloway (2012), these trends and patterns show the true beauty of the BYOD programs and their value to schools. In the eyes of school personnel and school district administrators, students can still get the technology access that they need during the school day to obtain a quality education, but it can be achieved at a much lower cost to the school or district, making BYOD a win-win proposition in most cases. However, this can also be the tricky part after the initial approval of the BYOD process.

Common uses. Aside from saving the Internet technology budget, BYOD provides learning opportunities and interactions with fellow students and educators that enhances the learning process overall. Common uses that do not require extensive professional development

for educators to employ include text messaging or the emailing of assessments and class work

schedules and changes (Thomas & Orthober, 2011), and the use of social media for

announcements and group projects (Chen & Bryer, 2012). Norris et al (2000) determined that

these simple processes can be used to develop students who will have the skills demanded of

them by a very competitive job market due to their familiarity and proficiency with technology

applications. Also beneficial are the acquired expertise in emerging technologies that students

gain as shown by Soloway and Norris (1998), as well as a simple understanding of the

technologies and applications of computers in the daily functioning of society researched by

Mullen and Wedwick (2008). In 2000, Norris and Soloway found that making technology use

common in the classroom is the responsibility of administrators as they are responsible for

enabling and supporting educators as they gain proficiency with technology through BYOD.

These necessary and valuable skill sets can be developed through BYOD. However, BYOD

technology into the classroom can also be hindered by a variety of factors, beyond the obvious

reason of budgetary constraints and restrictions. Factors such as educator buy-in and TAM

levels are sometimes the hardest to overcome, even though the benefits of BYOD are obvious to

all stakeholders of the school.

Implementation of BYOD

Once approval of the BYOD process is in place, implementation of the program is the

next step. Schools and school districts inform their educators that the program will be

implemented and that educators are expected to utilize the BYOD devices in their classroom

settings. Sutton (2013) explained the need for buy-in of all stakeholders of the school. McLester

(2012) indicated that administrators are stretched in their allotted budgets for technology needs

just by the areas of upgrades and IT needs. As a result, more strategic and creative strategies

must be put into place. BYOD successfully meets this need and only requires two wireless networks to run optimally while ensuring that school accounts are secure from any security breaches by having one of those networks dedicated to employees (McLester, 2012). Schools can also utilize buy-in aided by outside assistance at times, as in the case of the BYOD process in the city school system of Virginia Beach, when an outside investment company gave the school system a grant to fund the process. According to German (2013), this willingness of outside sources to help fund BYOD clearly shows that BYOD is a viable technology asset, not simply the latest passing fad in education.

Many separate studies have proven that once implemented; BYOD programs can assist student learning in a variety of ways. Students can use their personal devices to connect to the classroom smart board to interact directly with the lesson (Curriculum Review, 2013). Students in school districts with low IT budgets can still access technology through their personal devices, which saves the district money (District Administration, 2013). A study by McLester (2012) found schools can access newer and more effective technologies to stay abreast of the innovations in technology through BYOD and can occur more realistically and often than if new computers or other devices had to be purchased for each student for a computer lab. Richtel (2013) showed how the software applications for education can be accessed on a variety of devices, which allows students to gain experience in a number of different formats and operating systems, while saving the school district's budget in the process

Developing Policies

Morrison (2014) explained that extensive preparation must be undertaken to effectively plan, create, and implement the BYOD process in the school. Morrison also found that although common practice is to ban cell phones and other technological devices from campus, this ban

only serves to increase nonapproved student use. If the students are going to access the technology in spite of the ban, these policies must change in order to accurately limit and encourage responsible use of the device in the possession of the student at school (Morrison, 2014). Currently many schools have strict policies banning cell phones and other electronic devices at school, which will obviously have to change in a variety of ways if the BYOD process is to be implemented. However, Intel (2014) stated how true preparation goes much further than issues like that, since the school community must first be informed, educated, and engaged in order to achieve stakeholder buy-in for the BYOD program.

These stakeholders are defined in the Intel (2014) study as including school faculty and staff, school board members, and, of course, parents and students. The schools' demographics play a direct role in the availability of devices for the students to bring to school (Intel, 2014). Once initial buy-in has been achieved, a strategic team should be developed to facilitate the development of policies and procedures for the technology involved as well as training for staff, administration, and students in the proper use of the BYOD resources (Intel, 2014). According to Bruder (2014), research shows that educators and students on the development team can collaborate to develop a list of apps, cloud-based activities, and interactive lessons to research and explore at that time in order to see how well each one works on the variety of student's devices to determine if it should be included in future BYOD programs. BYOD would allow students' ownership and accountability in the planning process and would get them excited about the program overall, which would help to create buy-in at all levels (Intel, 2014). A 2012 Verizon study researched by Armstrong (2014), showed that 39% of middle school students utilized either laptop computers, smartphones, or tablets to complete schoolwork at home. According to Armstrong, if that same number would participate in the BYOD program, then

most school districts would have huge buy-in even on the middle school level. BYOD would allow for a much smaller amount of budget dollars to be spent for school-owned devices (Intel, 2014). Additionally, students are used to working in groups in the classroom setting, so expenses could be cut down even further by purchasing fewer school owned digital devices, while still allowing every student access to BYOD technology in class (St. George, 2013). These factors play a role in the stakeholder buy-in and must be addressed and agreed upon in order to move onto the next step of preparation for BYOD, which is the developing of the physical infrastructures to handle the program and the software infrastructure for non-cloud-based learning applications.

Technical Issues

Two important issues that come up during actual BYOD involve network bandwidth and network security for both educators and students alike. Raths (2012) advocated for the technology and security services to be outsourced to a third-party company. That would ensure that enough bandwidth existed to run multi-media applications while keeping the network secure from viruses and malware that might access the server through student devices (Clarity Innovations, 2014). Additional studies suggest another benefit of using a third-party vendor is that BYOD devices can be troubleshot by the students themselves through the guidance of the IT professional, which does not void the warranty of any device the student may bring on campus (New Bay Media, 2014). An CISCO study showed BYOD also serves to maintain the level of data security by having IT professionals create access privileges to the network.

According to Traxlor (2005), since mobile learning requires support structures that the school must provide, this issue should be left to the professionals instead of overwhelming the school IT resources with technical support issues, which is echoed by the research of Sangani

(2013). To address one key technical issue, which is related to software, Wong (2012) recommended the school utilize cloud-based tools, which provide a set of base apps that can be accessed by any device at any time. According to Wong, access to cloud-based applications that can be utilized by any device on any platform or operating system, would reduce the cost to the schools overall. Schools often found that instead of spending budget money to buy devices for students who already have access to their own personal device, IT departments can now invest in purchasing devices for the students who do not have their own. Wong found that this process places all students on a level playing field regarding access to technology at school. This can also be accomplished, according to the K-12 Blueprint, by utilizing a school portal site to filter out unauthorized users, to create a set of basic applications for students, and to limit or restrict access to unauthorized or unacceptable websites on their device (Clarity Innovations, 2014). The infrastructure allows students to utilize devices with which they are already familiar and comfortable, which allows the students to learn in a manner that fits with their natural way of living in today's society (Mulholland, 2013).

The next step in the process involves the adoption of an acceptable use policy for the protection of the school, the faculty, the staff, and the students (Clarity Innovations, 2014). Numerous authors advocate for these acceptable-use policies through the data collected in their research. Some examples of the need for standards to be set in place include the limiting of behavior issues, limiting of unauthorized technology access, and will also increase awareness of internet safety (Nielsen, 2011). A well-constructed, acceptable use policy will address school parameters for student BYOD use, parameters for students' BYOD misuse, and insure understanding by students and parents alike of the responsibility and maintenance issues associated with the BYOD program (Careless, 2012). All stakeholders should clearly understand

the consequences and procedures involved with not following the guidelines laid out in the acceptable-use plan (Clarity Innovations, 2014). While the acceptable-use policy will look different in each school setting, all acceptable-use policies must contain these items to ensure all legal issues are covered and addressed.

Curriculum and Utilization of Devices

The final parts of the process are curriculum and utilization of devices. Bielefeldt (2012) show how these two components go hand in hand because they ensure that the National Educational Technology Standards are aligned with the curriculum in the school, are being implemented in the classroom, and are accessible through apps and programs on a variety of competing devices as shown earlier in the K-12 Blueprint (Clarity Innovations, 2014). These findings suggest that the different approaches to curriculum and technology can create unintended consequences that can have instructional implications. BYOD that blends applications that work across all digital devices and platforms indicate a relationship with teacher roles and utilized instructional strategies (Bielefeldt, 2012). Bartelt (2012) showed how these standards serve as a guide for schools implementing technology into their curriculum to ensure that the devices are part of building literacy and overall educational skills, instead of being used simply as substitutes for notebook paper when students take notes in class.

The device considerations ensure that all programs and apps are accessible by many students on their devices. Part of the needed professional development for educators involves keeping in mind that assignments they create should be accessible on a variety of operating systems. There will be students who bring smartphones that run Apple iOS, others with Android, netbooks that run LINUX, and some with Windows. Johnson (2012) pointed out how the restrictions of the students' data plans also may come into effect when completing

assignments in class or at home. Johnson also advocated that all issues be addressed to provide each student with equal opportunity to complete the assignment on their device and to gain the educational enrichment that technology in the classroom offers.

Barriers to Successful Implementation

As with most issues in education, there are supporters and detractors regarding BYOD programs in schools. Many on both sides of the issue agree that technology is more than a passing fad and that some form of technology needs to be implemented to prepare the students for life in college and beyond (Vanderlinde, Aesaert, & van Braak, 2014). Several researchers have explored the many common issues arise that hinder BYOD or the continued use of the technology once it is implemented. Pagram and Cooper (2013) explained that the process is often performed in a slow, deliberate manner, which can lead to frustration and less than satisfactory feelings about the program. Additionally, developing strategies that create a technology-rich enterprise must successfully mix communications, security, networks, and devices; all take considerable amounts of time to examine and adopt, further frustrating the educators (Pagram & Cooper, 2013). Many programs have seen pushback from school stakeholders when BYOD programs are made mandatory due to possible device equity issues, especially in less affluent areas of the district (Chadband, 2012). Another detriment to the success of the process are complaints of off-task activities, when students focus on activities like text messaging, sending pictures, or accessing social media sites instead of staying on task with the activity to be completed in class (Tindell & Bohlander, 2012).

Norris (2000) pointed out how some school districts have expressed concern about BYOD programs in relation to accessing the network of the school. If the school's WIFI network is down for some reason or allows some devices to connect while not allowing other

devices access, the technology is not utilized and is therefore useless in the classroom. Many other researchers address common problems, including issues involving security processes (Fiorenza, 2013), both from a network's content standpoint and the safety of student devices. Device equity and functionality standards (Hayes, 2012), as well as security of data (Leavitt, 2013) both on the school and student levels are large concerns for schools and stakeholders. Currently in the news are issues of cyber bullying while at school. Holladay (2010), and Madge, Meek, Wellens, and Hooley (2009) found that schools should focus on helping students in the process of managing social media use and reporting abuse, as well as ensuring that the technology is being utilized for worthwhile purposes, which is reported by Law (2010), as well. Just having the technology just to say that it is available according to Law (2010), is not really what the purpose of the technology is. All these concerns are to be considered as valid problems in the process of implementing BYOD programs into schools; however, the buy-in of educators and the professional development to equip these educators should be at the forefront for many administrators and parents according to the K-12 Blueprint study (Clarity Innovations, 2014) because those areas are what actually ensures that the technology is being utilized in the classroom.

Teacher Perceptions

In weighing all the advantages and disadvantages of implementing a BYOD program, one key contributor to success is the attitudes and perceptions of the educators regarding the value of the program. Educator buy-in is very important, but it is the level of application and perception of the program that drives the teacher to either put the BYOD program to good use or merely to tolerate the program's existence. Shifflet and Weilbacher (2015) found that although many educators are supportive of adding BYOD to their classrooms for technology access, many

teachers believe that this goal will not come to fruition. A direct relationship between the belief that the BYOD system will succeed and professional development enabling educators to understand how BYOD should be utilized is necessary to create a positive atmosphere in the classroom (Shifflet & Weilbacher, 2015). The trend toward requiring educators to incorporate technology into their lesson plans is not merely an American idea. Studies of schools such as the Priory School in England (Haigh, 2013) and the Ministry of National Education in Turkey (Deng et al, 2013) have researched and implemented technology or BYOD programs in their countries as well.

Purcell (2013) noted typically the initial idea is implemented into the curriculum through curriculum specialists and librarians who see firsthand the value of collaboration with educators in order to utilize technology in the classrooms. Training can be accomplished on the primary level by You Tube videos explaining to educators how to incorporate technology into their daily classroom activities, by including something as simple as a video clip inside a PowerPoint presentation or a student-led creation of a PowerPoint describing their assigned section of some chapter material (Purcell, 2013). This basic level of integration of technology helps initially prepare the educators for the opportunities for learning that will arise when the BYOD program is implemented. Such basic training is valuable as an evaluation tool for determining the various levels of computer familiarity and proficiency for the entire staff of educators, should be completed prior to implementation of a BYOD program or evaluation with TAM. This early evaluation establishes a baseline for measuring the program success rate (Purcell, 2013).

Kiranli and Yildirim (2013) found that many educators view their level of technology competencies as high, as well as their abilities to differentiate instruction delivery methods in their classroom. However, the actual determined levels are much lower than the self-reported

data and, in actuality, educators' ability to utilize technology in the classroom is fairly low across the board (Kiranli & Yildirim, 2013). That fact directly impacts the perceived success of the BYOD and more importantly affects the educator's perceptions of the BYOD initiative. The study by Stortz and Hoffman (2012), adds that the altered instructional format created new demands on the skill level the instructor must exhibit regarding technology acceptance and use in the classroom, to stay ahead of the students. Stortz and Hoffman also explored how the changed instructional practices of the educators augmented the lessons presented to the students, which allowed for fostering of learning and the preparation of students for life in a technology driven world (Stortz & Hoffman, 2012). While it has been shown repeatedly that school performance, especially in reading and math, increase greatly in schools that have at least 10 computers in a computer lab for student use at school as was shown by Roman Carrasco and Murillo Torrecilla (2012), it stands to reason that if even more computers are available in the school, the better the education the students will receive. However, the benefit drops greatly if the educator does not use or does not value the added educational opportunities that BYOD offers according to the data recorded by Storz and Hoffman (2012). Norris, Soloway, and Sullivan (2002) found that evaluation by educators is common across the country, as studies have shown that the potential educational benefits of technology inclusion in secondary and primary classrooms have not been utilized in the United States (Norris et al., 2002). Norris et al. (2002) has shown that if support tools are available for assisting educators to implement technology, the classrooms will be utilized more efficiently, and the proficiency of the educators will improve significantly. Norris and Soloway (2000) explained the value of the Internet to educators by stating simple facts from the data showing that the instructional methods of tools, time and tasks, once put into practice, can improve the educators' perceptions of technology, allow the educators to become more

confident of their own technological abilities, and foster much more technology-based activities in daily classroom instruction, as the educators realize the manner in which the "internet uniquely supports learning" (p. 2).

A review of the literature shows several examples of studies which show that teachers' perceptions of how they feel their students will respond to the use of additional technology in the classroom (Lee, Cerreto, & Lee, 2010), depends in part on the perceptions of their colleagues in the school (Levin & Wadmany, 2006), or online in message boards and social media (Hur & Brush, 2009). Li (2007) also added that whether the school staff has overall positive or negative views about inclusion of technology in the classroom plays a large role as well. Many perceptions about technology use in the classroom are examined as educators offer up their personal opinions on technology and their individual experiences with technology use outside of the classroom as in the study by Rakes, Fields, and Cox (2006). These personal habits were found by Palak and Walls (2009) to play a role in the educator's willingness to incorporate BYOD into the classroom setting, as might social media exposure to webpages of student. Chen and Bryer (2012) found that this informal learning, through the social media experience of the students, could be modified or adapted as a part of a formal type of learning experience if the educator is willing to embrace it.

Matzen and Edmunds (2007) and K. P. King (2011) both found that much growth and change in attitudes and perceptions on the part of the educators can be achieved through professional development, which can be accomplished online through virtual communities, social media, blogs, and message boards. Adding to the data of Matzen and Edmunds (2007) and K. P. King (2011), Buus (2012) found that scaffolded e-learning platforms can then be incorporated into classroom activities, which enables the educator to focus on the pedagogical

approach matching their personality and instructional style. This enhancement of instructional practices involving technologically based assignments and other methods of technological integration can be incorporated into yearly teacher in-service meetings to provide continuing professional development for educators (Buus, 2000). All of these components are important to the success of a BYOD program in a school that has not previously integrated technology into the classroom; however, it appears that examining, evaluating, and working with the educators' perceptions of BYOD is the lynchpin that determines if the BYOD program is a good fit for the specific school, will be used by the educators, and will ultimately be a success or a failure.

As stated previously, technology in the classroom does not simply consist of having the students type assignments instead of writing them by hand although this does happen as some educators attempt to meet the technology requirement in this manner. Armstrong (2014) determined that some of this resistance is because of the educator's age, as older teachers are more likely to be hesitant to embrace technology, and awareness of this age difference clarifies the many differences in technology use between older and younger teachers. Voogt, Fisser, Roblin, Tondeur, and Van Braak (2012) emphasized the need for teacher education programs and professional development seminars utilizing the conceptual framework of TPACK to ensure that teacher knowledge about technology and pedagogy are combined early so that the educator is equipped to utilize technology effectively in the classroom.

Professional development. The study by Voogt et al. (2012) as well as several other studies show that there are a variety of reasons why some teachers utilize technology more readily than others. Most of these reasons are based on factors like age (Voogt et al., 2012), technology experience (Barron, Kemker, Harmes, & Kayaydjian, 2003), lack of resources (Shamburg, 2004), lack of belief about the importance of technology (Ertmer, 2005), and the

relative value the educator places on technology in the entire educational process (Anderson & Maninger, 2007). Educators must also learn through professional development that they must adapt their teaching strategies to become more student centered (Brush et al., 2003), if they are to effectively integrate technology. Belland (2009 found professional training will, in turn, impact the educators' beliefs about the importance of technology in the classroom and will lead to more intentional inclusion in the educators' lesson planning. In addition, Belland (2009) also discovered a relationship between the lack of many professional development programs for educators to focus on technology and used the sociological concept of habitus to explore the connection between educators' past experiences with technology and minimal technology integration in the classroom.

Professional development in technology resources has been shown in various studies to also change the instructional practices of educators. Professional development is often aided by mobile learning platforms such as School Fuel, which groups apps and programs by common core standards (Williams, 2013), and the technology taxonomy developed by Intel Education (2013). Both resources serve as a library for educators to look up how, when, and why they should utilize specific programs in their lessons. According to DeVaney (2012) these databases assist educators in managing content to be accessed by the BYOD technology while also guiding the educators who may be more technologically hesitant.

Professional development in the area of technology for educators could be aided by the development of standards in this area of professional digital competence (PDC) to evaluate the effectiveness of educators according to Lund, Furberg, Bakken, and Engelien (2014). Sandberg and Pinnington (2009) understood this professional digital competence should be the heartbeat of professionalism, for educators as they become licensed in the teaching profession and should be

continued through professional development throughout the educators' careers as stated in the K-12 Blueprint (Clarity Innovations, 2014). This training would allow for educators to assist their students in creating a personal learning environment (PLE) for each student through BYOD. Milligan, Johnson, Sharples, Wilson, and Liber (2006) determined the PLE would consist of a wide range of apps and programs that the student could utilize to complete the technological based task, as well as the primary goal of education-based technological learning (Fieldler & Pata, 2009).

Many educators currently own smartphones and understand how to use them for their personal use, which can directly influence the creating of digital assignments for classroom use Burns-Sardone (2014) discussed the prevalence of technology devices that educators own and use on a daily basis. The key seems to be providing the opportunity for educators to become professionally trained in the realm of technology in the classroom to allow for full buy-in to occur (Motiwalla, 2007). Also, allowing professional development for educators to occur will, in turn, show them the opportunities that exist to increase student engagement in the lessons through their use of technology (Motiwalla, 2007).

Instructional Practices

The use of mobile technology has changed the way society functions and learns. According to the Global Mobile Data Traffic Forecast by CISCO (2013), in the year 2017, there will be more than 10 billion mobile technology devices in the world, which will outnumber the earth's population. It is up to educators to change instructional practices to utilize technology to its fullest potential.

Foulger et al. (2013) evaluated the effectiveness of teacher education programs in addressing technological issues with their teacher candidates and found that many of these

programs are currently either in the planning phase of addressing technology in the classroom or

classify their program as addressing technology in the classroom through several instances

throughout the program's entirety. Foulger et al. also found the need for more consistent and

intentional focus on the use of technology in education as well as the need for creative pedagogy

in technological issues. Training of this sort will require a shift in traditional educator-centered

lesson delivery to one that is student centered, to truly gain all of the benefits from the program

(Cochrane, Antonczak, Keegan, & Narayan, 2014). The shift in instructional practices necessary

for success is often hard for veteran educators to achieve (Clarity Innovations, 2014), but with

ongoing professional development, can easily become a reality.

Lepi (2013) discovered that another common issue in this area involves educators'

unwillingness to try new things due to the fear of failure. The truth of the matter is that things

will not always happen the way an educator has planned. Since this is the case just as often with

traditional educational activities, this fear is unfounded and should be forgotten (Lepi, 2013).

Brown and Petitto (2003) have advocated for constant access to mobile technologies in the

school setting, due to the benefits the students receive from technological access. However,

Soloway et al. (2001) determined the devices must be available to the student in the classroom to

truly make a difference.

In order to truly understand the difference a BYOD program can make in the classroom,

Puente (2012) stressed that educators must be exposed to instructional practice changes and be

made aware of the influences these changes have on the entire educational process, ranging from

something simple, such as taking pictures of geometric shapes with smartphone cameras (Puente,

2012), to the vastly complex task of developing a complete virtual field trip using augmented

reality as studied by Clarke (2013). Most classroom activities will fall somewhere between those

two extremes. Kanaya, Light, & Culp (2005) found that educators tend to utilize new instructional practices they learn in professional development sessions more often when they align with the content their school expects them to employ. Kanaya's work was rooted in the studies of Frank, Zhao, and Borman (2004) and Riel and Becker (2000), who found that educators pay much more attention to their professional development sessions when they are asked to play a larger role in training their colleagues (Frank et al., 2004; Riel & Becker, 2000).

Another important point to remember when asking educators to change their instructional practices is that there is a slight difference between what is classified as mobile learning as opposed to electronic learning, Mobile learning, according to Traxler (2007), is categorized as a type of distance learning, which often is completed by the student and then turned into the educator, with no specific assistance on the educator's part. Uden (2007) determined that this style of learning assignment is appropriate in a university setting, but is not as useful in high school or lower level settings, due to the maturity of the students. Data from Uden's study also show activity theory is the guiding force and is behind the design of context-aware applications for educational needs in the classroom. While some individual assignments can be completed by the students without educator assistance, Rafool, Sullivan, and Al-Bataineh (2012) determined that the majority of assignments should be completed in a manner in which the educator can guide the student through the activity, whether it be the creation of a Prezi presentation or using *I-Movie* to edit video. Later studies indicate that the educator must be comfortable in technologically assisting the students and, as such, this format allows for guided learning that delivers information to the students in diversified manners (Simmons, 2014). However, technology use should still allow the educator to be able to meet different learning needs and still follow best practices in education (Wainwright, 2014) without making the student complete the

work individually.

In an educator-guided, technologically rich classroom, a variety of instructional practices can be utilized. Studies clearly show that social networks such as Twitter can serve as a tool to foster learning for students, especially since many of them utilize this social media app anyway (Veletsianos, 2011). Twitter can also be useful for educators who can assist other educators by sharing techniques regarding proven instructional strategies (Greene, 2014). Mobile devices can also be used as clickers to provide interaction in large classrooms, allowing students to respond to a prompt on the smartboard by choosing the correct answer with the mobile device (Scornavacca, Huff, & Marshall, 2009). Lesky (2014) stated that as students are already engaged in these interactive lessons, all the educator has to do is adapt the technological innovations for the classroom.

Capo and Orellana (2011) explained that although much has changed since the introduction of Web 2.0 technologies into the educational field, the fact remains that many educators found this program daunting and not very user friendly, which was determined to be one cause of reluctance to use technology in the classroom. Capo and Orellana clearly showed that educators are reluctant to implement technology into the classroom that they feel is not useful or not what they personally feel instruction should be. Lack of training, lack of equipment, and lack of program goals are all directly correlated to low levels of classroom technology use by the educators. Another related problem was shown to have stemmed from limitations of applications that could be accessed by educators (Capo & Orellana, 2011). This issue led many educators to question the feasibility of adding technology to the classroom on mobile devices, but with the advent of increased smartphone capability and cloud-based applications for educational purposes (Mustafina, Kalpeyeva, & Mazhenov, 2014). A paradigm

shift in educators' opinions regarding technology has occurred and must now, at the very least, be met with access to the computer lab during the week (Becker, 1994) for the students who do not have devices of their own with them at school.

Norris and Soloway (2000) found that most of the trends allow for instructional practices of educators to change and adjust to the conditions that enhance technology use in the classroom. Often such preparation falls short because there is no plan in place, and educators are on their own to decide what changes in instructional practice are needed, and which are only for entertainment (Anonymous, 2012). Additionally, according to Grussendorf (2013), bans of social media in the classroom can become confusing for the educator because sites classified as social media do promote students' collaboration and communication and can become a valuable part of the learning process. S. Davis (2003) found these websites can be augmented by networked classrooms that provide the same services as the Twitter feed or Facebook wall, but in a format that allows for anonymity when submitting answers or points for class discussion (S. Davis, 2003). Other methods, such as flipped-classroom-style teaching, can be implemented using a Moodle course site, allowing for sharing of the lessons by students, both in and out of the classroom setting (Fulton, 2013). Ertmer (2005) found that alignment through educators with student-centered pedagogy and willingness to invest in student-centered activities and assignments through technology in the classroom. Additionally, Ertmer (2005) found a relationship between educator use of technology and support, training, and resources provided by school administration.

In the beginning of the BYOD program, there will be some educators who will be on the forefront of this technology-driven change. As long as the school provides, adapts, and encourages professional development opportunities (Ertmer, 2005); changes the content and

context of learning opportunities (Lawless & Pellegrino, 2007), encourages new techniques (Bull, Ferster, & Kjellstrom, 2012), and grants administrative support (Clarity Innovations, 2014), BYOD will create a classroom environment that addresses the uniqueness of all learners (Soloway & Norris, 1998), and will offer core skills the students need to succeed in college and in life.

Summary

A variety of factors inform the school district or school's decision to implement a BYOD program. Previous attempts at providing technology in the schools were subject to the high cost of purchasing educational technology devices for each student to achieve a one-to-one computer to student ratio, even though these programs have been proven to work fairly well (Stanhope & Com, 2014). Rather than being the provider of the devices, schools are turning to the BYOD model to utilize the educational technology devices that students already have, instead of trying to draw upon the ever-shrinking budget to purchase technology (Education Digest, 2013).

The teachers need training in both technology and its application in the classroom setting for the purpose of teaching and learning (Handal, MacNish, & Petocz, 2013). This specific training can be accomplished through TAM applications and through professional development to ensure that the correct methods for integration into the curriculum are accomplished (Prasertslip & Olfman, 2014). Determining what educational faculty want from IT is also important to the process (Norbury, 2014). Once implementation has begun, teacher perceptions and acceptance are the keys to the effectiveness of the BYOD program. Educators' views of smart phones and other personal computing devices in the classroom, are also important when evaluating the TAM of each educator (Thomas & O'Bannon, 2013). Teacher acceptance is perhaps the most important aspect (Armstrong, 2014) regarding perceptions of BYOD because

ultimately, it is the educators' decision to utilize the BYOD model in the classroom on a basis that enhances the education of the students on all fronts.

The following groupings and themes appear throughout the literature on BYOD and are all vital components of BYOD in the classroom setting: the need for instructional technology in the classroom (Soloway & Norris, 1998); the implementation of the BYOD program itself; the process and associated problems associated with BYOD; the TAM evaluation of the educator (F. D. Davis, 1989a); the instructional technology implementation and acceptance by the educator, as well as the perceptions of the educator. Technology simply used as a support or add-in for lecture-based teaching falls short of best practice (Zemelman, Daniels, & Hyde, 2005), and is not well-grounded in learning theory (Pierson, 2001). Educators' confidence in technology used in the classroom will increase when they witness how learning is facilitated through technology (Ottenbreiet-Leftwich, 2007), and they will over time value even more the influence the technology has on the learning process (Wozney, Venkatesh, & Abrami, 2006).

Changes in instructional methods can often be time consuming and difficult; however, educators must adapt, because rapid advances in technology and the instant adaptation of the younger generation have all created new trends in everyday living and as a result in learning and education as well (Al-Okaily, 2013). This is the true value of the BYOD process as it creates a thirst for knowledge in the student through the use of technology and allows the educator to experiment with various technology integration strategies (McKnight, Phillips, & Hardgrave, 2009) in order to tailor their instructional practices to meet the needs of the student population and provide the students with the best possible educational experience.

This chapter included a summary of what the body of literature reveals about BYOD programs in high school classrooms. Chapter Three includes the methodology used for

conducting this study. In addition, the chapter contains a discussion of the participants and

location for this study.

CHAPTER THREE: METHODS

Overview

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of BYOD program implementation as a lived experience. Chapter Three includes examination of the design and setting of the study. In addition, the chapter includes a description of the participants and the procedures to conduct the study were explained. Finally, the steps for data collection and analysis are explicated and issues of trustworthiness addressed. The chapter concludes with a summary of the chapter in general, and the study overall.

Design

A transcendental phenomenological research design was appropriate for the study because it promotes understanding of participant perceptions of the phenomenon of BYOD program implementation as a lived experience. A transcendental phenomenological design was preferable to a heuristic phenomenological design, because of the separation of the researcher from the information being recorded. Bracketing was used to allow the data to be recorded and retold while limiting researcher bias that can be found in the heuristic design (Moustakas, 1994).

Additionally, the transcendental phenomenological design allowed for a thorough description of the experiences of the research study participants (Moustakas, 1994). The most important function of phenomenology is to explore the perceptions of the individual experiencing the phenomenon itself to discover the pure essence of the event (van Manen, 1990). Moreover, the transcendental nature of the research design transcends, or places distance, between the researcher and the data that are collected, while simultaneously limiting and acknowledging the potential for researcher bias.

Research Questions

Central Research Question

What are North Carolina private high school educator perceptions of the implementation of a BYOD program into their classrooms as a lived experience?

Research Subquestions (SQs)

SQ1. What are North Carolina private school educator perceptions of the ways professional development impacts their preparation for implementation of BYOD in their classroom?

SQ2. What are North Carolina private school educator perceptions of the ways the implementation of a BYOD program impacts student learning?

Setting

This research study was focused on accredited private high schools located in North Carolina that have implemented BYOD programs. Private high schools were used as the setting during this study for a variety of reasons. The first reason was that the North Carolina Independent Schools Association (NCISA, 2015) determined that member schools in North Carolina must provide a 21st century education for their students. Part of this education requirement includes either a 1:1 computer-to-student ratio, or the implementation of BYOD education technology style programs that provide students with their own devices for use at school. In addition, the schools must charge tuition for student attendance. As a result, funds derived from tuition payments are often available to assist in providing educational technology devices for those students who cannot afford them.

No more than 10 private high schools were utilized as the setting for the research study. Data were gathered from educators who are teachers at the individual schools to maximize diversity and richness in detail.

The rationale for the selection of the setting for this study was centered upon the ability of most NCISA member schools in North Carolina to be able to afford the necessary WIFI, band-width, and computer network upgrades to handle the additional devices that will need Internet access and technical support. Western North Carolina is more of an urban region than the eastern portion of the state, with an income level which is demonstrably higher in the western portion of the state compared to other parts of North Carolina according to the North Carolina socioeconomic map provided by the government of the state. In fact, four of the five zip codes with the highest median income are located in the central to western part of the state according to the latest census data. The western part of North Carolina is also where the majority of larger cities are located which, in turn, leads to more employment opportunities and a higher salary (Raleigh.nc.gov). The private schools of Western North Carolina and the parents of the students who attend them typically have available funds to be able to fully implement the BYOD program before many of the public school districts in North Carolina would be able to. Additionally, the targeted private schools in North Carolina all have decided to implement BYOD programs into member schools of the NCISA to provide all students the benefit of a technology-filled educational experience, in a high school setting, prior to graduation.

Participants

This research study utilized a purposeful sample of 10 educators who met the study participant selection criteria. Polkinghorne (1989) recommended a sample size between at least five, but no more than 25 educators and administrators for transcendental phenomenology.

Polkinghorne also recommended starting with a minimum of five participants and continuing to add participants until the point of thematic data saturation is reached. All educators participating in this study met the following qualifications. They must work within the geographical region of Western North Carolina. Participants must also be educators who are teachers in private high schools whose schools have implemented a BYOD program within their specific school setting, and which they have used in the past three years, or are presently using, in the classroom. While the levels of technology acceptance varied between educators, the differing perceptions of the participants enhanced an overall understanding of the BYOD implementation process as a lived experience.

Procedures

Following a successful proposal defense, Internal Review Board (IRB) approval from Liberty University was sought and achieved (see Appendix A). After receiving IRB approval, the participants for this study were solicited and secured (see Appendices B and C). Data were then collected using questionnaires, individual interviews, and journals. Following the suggestion of Moustakas (1994), data were analyzed and interpreted to describe and understand the essence of the participants' lived experience with the study phenomenon, BYOD implementation. During data analysis, all transcribed data was coded and organized into themes.

After receiving Liberty University IRB approval, I sent a participant initial interest questionnaire to high school principals of Western North Carolina private high schools with implemented BYOD programs already in place (see Appendix D). Upon approval, both site-specific (see Appendix B) and through Liberty University's IRB (Appendix A), I then distributed both questionnaires and accompanying surveys to all the educators who qualified for the research study based on their employment at a private high school with an established BYOD program in

place, in order to obtain their willingness and approval to become participants in this

phenomenological study. At least one teacher from each school of the 10 schools represented in

the total sample, who completed the initial interest questionnaire and an informed consent form

(Appendix E), was selected to participate to receive a representative view of the BYOD process,

the educator acceptance level, and the level of each educator's classroom application in each

separate school setting. Accepted respondents ranged in age from 24 to 65 years, which allowed

me to fully assess the phenomenon of technology acceptance and usage.

The Researcher's Role

My role in the study was to serve as the human instrument of data collection and analysis.

As the sole instrument of data collection and analysis, I was able to describe the participants'

stories of their lived experiences with the study phenomenon, through the voices of the educators

themselves. In addition, I had no prior relationship with any of the study participants. However,

the use of bracketing for the duration of the study facilitated transparency for situations in which

I might unexpectedly encounter a participant with whom I am familiar; bracketing

simultaneously enabled me to limit researcher bias.

Data Collection

Three types of data were collected for the study. The first type of data was a

questionnaire sent to the targeted participants to solicit their participation in the study, and to

determine their use of BYOD technology in the classroom sometime during the last 3 years. The

questionnaire was designed using the TAM and the theoretical framework of TPACK. The

information that frames the TPACK model was based on the items contained in the Survey of

Preservice Teachers' Knowledge of Teaching and Technology (Schmidt et al., 2009), and was

developed into an initial questionnaire to measure the overall knowledge of the educators

involved, as well as their acceptance levels regarding the use of technology (Moroney & Haigh, 2011).

Questionnaire

The purpose of using the TAM was two-fold. First, as an initial interest questionnaire, the TAM was used to determine the interest level of the educators solicited to participate in this research study. Second, the TAM was utilized to report the acceptance level of the participants regarding a BYOD program. Although the TAM is considered by researchers as a valid and reliable assessment for research purposes to determine the level of technology acceptance that an educator exhibits, for the purposes of the study, the data revealed by the questionnaire were reported only and not statistically or qualitatively analyzed (F. D. Davis, 1989a).

Individual Interviews

Individual interviews with each study participant were conducted to understand their lived experiences with the phenomenon of BYOD implementation, and thus answer the research questions of the study. The individual interviews utilized a semistructured format (see Appendix F).

The following five interview questions were used to elicit responses to answer the central research question (CQ) and the research subquestions (SQ1 and SQ2). Follow-up probing questions were asked as needed to complete each profile as well as to answer the research questions.

1. Tell me about your background and experience in teaching, including your use of technology as an instructional tool.

2. What are your perceptions, thoughts, beliefs, and memories of the lived experience of implementing a BYOD program into your classroom instruction? (CQ)

3. What are your perceptions of the ways professional development has impacted your acceptance and implementation of a BYOD program into your classroom instruction? In your answer to this question, please include your thoughts and perceptions of professional development prior to implementing a BYOD program, during implementation, and as continuing education following implementation. (SQ1)

4. What are your perceptions of the ways a BYOD program impacts student learning? (SQ2)

5. Is there anything else that might have been overlooked during this interview that you believe is important to the study and would like to share with me regarding the implementation of a BYOD program into your classroom instruction?

The first individual interview question was simply an ice-breaker question designed to place the participant at ease and to elicit background and demographic information requisite to constructing a complete phenomenological portrait of the participant for the study and to place their use of technology in perspective. Individual Interview Question 1 prompted the participants to reflect on the lived experience of implementing a BYOD program into their instruction. Follow-up and probing questions were asked as necessary to fully answer the research question.

Individual Interview Questions 2 through 4 aligned directly with the research questions of the study. Interview Question 2 served to answer the central research question (CQ), Interview Question 3 addressed SQ1, and Interview Question 4 addressed SQ2. Finally, individual Interview Question 5 was designed to wrap up the interview by providing the participants with an opportunity to add anything they believed was left out of the interview that could be important to the study.

Moreover, individual Interview Question 2 addressed the impact of professional development for educators who have integrated in the past, or are presently integrating, a BYOD program into their classrooms. TPACK research shows that professional development impacts technology acceptance by educators (Moroney & Haigh, 2011). Furthermore, professional development is needed for educators to develop new skills necessary to foster a 21st century-style classroom (Archambault & Crippen, 2006).

All interview questions were grounded firmly in the literature, as they were intended to examine the participants' perceptions, attitudes, feelings, and acceptance of a BYOD program into their classrooms, based on the TAM proposed by F. D. Davis in 1989, as well as the TPACK framework that guided the present study. All individual interview questions addressed the lived experience of implementing a BYOD program into classroom instruction by the participants to enable them to integrate technology into their classrooms in a manner that combines the four necessary items of content knowledge, technical knowledge, pedagogical content, and technical acceptance in a manner that provides for educational opportunities including technology for each student on a daily basis (TPACK.org, 2012.

Reflective Journals

The third type of data collected for the study was reflective journals (see Appendix G). Each participant was asked to record in a journal their personal reflections on the study phenomenon, BYOD implementation. Google Docs was used to administer the reflective journals. Google Docs is a web-based application that is free to the user for creating documents and spreadsheets. These documents can then be shared with other Google docs users and edited online for all parties to be able to see all changes in real time according to Forment et al. (2012).

Although the study participants were requested to respond to only three formal journal prompts emailed to them during the study, the participants were encouraged to make as many additional journal entries as they desired, and as often and frequently as they wished, for the duration of the study. Scholars note that journals, when used in conjunction with other means of data collection, such as individual interviews, are an excellent approach to collecting rich, detailed, and candid individualized accounts of study participants' lived experiences with a phenomenon (Smith, Flowers, & Larkin, 2009).

The three research questions of the study provided the framework for the reflective journals. However, participant responses to the questions used in the questionnaire, plus the individual interview questions, also provided a point of departure and guided formulation of the three formal journal prompts to promote participant thinking for the journaling activity. The following is an example of the type of formal journal prompt that was used to elicit journal entries: How have you grown as an educator over the course of the year, since introducing BYOD technology into your classroom?

Data Analysis

Data were analyzed using the modified Stevick-Colaizzi-Keen method as advocated by Moustakas (1994). I first utilized epoché to set aside all prior personal experiences with BYOD technology use in order to allow the voice of the study participants to be heard as they intended. This step allowed me to document my prior personally lived experiences that I had teaching at a school that implemented a BYOD program in 2016. My experiences with BYOD were positive ones, but epoché allowed me to efficiently bracket out my biases and opinions through documenting my personal feelings while accurately conveying the data I collected from the study participants (Merriam, 2009).

Secondly, I collected the significant statements about BYOD implementation from the participants and used horizontalization of the data to ensure every statement had equal worth as advocated by Creswell (2013). Discovering the significant statements in the data involves finding those areas that are common, shared, instances of the phenomenon, which revealed the differences in how each study participant viewed similar experiences and circumstances. Using data horizontalization, I treated every study participant's opinions and feelings about BYOD implementation as equal. This step ensured that no bias was exhibited regarding experiences that I agree with as opposed to those I do not agree with. All statements were treated as valid, as they are the experiences that individual shared during data collection and accurately reflects how they personally view the phenomenon.

I then grouped the statements about BYOD into general themes and utilized the grouped statements to construct a rich "textual description and structural description" (Creswell, 2007, p. 194) of the collected data. Similar information and experiences that were discovered in the data analysis were grouped together into several different perspectives of the BYOD implementation process. These groups were then be synthesized into a description of the study, which presented the variations in opinions and feelings of the participants regarding their lived experiences with the phenomenon of BYOD program implementation.

Finally, a textual-structural description was written, which captured the essence and meaning of the BYOD experience (Creswell, 2013; Moustakas, 1994). This textual-structural description is a complete and thorough description of the BYOD phenomenon through the experiences of the participants of this study. It was written in a manner that explains both how and what the study participants experienced in their own voices, regarding their perceptions of BYOD program implementation.

Trustworthiness

This research utilized the following steps to ensure trustworthiness of the data collected and analyzed for the study. These steps included ensuring credibility, dependability and confirmability, and transferability.

Credibility

Lincoln and Guba (1985) defined credibility in a qualitative study as a form of external validation. External validation is a measure of how applicable the study results are in a real-world environment. For the results of the study to be externally valid, the researcher must be able to generalize the results in other situations and times outside the context of the study. To ensure credibility in this study, I utilized triangulation of data sources, methods, and investigation, as advocated by Lincoln and Guba (1985).

Dependability and Confirmability

Several steps were undertaken to ensure that the findings of the study were both dependable and confirmable. Lincoln and Guba (1985) defined dependability in a qualitative study as showing that findings can be repeated and are consistent; therefore, to ensure the findings of the present study are dependable, an external audit was used. In addition, Lincoln and Guba noted that confirmability in a qualitative study should include triangulation, which is achieved through the use of multiple data sources. For the present study, triangulation was used to ensure the findings were confirmable.

Transferability

Finally, to ensure the findings of the study are transferable, several methods were utilized. Lincoln and Guba (1985) stated that transferability in a qualitative study is shown by

the findings being applicable in other contexts. Therefore, the present study utilized a thick, rich, description of the data to ensure the study findings are transferable.

Ethical Considerations

I first addressed any potential ethical concerns by obtaining Liberty University IRB approval prior to collecting any data. In addition, conflicts of interest were removed by avoiding any research being conducted at the school where I am currently employed or with any educator with whom I am acquainted. Pseudonyms were utilized for all participants and all study sites to protect anonymity. Response to the questionnaires, interviews, and journals, were kept confidential. Finally, data were kept secure using password protection on all electronic data, and by maintaining a locked file cabinet for all paper data.

Summary

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of BYOD program implementation as a lived experience. Chapter One was an introduction to the study that included the formal problem, purpose, and research questions. Chapter Two provided the theoretical framework for the study and a review of relevant literature to illustrate a gap in the literature regarding the absence of research of BYOD program implementation as a lived experience. Finally, Chapter Three of the study included a description of the targeted participants and an explanation of the methods and procedures that were used to conduct the phenomenological investigation into the perceptions of the lived experiences for educators who have introduced BYOD into their classrooms. The recording and retelling of these perceptions served to document the real-world applications of BYOD and led to more intentional lesson planning by the educators and also to technology centered forms of focused student learning in the classroom.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this transcendental phenomenological study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. This study was focused on one central research question, which was further defined by two research subquestions. Audio recordings and transcriptions of personal interviews, questionnaires, and journal entries of 10 teachers from qualified North Carolina private high schools provided thick, rich data. Teachers with 3 years of teaching experience and who worked at a school with an implemented BYOD program were invited to participate in this study.

Participants in this study were asked to describe their perceptions of the implementation of a BYOD program into their classrooms, how professional development impacts their classroom BYOD preparation, and how the BYOD program implementation impacts student learning. Data analysis resulted in exploration of the teachers' individual perceptions of the phenomenon to discover the pure essence of the event (van Manen, 1990), allowing for the themes and common occurrences to be discovered across the three data collection methods. Three themes resulted from conducting a thorough qualitative, transcendental phenomenological research study with 10 individual teachers from various North Carolina private high schools and analyzing the data retrieved from their journal entries, questionnaires, and individual interviews. These themes may provide insight for educators who are planning to implement BYOD programs into their personal classrooms Teachers considering BYOD implementation may make informed decisions as they seek professional development and classroom resources to aid in the implementation process.

Participants

A selection of 10 teachers participated in this research study. Interest questionnaires were sent to over 30 teachers at 15 NCAIS schools in the western region of North Carolina, however, only 10 of the respondents agreed to become participants in this study. All 10 of these participants completed all three of the tasks involved in this study, including completing questionnaires, participating in individual interviews, and responding to reflective journal prompts. Pseudonyms were utilized to ensure participant confidentiality. The 10 participants represented a range of teaching experience and years that they personally have used BYOD technology in their classrooms. The experience levels of the participants ranged from a high of 30 years to a low of 9 years and all participants had at least 2 years of experience with BYOD. All participants were interviewed in person and in their personal classroom settings as a courtesy for their valued participation. Table 1 provides participant background in this qualitative phenomenological study.

There were four male teachers and six female teachers in this research study. Three teachers represented the English content area, two teachers from each of the following content areas: Math, Science, and Social Studies, and the final teacher participating in this study represented the agricultural studies program. The experience level overall of the participants ranged from a high of thirty years to a low of nine years, with a mean level of 16.2 years of overall teaching experience. The mean level of BYOD experience was 5.3 years, with a high of nine years and a low of two years.

Data saturation occurs when a thorough account of the phenomenon is reached (Moustakis, 1994), no new information is discovered, and further coding yields no new data. Coding is the process of classifying and interpreting the data and is the "heart of qualitative

analysis" (Creswell, 2013). In relation to this study data saturation provides thick and rich data that describes the essence of the BYOD phenomenon in an exhaustive manner (Giorgi, 2009). Out of the potential thirty participants only ten completed the entire study tasks; however, data saturation is not about the sheer number of participants, but instead the depth of the resulting data. The sample size of this study meets the guidelines and parameters for data saturation (Creswell, 2013).

Table 1

Participants' General Background Information

Participant	Subject area	Years teaching	Years of BYOD
Alicia	English	10	6
Elijah	Social studies	20	3
Jennifer	English	18	9
Kevin	Social studies	19	7
Lynn	Math	20	4
Loreli	Science	15	2
Matt	Math	9	2
Padma	Science	12	2
Reva	Agriculture	9	9
Steve	English	30	9

A detailed description of each participant is provided in the following sections. All participants were provided with a pseudonym in order to identify the participant, but still protect their actual identities.

Alicia

At the time of the study, Alicia was a 31-year old English teacher with 10 years of teaching experience and 6 years of BYOD experience. She had been teaching in a public-school setting for 9 of her 10 years and just recently accepted a position at a private school and "loves

it." She expressed that she would not trade her public school experience for anything, but is also "glad to be in a school that views technology integration as "more than giving the teacher and students electronic textbooks." As the junior member of the English department of her school, she has the chair as her faculty mentor, which adds to her smooth entry into the BYOD program of the school. She also touted the importance of "research skills using their personal devices to understand that they can gain knowledge on any subject at any time."

Alicia felt that she was comfortable using technology in the classroom, but was even more so since her school had a mentorship program in place to ensure that she knows all the policies and procedures of the school. She also feels that administration values putting technology into the classroom by allowing the BYOD program and offering the teachers multiple conference/workshop opportunities during each teacher workday. She does not like the fact that many of her students "have Spark Notes favorited," but also understands that BYOD does more good than harm, in her opinion.

In this study the English teachers seemed to be on the positive side of BYOD in the classroom and Alicia was no exception. She came across as confident, well-spoken, and kind in her interview. Alicia also has used technology for most of her life and is comfortable with allowing her students to use it in the classroom. Her favorite saying is "Technology is the present, but literature is timeless."

Elijah

At the time of the study, Elijah was a 44-year-old social studies teacher with 20 years of overall teaching experience, and 3 years of BYOD usage in the classroom. He was born in a suburb of Washington, D.C. and described himself as "a man passionate about American government, God and his family," and "educating young minds" he quickly added, in almost the

same breath. He started teaching right out of graduate school. He described his best teaching experiences as "traditional and filled with rigor, although he admitted his students often did not share his enthusiasm as a whole." He was a valuable member of the social studies department, but often clashed with administration over his reluctance to deliver lessons in any manner other than lecture-based delivery.

Elijah did not have much use for BYOD technology and often stated during our time together that it was "ruining the youth of today, creating laziness, and a lack of attention to detail." Elijah also mentioned that the "only best method to teach young minds is repetition and memorization." He saw BYOD as a distraction and not as a viable educational tool and expressed these feelings in no uncertain terms. As one of the educators in the lower end of the age spectrum, it was surprising to see his animosity toward BYOD. He did own a smart phone, but still did not acknowledge the potential of technology being introduced into the classroom. He had read recent articles about potential benefits of BYOD in the classroom, but remained steadfast in his beliefs. In his interviews, he was almost hostile in his attitude toward BYOD, but was pleasant and refined otherwise. He referred to himself as an "old soul" and that viewpoint and value system was evident throughout the contact I had with him for this study.

Jennifer

At the time of the study, Jennifer was a 38-year-old English teacher with 18 years of teaching experience and 9 years of BYOD experience. Jennifer was the daughter of two English professors, so in her mind, there never was a time she ever considered any other profession as a career. She began teaching English upon graduation from a small, Bible college and has been employed in Christian schools for her entire career. Jennifer uses BYOD technology in her class through the Google Suite app and by allowing her students to use their phones as sort of an E-

reader in class for their assignments. She is concerned that her school "does not do enough to prepare the students by allowing the teachers money for technology and professional development." The school where she is employed is a small, fundamental Christian school that does not have a large budget or charge much for tuition. Jennifer feels blessed that "she had a ton of parental support and willingness to purchase technology she needs in her classroom so she can teach to her full potential."

Jennifer feels strongly about engaging her students in the classroom and feels that "technology works." She also feels that although many people feel technology can be a distraction, in her opinion, "The content does not change in a book or a tablet, so let's meet the students where they are comfortable, which happens to be with technology." Jennifer lives and breathes the subject of English. She has been around the teaching profession her entire life, so she is very comfortable and knowledgeable in the field. She feels that literature will never disappear, so she is not worried in the least about technology in the classroom. She wished her school would do more to help educators prepare and became more knowledgeable about BYOD, but she also understands that she has a good situation where she is.

Kevin

At the time of the study, Kevin was a 50-year old social studies teacher with 19 years of experience and 7 years of BYOD experience in a very rural school system. Kevin was born, raised, and made his home in a very small, Western North Carolina town. Despite the rural location, the school where he is employed received a grant to improve technology in rural schools, so the location is a technological wonderland for the teachers and students. He started his career as an assistant football coach and worked his way up into the physical education department of which he was the chair. His experience makes him value discipline, commitment,

and hard work and also, as he put it, "doing whatever it takes to achieve the desired result." He felt the same way about the educational careers of his students and loved the idea of technology in the classroom to achieve that goal.

Kevin often stayed late after school and football practice to find new applications and programs for his students to use on their devices to enjoy the material being taught. According to Kevin, "The attention span of these students is so small these days anything I can show them on their phones that is relevant to the lesson is a huge win for me." Though older and with less teaching experience due to his working his way through the system, he is loved by his students and colleagues alike. Kevin was willing to go the extra mile to make sure his students stayed engaged with his history course, and although technology was hard for him to figure out, he was more than willing to embrace BYOD full force. During our time together, Kevin was friendly and engaging. He did mention that he sometimes worried that technology would work him out of a job in the future, but added "hopefully I'll be retired by then.".

Loreli

At the time of the study, Loreli was a 48-year old science teacher with 15 years of teaching experience and 2 years of BYOD experience. Born and raised in the Midwest, Loreli moved to North Carolina in the last 2 years and that was when she was introduced to the concept of BYOD. She came into the teaching profession from the field of real estate, where she stated "the only technological part of real estate in the Midwest was the network database, so my computer knowledge was way behind." Loreli majored in chemistry in college and had the opportunity to teach chemistry in the Midwest, but was not able to get a chemistry-centered job in North Carolina. At the time of the study, she was teaching science within the content area of biology, which she stated was challenging her.

Loreli admitted that she was not completely confident in teaching biology and, as a result, was not very proficient in her BYOD implementation. "It's a struggle to stay ahead of the students where teaching a content area outside what I am comfortable with. The last thing I have time to do is try to find technology to go along with it." She also stated that she is happy to be employed so she was stressed about failing to use more BYOD in the classroom, but she "can only do so much."

Lorelei was one of the least proficient and experienced teachers in the study as far as technology is concerned. She also appeared to feel that her lack of experience in this area made her less desirable as a teacher, which gave her a lot of stress. Lorelei agreed that technology in the classroom was worthwhile, but expressed that perhaps if she was teaching in her content area it would be more attractive for her to try.

Lynn

At the time of the study, Lynn was a 44-year-old math teacher with 20 years of experience and 4 years of BYOD experience. She proudly stated that she "was not and would never be married." She has taught all levels of math and was proud of the fact that all her years of teaching have been at the same school. She especially loved the higher-level math classes she taught because "the smaller number of students in these classes ensure that everyone gets the information in a manner they can understand and retain." Lynn often went to yard sales and purchased things like McDonald's happy meal toys and placed them around her classroom for her student's amusement.

Lynn was receptive to the school where she worked implementing BYOD, but expressed that "in math there is only so much technology you can actively use." She also remarked that she still used an overhead and opaque projector in her classroom and had no intention of not

utilizing them even though administration had installed a new Smartboard in her room. Lynn also stated that ultimately she was a rule-follower and did implement BYOD into her classroom to satisfy administration, but was not "sacrificing math content and knowledge for bells and whistles." Lynn has considerable seniority at the school where she is employed and, as a result, does not have to be as concerned about her job security as other teachers have to be. She does appease administration by doing the bare minimum requirements regarding BYOD in the classroom to obey the mandates, but her final grades and content retention by her students are historically high, both before and after implementation of BYOD, so there is no clear evidence of a need to change in her opinion.

Matt

At the time of the study, Matt was a 42-year old math teacher with 9 years of teaching experience and 2 years of BYOD experience. Matt came to the teaching field after becoming an accountant. He stated that it sometimes was hard for him to understand how some of his students "just don't get math concepts"; however, he sincerely desires to be a good teacher and cares about his students. Matt went to business school at a university in Florida and admitted that he was not always the most social person. Despite his solitary tendencies, he is liked by his students and they felt that he was a good teacher. Like Lynn, the first math teacher interviewed for this study, Matt did not really see how BYOD technology in the classroom would improve his students' understanding of math concepts: "In my opinion, it only gives them an excuse to either be lazy or cheat when I allow them to have their cell phones."

At the time of the study Matt was having to develop all new curriculum plans for the upcoming school year due to the advanced math teacher quitting unexpectedly. I asked him if he was planning to implement more BYOD opportunities as he planned for his new classes and his

response was "not really, I feel my students will benefit more from sound and repetitive math concepts than they would being able to look the answer up on their phone or get short cuts from YouTube." As a math teacher, Matt knows he is in a position of power in the hiring process so it is easier for him to have a little more leeway with BYOD non-compliance than other teachers typically would. He also is quick to point out that math is one subject that is not always the easiest to integrate BYOD into in the first place. Matt was confident in his interview answers and emphatically repeated his opinions on technology and how it was not that important in his subject area.

Padma

At the time of the study, Padma was a 45-year-old science teacher with 12 years of teaching experience and 2 years of BYOD experience. Born in India, Padma moved to the United States about five years ago. She taught previously in schools in India, prior to her coming to the United States to teach. She has been at her current school for 4 years and is the chair of the science department. Padma speaks heavily accented English and stated that she "often uses technology in the classroom to ensure key concepts I am trying to get across are not misunderstood due to my accent." Padma had a sense of humor about her accent ant truly loved using technology in her higher-level science classes: "The students are all comfortable with technology, so I would be a fool not to use that to my advantage in the classroom."

Padma mentioned that there needs to be a lot more emphasis on BYOD in education because, as she put it, "Every student has a phone that is 100 times more powerful than the computer that sent men to the moon in 1969; with the science field getting more technological rich every year, education would be wise to follow along before it become irrelevant." Padma was funny, engaging, and knowledgeable about education as we talked in our interviews. She

made sure to mention often that all science teachers needed to utilize as much BYOD technology as possible in the classroom to give students a level playing field with those in India and other countries. She also recognized that since students are never without their phones, it would be a losing battle not to let them use their phones in the classroom.

Reva

At the time of the study, Reva was a 29-year-old agricultural studies teacher with 9 years of teaching experience and 9 years of BYOD experience. Reva was a female teacher in a predominately male field. Agriculture education is a gateway for many high school students who are interested in farming, crop science, or turf management. In the school where she currently works, Future Farmers of America (FFA) is the school's largest club and is funded by many local farm families. She is a young teacher who has taught agriculture since her graduation from college and it was obviously a passion in her life: "When students understand that farming and agriculture are so much more than riding a tractor all day they really get excited about the opportunities they have in the field." She also is the local FFA representative for the school in addition to her teaching duties.

Reva loves to talk about the technology available at her school and how the students learn quickly that "farming technology changes all the time." Her classroom is entirely online as far as homework, classwork, and tests are concerned: "The only time they are not involved in BYOD is when they are doing hands-on activities in the greenhouse." In all my interviews, Reva's classroom is, by far, the most technologically integrated. As the youngest teacher I interviewed, Reva was also, by far, the most technologically savvy. When asked, she mentioned that she has always had technology in her life and could not imagine not being able to utilize it in

the classroom, even if she was not required to do so by administration. During interviews, Reva was polite, but also somewhat distracted as she multitasked on her phone during breaks.

Steve

At the time of the study, Steve was a 55-year-old English teacher with 30 years of teaching experience and 9 years of BYOD experience. Steve lived most of his life in the northeast, primarily in Maine. Steve has been married to his wife, also an educator, for 25 years. Most of Steve's teaching experience was in cutting-edge schools that were focused on the newest trends in education which created "a sort of culture shock," regarding classes in North Carolina private schools that were more conservative in nature. Steve was the department chair for the English department for the past 3 years that he has been at his current school. Steve was excited to hear that BYOD would be implemented at this school when he signed his contracts 3 years ago: "I thought I had found a school in the deep south that placed the same amount of priority that I was used to in using technology to provide a top-shelf education." When asked about practical training, Steve stated, "The school is good about allowing the staff to have the opportunity to access professional development training and will reimburse the majority of the expenses the teacher pays, so you can tell they value their teachers."

Steve had only one other passion in his life that was revealed in our conversations, and that was his love of gardening. He often related to his students in gardening terms and even referred to some of his students as either "weeds or flowers," depending on the effort they put forth in the classroom or whether they utilized all of the technological advantages he offered them in his classroom. As the study participant who has been teaching the longest of all of them, Steve was surprisingly well-versed in all aspects of new technology, despite his nearing retirement age. Steve was passionate about delivering the best possible educational experience

to his students which, for him, included all aspects of BYOD. Steve came across as confident and very self-assured in his interview. He was completely invested in the BYOD implementation and use of it in the classroom, and quickly brushed aside any negative potential situations I brought up.

Results

The following are the results of this transcendental phenomenological research study. Individual interviews, questionnaires, and reflective journal entries were analyzed to discover significant words and phrases that were grouped into themes and subthemes. The five open-ended interview questions were centered on the central research question: What are North Carolina private high school educator perceptions of the implementation of a BYOD program into their classrooms as a lived experience? These interview questions were also focused on the two research subquestions: What are North Carolina private school educator perceptions of the ways professional development impacts their preparation for implementation of BYOD in their classroom? and What are North Carolina private school educator perceptions of the ways the implementation of a BYOD program impacts student learning?

After reaching data saturation through analysis, there were three core themes and 10 subthemes that emerged from this research study and are represented in Table 2. The three core themes were value to the instructor, student engagement, and continued learning and professional development. The research question and subquestions are answered through the themes and subthemes that derived from the data analysis.

Table 2

Themes

Major theme	Subtheme	Code
Value to the instructor	Comfort level with technology	Confident (7)
	Use in classroom	Apprehensive (4)
	Professional training	Technology value (3)
	Personal perception	Cutting edge (2)
		Digital awareness)2)
Student engagement	Technology	Student centered (8)
	Student-centered classroom	Hands on (7)
		Valued (7)
		Listened to (5)
		Active (5)
		21st century (3)
		In their world (2)
Continued learning and professional development	Applicable	Tech. training (9)
	Level appropriate	Tech savvy (7)
	Course specific	Apps for education (7)
		Below my level (4)
		Not needed (1)

Major Theme 1: Value to the Instructor

The first identified theme was the perceived value that BYOD provided to the instructor affecting the level of use in the classroom. If the teacher was comfortable using BYOD technically and valued what BYOD could do for the educational experience in the classroom, it was more likely the instructor would perceive value in BYOD implementation.

Seven out of 10 participants in this study believed that the more value the teacher placed on BYOD technology, the more likely they were to have a positive experience with the BYOD

implementation. Six out of 10 referred to having to feel comfortable with the technology prior to having their students use it in the classroom. Seven out of 10 felt that technology is too powerful a force in the lives of the students to prohibit it in the classroom for educational purposes.

Many quotes from the participants emerged from the journal entries, questionnaires, and individual interviews, and these quotes provided a look into the lived experiences of the study participants involved with BYOD as a studied phenomenon. Each participant contributed to the data through phrases and comments regarding the value of technology and its role in the BYOD implementation process. Steve and Padma shared their excitement of their current school's implementing a BYOD program that matched the ones in their previous schools. According to Steve, "Cutting edge technology is what sets the truly good private schools apart." Padma added to that thought by commenting, "Computing and coding are the wave of the future, we hinder our students if we do not allow them to embrace it." Reva, Alicia, Steve, and Kevin all felt that if they felt confident in what they were doing in the classroom, the overall experience was great for the students in the classroom. Kevin put it best, when he remarked,

> As long as I know what I am doing and understand what the technology will do, I feel great about using BYOD in the classroom; it is when I don't take the time to fully understand the program or app when it gets sideways. In my opinion, that is the only reason a lot of teachers fear it.

Alicia also mentioned that BYOD can get messy for teachers who do not understand what they are doing with technology before putting it in front of the students: "The kids can smell when you aren't comfortable with something. That's why professional development is key for those who are in a BYOD classroom and not confident in their ability with technology use."

Personal comfort level with technology. The first subtheme to emerge from the major

theme of value to the instructor was directly related to the teacher's personal comfort level with technology. All the teachers who were confident in their knowledge and use of technology placed a higher value on BYOD in the classroom. Loreli was not confident at all in her use of technology and that showed in her unwillingness to utilize it as much as she could in class: "Confidence is a huge part of whether or not I am going to do an activity in class . . . if I don't know or am not sure what will happen, why chance it?" In contrast, Steve uses technology in every aspect of his classroom and "can't imagine not using every tool available to reach the students." He added,

> I'm not the best at technology sometimes; I really have to work to understand what just comes naturally for my students, but I am willing to do whatever it takes to educate my students even if I may look foolish from time to time.

The rest of the study participants fell somewhere in between the two extremes of Loreli and Steve. The data clearly show that the teachers who feel more confident in their abilities with technology and those who are willing to learn new things in order to reach the students use BYOD technology much more often in their classrooms, which introduces the next subtheme: use of BYOD in class.

Use in the classroom. The second subtheme to emerge from the major theme of value to the instructor was the actual use of BYOD in the classroom, as the first subtheme showed there is a connection between the value the instructor attributes to BYOD and the use of it in class. This subtheme is also related to the subject content material in class and often, mathematics courses do not have as much use for BOYD in the classroom due to the methods used to complete classwork and homework. Matt addressed this in his personal interview on several occasions when he stated,

Math is done in the trenches, about the only BYOD I can use to truly help my students is working out the problem in front of them on the Smart Board, so they can all see how to do the problem correctly.

Matt explained how it was not worthwhile to use anything electronic for math other than a TI-80 calculator, and this opinion was echoed by Lynn who also explained that she only used enough BYOD to please administration because, in her words, "math just does not need it [BYOD]." Teachers in other disciplines were otherwise positive about BYOD implementation in their classrooms. The only other dissenting view was from Loreli, who was too stressed from having to change curriculum and teach in a science area other than her major, which was chemistry. Loreli felt she was "way too stressed from my teaching demands in the classroom to put any extra time into using BYOD in my classroom."

Professional development. The third subtheme to emerge from the major theme of value to the instructor was how professional development affects the implementation of BYOD into the classroom. All study participants agreed that professional development was vital to any teacher who wants to stay current on best practices and learn techniques for use in the classroom. All the study participants, except for Elijah, agreed that professional development directly in BYOD training would help them to become proficient in the technology area. Steve mentioned how professional development can keep teachers "on the cutting edge of technology in the classroom." Additionally, Alicia pointed out "that the key to helping out teachers who were uncomfortable with BYOD would be through professional development and helping teachers understand the apps for new BYOD teachers." This positive position on the need for continued professional development was about the only area of this research study that all the participants agreed upon unanimously.

Teacher perception. The final subtheme to emerge from the major theme of value to the instructor was the area of teacher perception. As mentioned earlier, the subject area in which the participant teaches can have a direct affect on the personal value that they place on the BYOD implementation and use of BYOD in their classrooms. Matt and Lynn both pointed out that there is not as much need for BYOD in the math classroom. Loreli explained how teachers adapting new curriculum or teaching subjects they are not familiar with, typically are "not in a good position to spend much time using technology when you are just trying to stay afloat and ahead of the students." Elijah pointed out, "If you perceive that BYOD does not work for you in your class then you should not have to use it." The subtheme of teacher perception was accorded positive points of view by the majority of participants in this research study, but was expressed best by Reva: "If you buy into the system and do what you are asked then the result will be you becoming a more complete educator when you adopt technology into your classroom." During transcription analysis, all of these subthemes had equal meaning and were repeated throughout the data to be grouped together with other thoughts on the value teachers placed on technology directly affecting the use of BYOD in their individual classroom.

Major Theme 2: Student Engagement

The second identified theme was the concept that BYOD use in the classroom created an environment where the students are engaged in the learning process through the use of technology. Technology allows the students to focus more on the information that the instructor is presenting in a delivery method that is comfortable and familiar to them. In all subjects, except for math, at least one participant felt that technology was a necessary part of the overall student learning experience. Six out of 10 participants shared this belief; the four who did not share this belief were not comfortable with technology, were stressed creating new curriculum,

or did not see how technology through BYOD would improve upon their math ability and skills. The phrase "student-centered classroom instruction" was mentioned at least once by eight of the 10 study participants, which suggests that BYOD classrooms created an atmosphere for learning where the students were comfortable and engaged.

The following phrases, comments, and quotes provided a view into the experiences of the study participants involved with BYOD implementation as a lived experience. These quotes contributed to the theme of student engagement. Padma, Reva, Kevin, Jennifer, and Steve all felt that BYOD allowed their students to feel valued and confident in the classroom. Jennifer stated, "BYOD allows the students to have fun in the classroom while learning . . . additionally, it makes the students so proud when they can show me something new with the apps we use in class." Also mentioned several times by several participants was the fact that since the students have their phones on them 24/7, it only makes sense to engage them where they spend their time in order to keep their attention in class. Padma remarked, "When the students are engaged and having fun, it benefits everyone; BYOD is the bomb, according to my students." Reva laughed out loud when she said,

> Students always hated when I lectured, but now that they know that the sooner they pay
> attention and get the material I am lecturing about the sooner they can get their devices
> back. You would think my lectures have become Nobel winning speeches.

Alicia mentioned that her "students worked together better than ever since they could show off their knowledge of technology for each other, my student collaboration has significantly improved."

Technology. The first subtheme to emerge from the major theme of student engagement was how much technology is involved in the day-to-day lives of the students. When I asked the

study participants how many of their high school students had at least one digital device other than the one they considered their primary BYOD device, the common answer was that it easier to list the students that did not have an additional device. Secondary devices ranged from MacBooks to iPads to Apple watches or their android-based equivalents and, on average, students had at least one additional device on their person each day. According to Alicia, "They surround themselves with technology all day, so it only makes sense that they would use more than one device. However, the trick is understanding when they are on task or simply playing around." Her point was echoed by Reva and Kevin, who also remarked that the main issue they had with BYOD is keeping the students on track and free from distractions by the availability of technology. Reva also added that "I am always aware of the potential for distraction, but the value of instant information and student engagement was worth much more than the small amount of time I spent monitoring the student." Overall, the study participants acknowledged that the potential for misuse of technology was always there but, if the teachers put effort into creating engaging lessons then it became a non-issue. "All of the students really enjoy using technology in the classroom, which drives up student engagement so I think there is no turning back now" Kevin said (personal communication, July 16, 2019).

Student centered classroom. The second and final subtheme to emerge from the major theme of student engagement was the desire of many of the study participants to create a student-centered classroom. According to Jennifer,

> BYOD makes it easy to allow the students to play a large part in their learning experience
> . . . when the students feel empowered by being allowed to use something they are
> comfortable with, like their phones, then learning becomes less of a chore and more like
> fun.

Out of the 10 participants in this research study, only three were not particularly interested in making their classrooms more student-centered and less lecture-based or having the activities run by the teacher. Padma said,

> For students to have buy-in to the program we have to make them feel a part of the program. We can't just expect them to listen, take notes and sit still while we tell them all they need to know. Those days are long gone.

Elijah was the study participant most adamant about not employing a student-centered model in his classroom:

> To me, BYOD and the idea of a student run classroom are ludicrous. I am the expert in my subject matter and I would be doing my students a disservice if I let them be a part of the process.

Though his displeasure was voiced very strongly, Elijah admitted that he knew it was only a matter of time before he would have to change his lesson delivery methods if he was going to keep his job, since the field of education was changing rapidly.

Matt and Lynn agreed with the student-centered classroom being unnecessary in math, but also acknowledged that the attention span of their students had obviously lessened, so they both saw the need to make their teaching methods more student-centered and more student-friendly. "Students fear math to begin with for the most part. We need to do something to engage them so if the answer is making the students feel more comfortable than that is what I will do." Steve remarked, "In order to get student buy-in to the BYOD program and student-centered learning, first you must get teacher buy-in."

Quotes and comments that showed common references to the theme of student engagement included, "fun," "hands-on," "awesome." "more involved," and "21st century"

during transcription analysis; each of these phrases held equal meaning. Jennifer's statement about BYOD "creating a 21st century education for each student and allowing them to be actively engaged in the learning process" demonstrates a statement that included terms reported enough throughout the study and data analysis to be grouped together with other quotes that suggested student engagement.

Major Theme 3: Continued Learning and Professional Development

All 10 of the study participants mentioned that continued learning and professional development were important in the career of any educator. Nine of the 10 participants felt that professional development and training in the areas of BYOD and technology in general was vitally important to stay current with the educational trends involving technology. The one abstaining opinion was from a study participant who had no interest in professional development of any kind. The theme of professional development and BYOD implementation success was mentioned over and over by all the participants, even the one who claimed to have no interest in professional development at all. Loreli mentioned that professional development in the areas of BYOD would make her much more confident and willing to use BYOD more in her classroom; even Elijah mentioned that he "felt knowledge about BYOD through professional development would help out overall, even though I personally won't use it in my classroom if I can avoid it." As far as BYOD professional development goes, as Lynn remarked, "I'll take as much as I can get."

Applicable. The first subtheme to emerge from the major theme of continued learning and professional development was how applicable the BYOD technology was to the educator's individual classroom setting. All 10 participants felt that professional development was important and could be useful, but all 10 also agreed that if one could not use what was being

taught in the professional development course in their individual classrooms, then it was a complete waste of time. According to Reva, "If we can use it and it applies to our subject or our students interests than I am all for it." Although all the study participants varied in their feelings on how valuable general professional development sessions were, all of them agreed with Reva's point and noted it would be better to not have any professional development at all if it was not applicable to what they were doing in class. This point led directly into the second and third subthemes.

Level appropriate. The second subtheme to emerge from the major theme of continued education and professional development was the importance of level appropriate training. All 10 study participants agreed that in addition to being applicable, professional development in the area of technology also needed to be level-appropriate. Jennifer stated, "Technology training is great, but if it is geared towards apps for elementary levels, what can I do with that in high school?" Conversations with the study participants revealed that administrators at the schools involved in this study all used a one-size-fits-all approach toward scheduling professional development on campus during in-service days. This leads to considerable frustration with the educators, especially when learning something new about technology as part of using BYOD in their classrooms. Kevin complained,

> We all have different needs . . . you can't put us all in a room and expect that an app that teaches basic Spanish color names will work for all of us. We need individual P.D. [professional development] that works for our grade level and subject material.

His sentiments were echoed by the rest of the study participants who felt that it should be the administration's job to secure professional development that works for the teachers and does not

just full-time in workdays. This subtheme led into the final subtheme of course-specific professional development.

Course specific. The final subtheme to emerge from the major theme of continued learning and professional development was that any training needed to be course content-specific. As was noted in the prior subtheme, a one-size-fits-all approach does not really help anyone and can drive up resentment toward any future planned professional development. "We all need professional development; we just want it to be worthwhile and not a waste of time," Elijah said. He freely admitted that he was not a fan of professional development or technology in the classroom, but acknowledged that he had to have hours to renew his license, so it was a "necessary evil." The other study participants also noted that they were required to complete a certain amount of professional development to keep their license, but were more enthusiastic than Elijah was about the usefulness. "I teach English," Steve said, "give me professional development that is English-related." This opinion was prevalent in all of the individual interviews I conducted and emphasized the fact that teachers are willing to implement and use a BYOD program in their classrooms, but they want professional development that works for them personally. A high school English teacher needs professional development that is different than that for a high school math teacher, and that is different than the needs of a middle school English teacher. Even those teachers who do not particularly see the need for professional development would be more enthusiastic if the training was applicable, level-appropriate, and course content-specific for their individual classroom.

These expressions were repeated over and over and showed commonality in relation to the theme of professional development that added value to BYOD implementation. Other common phrases included "technology training," "tech-savvy," and "apps for education." These

terms represent descriptors that arose again and again during data analysis. This suggested that professional development was a major component of the essence of the lived experience of BYOD implementation.

Research Question Responses

This research study was guided by a central research question and two research subquestions addressing participants' perceptions of BYOD implementation through their lived experiences. The central research question and both research sub questions were grounded in F. D. Davis's (1989a) TAM theory and Moroney and Haigh's (2011) TPACK framework. The following section contains participant responses used to answer the study's research questions.

Central Research Question

The central research question was used to understand the perceptions of North Carolina private high school educators regarding the implementation of a BYOD program into their classrooms through their lived experience. This central research question was answered by Major Theme 1: value to the instructor, and Major Theme 2: student engagement. The central research question was also answered by the subthemes from Major Theme 1: comfort level with technology, use in the classroom, and personal perception.

Although there was some variation in the participants' lived experiences with BYOD implementation, the vast majority expressed that their experiences were positive. One participant felt mixed between positive and negative experiences regarding BYOD implementation, and two expressed primarily negative lived experiences. Padma stated, "Technology is a tool for learning and an equalizer in the classroom." The positive feelings were expressed best by those study participants who were technologically proficient for the most part, but surprisingly, even many of the older teachers that did not grow up using technology found

that BYOD added a lot to the overall learning experience in their classrooms. Steve stated, "If

the teacher presents BYOD in a positive manner, then the student will have a positive experience

and if they have a positive experience, then they learn more." Every study participant mentioned

that they had fewer disruptions and fewer instances of students losing focus during their classes

and they attributed this to the addition of BYOD to their classrooms.

Research Subquestion 1

Research Subquestion 1 was used to identify the study participants' perceptions regarding

the ways professional development impacts their preparation for implementation of BYOD in

their classrooms. Research Subquestion 1 was answered by Major Theme 3: continued

education and professional development as well as the following subthemes from Major Theme

3: applicable, level-appropriate, and course-specific training for BYOD implementation.

Three of the participants mentioned that they were taking online courses toward their

master's degrees that were focused directly on technology in the classroom. Kevin mentioned

that his education courses for his master's degree was focused specifically on BYOD in the

classroom. Nine out of 10 study participants had received some form of professional

development focused on technology in the past 2 years. Three participants had to pay for their

own courses, while six had their courses paid for or were reimbursed by their respective schools.

Reva and Padma explained that they often took free online courses called Massive Open Online

Courses (MOOCs) that allowed them to receive training without sacrificing the school budget to

do it. Each study participant, except for Elijah, viewed professional development for BYOD as

very important and as something that made their jobs easier. Elijah remarked, "To me, the best

learning is what I read and research on my own, PD does nothing for me." When I asked him

follow-up questions on that topic he expressed that the only important things were repetition and

rigor, "neither of which have anything to do with professional development of BYOD."
Ironically, Elijah was very active in his social media use and was very well-versed in technology usage; he just did not see how it fit into education as the other nine study participants did.

Research Subquestion 2

Research Subquestion 2 was used to examine the study participants' perceptions on the ways the implementation of a BYOD program impacts student learning. Seven out of 10 study participants felt that their students were more engaged and focused in class after the school implemented the BYOD program. Research Subquestion 2 was answered by Major Theme 2: student engagement and by the following subthemes from Major Theme 2: technology and student-centered classroom.

Alicia mentioned that she heard that her class was "fun," much more often than she did prior to starting to use BYOD. Both English teachers, Steve and Jennifer, remarked that their students retained long-term memory more effectively on the literature they were tested on at the end-of-grade testing period after they utilized BYOD in the classroom to augment their classroom instruction. Several other study participants mentioned that their students retained information for a longer time than before; however, they were divided between whether or not it was BYOD that created this memory retention or simply the fact that the students seemed to be more engaged in their learning. Matt mentioned that because he taught math, his scores really did not change that much, but he also said that he does not use BYOD in his classroom as much as his administrators have asked him to. The general consensus of the study participants was that the students enjoyed using their devices for education purposes and if the only thing BYOD did was engage the students, then it was worth it to them.

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. Participants included 10 teachers from private North Carolina high schools with 3 years of overall teaching and 1 year of BYOD experience, I used reflective journal entries, questionnaires, and individual interviews as data sources for this research study.

Summary

Chapter Four contained the details discovered from the findings and data analysis of the study and description of the phenomenon of BYOD implementation through the voice of the teachers recounting their lived experiences. The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. With the participation of 10 teachers from private North Carolina high schools with at least 3 years of overall teaching and 1 year of BYOD experience, I used reflective journal entries, questionnaires, and individual interviews as data sources for this research study.

Data from the research were organized into three major themes: value of technology to the instructor, student engagement, and continued learning and professional development. In addition, there were nine subthemes: personal comfort level of the teacher with technology, use in the classroom, professional development training, perception of BYOD, technology, student centered classrooms, applicability, level appropriateness, and course-specific needs. These themes and subthemes may provide insight for any teacher or administrator going through implementation or considering implementation of a BYOD program into their classroom. After analyzing the data found in this research study, anyone contemplating BYOD adoption and implementation into their classroom, may be able to make informed decisions about BYOD

implementation in the future. Textual descriptions of the data revealed the things that the

teachers viewed as useful or not useful about BYOD implementation through their lived

experience. Study participants also shared personal experiences and opinions regarding BYOD,

professional development, and the issue of student engagement. Both positive and negative lived

experiences were received and documented to give an accurate portrayal of BYOD

implementation through their personal experience.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this transcendental phenomenological research study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. After identifying 30 potential participants, a group of 10 educators agreed to be interviewed, fill out a questionnaire, and complete reflective journal entries. All personal interviews were recorded and transcribed. All data were then analyzed and recorded. Three major themes and nine subthemes related to teachers' perceptions of BYOD implementation were identified during data collection and analysis. The results of this research study revealed that professional development and the educators' personal levels of comfort with technology played a large role in the teachers' opinions and perceptions regarding the usefulness of BYOD in their personal classrooms. Study participants described in detail their perceptions, feelings, observations, and opinions on both BYOD and technology in general as related to the field of education through their lived experiences. Chapter Five includes a summary of the findings from this research study, a discussion of the implications the research found, acknowledgement of the delimitations and limitations, as well as recommendations for future research related to this phenomenon.

Summary of Findings

The study included data from reflective journal entries, questionnaires, and journal entries. Participants included 10 educators who had been a teacher for at least 3 years, were employed at an NCAIS private school in North Carolina, and had at least 1 year of experience working in a school with a BYOD program in place. The major themes of this research study were value of technology to the instructor, student engagement, and professional development.

The central research question guiding this study prompted participants to explain their perceptions of the implementation of a BYOD program into their personal classroom through their lived experience. Three major themes were identified through the data collected in the exploration of the central research question: value of technology to the instructor, student engagement, and professional development. Throughout the data collection, study participants described their personal experiences with BYOD and the use of technology in their personal classrooms. Educators identified technology as a great addition to the learning environment of their classroom, adding BYOD to the classroom was seen by most study participants as a positive addition, but a few of the study participants viewed BYOD as unnecessary or a hinderance to learning depending on the content area in which they taught. Overall, most of the participants felt comfortable with and enjoyed using BYOD in their classrooms.

The first subquestion of this research study addressed how professional development impacted the study participants' preparation for BYOD implementation in their classroom. Positive experiences with professional development abounded throughout the study participants' remarks, with even those who did not really like BYOD admitting that professional development was necessary to grow as an educator. Free open online courses (MOOCs) and subject-specific technology training were viewed as very important and useful to the majority of the study participants.

The second subquestion of this research study addressed how the study participants perceived the ways the implementation of a BYOD program into their personal classrooms impacted student learning. Improved engagement and increased focus in class were experiences mentioned by the majority of the study participants as substantial positive impacts on the student

experience in each of their classrooms. Study participants also mentioned the enjoyment of the students being seen through the BYOD implementation process.

Discussion

The purpose of this transcendental phenomenological study was to understand North Carolina private high school educator perceptions of the implementation of a BYOD program as a lived experience. This study revealed that study participants varied in their perceptions of the usefulness of BYOD technology in the classroom and also in their perceptions of the ways in which professional development and student engagement were affected by the implementation of a BYOD program into their personal classroom. The results of this study are supported by F. D. Davis's (1989a) TAM and Moroney and Haigh's (2011) TPACK framework and further support the body of literature concerning educator perceptions regarding the implementation of a BYOD program into their personal classrooms.

Empirical Literature

The information presented in Chapter Two was supported by the participants' perceptions and experiences with BYOD implementation in this study. Participants commented on their experiences and their perceptions regarding the entire BYOD implementation process and explained how the areas of professional development, student engagement, and the value of technology to the individual educator played a key role in their feelings and opinions about the usefulness of BYOD as a whole. Study participants' responses regarding the implementation of a BYOD program into their personal classroom agreed with the research concepts and information presented in Chapter Two. This section includes explanation of how the results found in this research study diverge or support previous research about teacher perceptions of a BYOD implementation into their personal classrooms as a lived experience.

The results of this research study support previous research suggesting that there are correlations between the success of BYOD implementation and the feelings and opinions of the educator regarding technology familiarity (Brinkerhoff, 2006). If the teachers value technology and seek to learn new ways to implement and utilize BYOD technology methods in their classrooms, it is more likely they will see BYOD implementation as useful and as a vital part of the educational experience. The participants of this research study all expressed the importance of engaging the students and doing whatever was necessary to help each student reach his or her full academic potential.

The participants of this research study also expressed their shortcomings personally with technology and how their hesitance to use technology in the classroom could be traced to their personal value placed in technology or on their training that they have either received or not received in BYOD. Specifically, Loreli remarked that having to learn a "whole new science subject" directly hindered the value that she placed on implementing BYOD into her classroom. She also mentioned that her lack of experience with technology in general had a direct result on her willingness to try to stay ahead of her students in the material she was not familiar with in the new subject content matters she was expected to teach, when combined with the administrations expectations of her using technology in her classroom. "Something had to be left undone" Loreli commented, "and for me the less importance was placed on BYOD implementation". This affirms previous research suggesting that teachers who are comfortable with technology often utilize and value BYOD more than those who are uncomfortable (Cuban, 2001). Data analysis revealed that the current study participants frequently mentioned the value and comfort levels they had with technology.

Similar to the studies reviewed in Chapter Two on the impact of professional development on educator perceptions of BYOD implementation, participants in this research study recalled experiences they had in which professional development or continuing education helped them to positively implement and use BYOD technology in their classrooms. The differences the study participants had in this present study mirror the results Afshari (2009) documented that professional development had a direct impact on the vast differences educators had when implementing a BYOD program into their classroom.

The area of student engagement indicated agreement with the research presented in Chapter Two, where it was shown that a positive perception on the part of the educator implementing BYOD played a key role in the level of student engagement with technology in the classroom (F. D. Davis, 1989a). For example, when asked what the hardest part was about implementing BYOD into his classroom for the first time, Steve stated,

> Change is hard for teachers to accept. However, if the students see that you are trying to teach them in an area and medium that they are familiar with and enjoy, then I am doing my job and engaging the students in a manner in which they will get the most educational benefit.

This statement supports Inan et al.'s (2010) study, which measured educator buy-in with the success of BYOD use in the classroom setting.

Theoretical Literature

The theoretical framework used in this present study was Moroney and Haigh's (2011) TPACK theory. BYOD use, once implemented, depends quite a bit on the perceptions and opinions regarding technology that the individual educator has. Research shows that technology knowledge and acceptance play a huge role in the willingness of the educator to employ BYOD

into their classroom (F. D. Davis, 1989a). The participants in this present study talked about how their lived experience of BYOD implementation, value, and student engagement colored their perceptions and opinions.

The concept of educator comfort and buy-in was addressed in the literature by Sutton (2013), who found a different correlation between teacher buy in and positive reactions to teachers regarding BYOD implementation. This present research study showed both a positive and negative correlation, depending on the individual educator's perception of his or her preparedness to begin utilizing BYOD in the classroom. Reva explained that technology had always been both a part of her life and part of her educational journey, so she would feel "weird" if she was not giving her students the chance to use technology in the classroom. On the other hand, Matt, who is a math teacher, felt that BYOD opportunities are limited in his classroom due to his opinion that math is a harder subject to learn in a manner other than by using pencil and paper.

Overall, study participants' responses regarding the areas affecting implementation of BYOD technology into their personal classrooms hinged more on the areas of value to the individual instructor and the type and quality of professional development than on any other areas discovered during the data analysis. This study supports prior research that places importantance on teacher acceptance and training playing a large role in BYOD implementation success.

Implications

Current and future teachers, administrators, and all other school stakeholders in the community can use the information from this research study to understand and improve the way a BYOD technology program is implemented. Additionally, this research study aids in

understanding the driving factors behind teacher perceptions of the process and what can be done to improve BYOD implementation from the lived experience of the participants in this current research study. Findings of this study show the perceptions of high school educators in North Carolina private high schools regarding BYOD implementation in their classrooms. The findings of this study are similar to other studies of BYOD implementation. This data and information add value to the current body of work that informs about teacher perceptions of BYOD implementation, this supporting effort to improve BYOD implementation methods in the field of education.

Theoretical Implications

Successful BYOD implementation into the classroom primarily depends on the value that the individual educator places on technology and that educator's personal comfort level with using technology in the classroom. Kiranli and Yildirim (2013) found that many teachers overestimated their proficiency with technology, but understand that there is a connection between their comfort level and their actual use of BYOD in the classroom (Stortz & Hoffman, 2012). Participants' statements in this current research study support those findings. According to Alicia, "I often find myself avoiding technology apps that I don't understand." This was a fairly common sentiment across the study participants, but the levels of work each participant was willing to put in to become familiar with the app or website varied greatly.

Palak & Walls (2002) found that the value placed on the technology assignment in class directly played a role in the willingness of the instructors to utilize it in their classrooms. Lynn stated that even though she did not value the use of BYOD in her math class, she did see the value in staying current with trends and also that the majority of teachers should use technology in their classes to provide a "quality, modern educational experience." Administrators and

school stakeholders need to increase teacher buy-in and enthusiasm for the implementation of a BYOD program to ensure their school provides a quality education for their students.

Additionally, educators who value technology use in the classroom often have levels of student learning increase in their classroom (Norris & Soloway, 2000). This was definitely true for Kevin, who found that the more he studied and learned about current educational applications of technology, the more his students were engaged and enjoyed learning about social studies when he used technology in class. "We have to teach them with what they know and love," Kevin said. This feeling was echoed by Jennifer, who also clearly saw the value of increased technology use in her English class: "I can explain something to them 50 times, but if they find something out on their own before another student does on their device it sticks with them." Stortz & Hoffman (2012) found similar information in his study when he showed how changed instructional practices to add technology daily to the classroom augment student learning. Implementing ways to increase understanding of the role BYOD technology plays in student engagement is an area in which administrators must add in educational opportunities for teachers to research this and understand it on their own.

Teacher perceptions of BYOD can be turned positive by offering opportunities for teachers to engage in professional development training (K. P. King, 2011). This does not have to be cost-prohibitive or place a burden on the school, as it could be as simple as requiring teachers to watch videos on technology integration into the classrooms on YouTube (Percell, 2013). Reva remarked that she just felt better when professional development training was offered to her: "Many times, the teachers express desire to learn things that will assist them to become better teachers, but administration does not always see that value." Shifflet and Weilbacher (2015) found that professional development that allows educators to understand

BYOD let to a belief that BYOD implementation is valuable and positive. Steve echoed that finding with his comment, "Teaches are scared of the unknown." Making BYOD understandable and offering training to assist teachers in ways to put BYOD into practice in their classrooms should be considered by administration and school stakeholders in order to increase educator perceptions to become positive regarding BYOD implementation. This would increase the value perceived by the teachers as well as increase student engagement and improve professional development opportunities in technology.

Empirical Implications

Although there is a large body of literature that reflects on BYOD implementation and strategies to utilize in the classroom, qualitative studies on the educator perceptions of BYOD implementation are not readily available. Prior studies have addressed teacher buy-in, but not the direct lived experiences of the educators with BYOD in their personal classroom. This research study fills a gap in the literature, as the participants represent a unique population in an ever-widening alternative to public schools. Further, having qualitative data documents, and interviews provided by this unique population of private high school educators fills a gap in the literature.

Interviewing private high school educators with at least 3 years of teaching experience with at least 1 year of BYOD use in their classrooms gave a unique perspective that could assist future educators through the BYOD implementation process. The collection of data from the 10 participants in this study, along with previous research, showed that increased professional development and education on the value that BYOD brings to the individual educators classroom all work to increase student engagement and the overall educational experience for all students. (K. P. King, 2011; Norris & Soloway, 2000; Stortz & Hoffman, 2012). Padma emphatically

stated that professional development was vital to educating teachers on the value BYOD can add to their classroom. Padma continued to say that all teachers needed professional development for continuing education credits, so it would be fairly easy to explain to them how valuable and important it would be for them to consider BYOD related professional development for their next sessions. "Understanding that decisions should be explained instead of being mandated would go a long way toward relations between teachers and administration in the area of BYOD implementation," Steve said. Administration and their lack of understanding were the most common complaint from the study participants regarding the way each of their individual schools handled BYOD implementation overall.

Educational stakeholders and administrators should consider enhanced methods of communication with teachers and staff once deciding to implement a BYOD program into their school. This would help with teacher buy-in and lessen the frustration and resentment that was common for several of the participants in this research study. Several participants mentioned that implementation of BYOD into their classroom could have gone a lot smoother than it did if they had been informed, trained, and given time to adjust before going "all-in" with BYOD during the school year. Teachers' ideas, opinions, perceptions, and suggestions should be solicited by school stakeholders and administrators as often as possible to enhance student and teacher engagement in the process. Those ideas that are feasible should be employed into the BYOD implementation process to allow the lived experience of the educators to be acknowledged and utilized.

Practical Implications

This research study provided practical implications for all stakeholders associated with the process of BYOD implementation in schools. Positive teacher perceptions and familiarity

with technology are strong predictors of a positive BYOD implementation experience. The

perception of usefulness to the educator is also paramount to positive perceptions of BYOD

implementation (F. D. Davis, 1989a). Teachers realize the need for technology use in the

classroom to provide a 21st century educational experience for their students and also

acknowledge that their knowledge of teaching and technology go a long way toward their

success (Archambault & Crippon, 2009). Reva commented that she was extremely comfortable

using technology in her classroom, but also acknowledged that professional development helped

her to learn new techniques and teaching strategies with technology that she had not previously

thought of using. This was also expressed by Alicia who pointed out that even younger teachers

who already know a lot about technology, could stand to utilize professional development

opportunities in the technology sector, because as she put it "technology changes daily."

Educational stakeholders and administrators should consider and implement ways to

allow teachers to get the technology training that they need to feel comfortable using BYOD in

their classroom daily. Administrators should also try to express to the teachers that BYOD is not

something that will simply be the latest fad or something that will disappear within the next few

years, but instead should show teachers that BYOD has great value and potential for the

educational community. Leading by example in this area will allow the teachers to see the value

that administration places on BYOD implementation and acknowledge that it should have value

to them as well.

<center>**Delimitations and Limitations**</center>

Delimitations to this research study included restricting the study to private high schools

in Western North Carolina and to teachers with at least 3 years of overall teaching experience

and at least 1 year of BYOD teaching experience in order to focus on educators in a school

setting that already has an implemented BYOD program in place. A transcendental phenomenological approach was chosen for this research study because I wanted to separate my own experiences teaching in a school with a BYOD program from the past experiences of the research study participants. Additionally, the aim of this research study was to describe the phenomenon of the teachers lived experiences through the BYOD implementation process (Creswell, 2013; Moustakas, 1994). The 10 participants in this research study were purposefully selected in that they were educators with 3 years of overall teaching experience with 1 year of BYOD teaching experience who also worked in a North Carolina private high school with a BYOD program in place.

Limitations of this research study included the type of school where the educator was employed and the geographical area in which they worked. Private schools in the western part of North Carolina had higher levels of BYOD programs in place when compared with both public and private schools in the eastern part of the state. This geographical boundary limited the scope of the study as more programs were concentrated in one part of the state. All data collected for this research study came from the individual perceptions of each research study participant, which also further limited the research study.

Recommendations for Future Research

Teacher perceptions of BYOD implementation and BYOD use in the classroom are both current issues in the field of education that deserve to be studied further. The lived experience of teachers and their perceptions of BYOD are not just a phenomenon only unique to teachers in North Carolina private high schools. Therefore, the scope of interest in conducting research on this growing trend should expand beyond private high school teachers and beyond the geographical boundaries of the state of North Carolina. BYOD is gaining popularity around the

globe in the educational field and can be studied and examined from many varied perspectives. Although, the results of this study were similar to many of the findings discussed in the literature review, the delimitations and limitations of this study indicate that there are several opportunities to conduct more research.

A phenomenological study that involves a look at public high schools with implemented BYOD programs could add further information to studies of teacher perceptions of BYOD implementation. Future researchers should consider the differences faced by both private and public high schools with an implemented BYOD program. Further, quantitative research should be conducted to quantify successful BYOD implementation processes, educator training, and professional development. Quantitative and qualitative studies examining teacher perceptions of BYOD implementation could add to the body of research concerning this phenomenon.

Conducting case studies in both public and private high school settings with an implemented BYOD program in place is recommended. Many participants in this current research study had never taught in a public school setting, which brings unique experiences to their lived experiences in the private school setting. A cross-case analysis of teacher perceptions from both public and private high school settings could add to the body of research for this topic.

A study of administrator perspectives would provide an interesting look at the phenomenon of BYOD implementation. This study could provide insight into the frustration teachers often felt with administration throughout the BYOD implementation process according to the study participants I interviewed. More research should be conducted to examine this issue from the point of view of school administrators. Lastly, quantitative or qualitative studies involving teachers in other states could provide different perceptions, opinions, and strategies

concerning BYOD implementation, which could add to the body of research on this phenomenon.

Summary

Although the research study participants discussed various perceptions on professional development, student engagement, and their personal value that they placed on technology and BYOD in their classrooms, what was clear is teachers' acknowledgement that technology should be a part of the classroom experience and also that they should be trained in the best practices of BYOD implementation. Both items were seen by the study participants of this research study as being vital to providing the best educational experience for their students. The fact that teachers acknowledge professional development is both needed and desired should show administrators and school stakeholders what is necessary to implement a BYOD program into their school.

In this research study, participants described what they perceived during the BYOD implementation process and what needed to be done to implement BYOD into their personal classroom setting. Content knowledge, pedagogy, and comfort with technology all play a role in implementation and use of BYOD in the classroom (Moroney & Haigh, 2011). Additionally, professional development is key to providing a positive BYOD classroom experience for the student (Shifflet & Weilbacher, 2015). Both tenets would make a positive impact and ease stress during implementation and use of a BYOD program in the teacher's classroom setting.

Finally, school-provided training and professional development are vital to improving both student engagement and teacher use of BYOD in the classroom. Once the program is implemented, participants mentioned that they often had to find or pay for professional development on their own, which produced negative perceptions of the BYOD program overall. Administrators need to make professional development opportunities readily available before,

during, and after BYOD implementation into their school setting in order create a positive

atmosphere and environment for the teachers. This will transform classrooms into the

technology-rich learning environments that our students deserve and desire.

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APPENDIX A: IRB APPROVAL

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

June 17, 2019

Alexander Randolph Grey

IRB Approval 3772.061719: North Carolina Private School Educators' Perceptions of BYOD

Implementation as a Lived Experience: A Transcendental Phenomenological Study

Dear Alexander Randolph Grey,

 We are pleased to inform you that your study has been approved by the Liberty University IRB.

This approval is extended to you for one year from the date provided above with your protocol

number. If data collection proceeds past one year or if you make changes in the methodology as

it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms

for these cases were attached to your approval email.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to
specific, minimal risk studies and minor changes to approved studies for the following reason(s):

   7. Research on individual or group characteristics or behavior (including, but not limited to, research on
   perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social
   behavior) or research employing survey, interview, oral history, focus group, program evaluation, human
   factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt

from the HHS regulations for the protection of human subjects. [45 CFR 46.101(b)(2)](#) and (b)(3). This listing refers only to research that is not exempt.)

Thank you for your cooperation with the IRB, and we wish you well with your research project.

APPENDIX B: PERMISSION REQUEST LETTER TO CONTACT PRIVATE SCHOOL

EDUCATORS

March 20, 2019

[Recipient]
[Title]
[Company]
[Address 1]
[Address 2]
[Address 3]

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The title of my research project is North Carolina Private School Educators' Perceptions of BYOD Implementation as a Lived Experience: A Transcendental Phenomenological Study and the purpose of my research is to discern the feelings and opinions of western North Carolina private high school educators on the topic of BYOD implementation.

I am writing to request your permission to contact members of your faculty to invite them to participate in my research study.

Participants will be asked to email me at argrey@liberty.edu to get the initial interest questionnaire and then to schedule an interview Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please respond by email to argrey@liberty.edu.

Sincerely,

Alexander Randolph Grey
Doctoral candidate

APPENDIX C: PARTICIPANT RECRUITMENT LETTER

[Insert Date]

[Recipient]
[Title]
[Company]
[Address 1]
[Address 2]
[Address 3]

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to discover the perceptions of educators in North Carolina private high schools regarding the implementation of a BYOD program into their classrooms, and I am writing to invite you to participate in my study.

If you are 18 years of age or older, have been teaching for at least three years, and are willing to participate, you will be asked to complete an initial interest questionnaire, an individual interview, and complete three reflective journal entries. It should take approximately one and one half to two hours for you to complete the procedures listed. Your name or other identifying information will be requested as part of your participation, but the information will remain confidential.

To participate, email me at argrey@liberty.edu to receive the initial interest questionnaire and the consent document, complete and return the consent document and then contact me to schedule an interview.

A consent document will be provided to you once you email me at argrey@liberty.edu. The consent document contains additional information about my research, please sign the consent document and return it to me by email and indicate if you would like to take part in the survey.

If you choose to participate, you will receive a small gift card to a local restaurant.

Sincerely,

Alexander Randolph Grey
Doctoral Candidate

APPENDIX D: INITIAL INTEREST QUESTIONNAIRE

Please select one answer for each of the following questions after reading and evaluating the question fully. While completing the survey please keep in mind that you also have the option of declining to answer any of the following questions for any reason. All personal information, participant responses, and all recorded answers will be kept confidential and will not be shared with anyone other than the researcher at any point of this research study. Please answer any of the following questions using one of the following descriptive terms that best represent your experiences with using technology in the classroom: Strongly agree, Agree, Disagree, strongly disagree.

1. I feel confident and capable in integrating multiple technologies into my classroom instruction.

2. I have developed a variety of lessons and ideas for integrating technology into my instruction.

3. I believe integrating technology into my classroom instruction is vital for student success.

4. I like utilizing technology in the classroom, but I wish I had more direction on how to use it better.

5. I feel comfortable implementing and using technology in the classroom.

6. I feel that the school should provide additional technological support that would assist educators with technology and technology questions.

7. My school provides adequate professional development training in the area of technology use in the classroom.

8. I feel prepared to guide other teachers in the planning of lessons incorporating technology.

9. I regularly discuss and work with my team/grade level on technological apps or educational web-based resources.

10. The support I receive in instructional technology is offered at an adequate level.

APPENDIX E: INFORMED CONSENT FORM

CONSENT FORM

North Carolina Private School Educators' Perceptions of BYOD Implementation as a Lived

Experience: A Transcendental Phenomenological Study

Alexander Randolph Grey

Liberty University

School of Education

You are invited to be in a research study on the perceptions of educators regarding the implementation of BYOD technology into your personal classroom setting. You were selected as a possible participant because you teach at a western North Carolina private school, which has implemented a BYOD program. Please read this form and ask any questions you may have before agreeing to be in the study.

Alexander Randolph Grey, a doctoral candidate in the school of education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine the perceptions of North Carolina private high school educator perceptions of a BYOD program implementation as a lived experience.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Complete the initial interest questionnaire. This procedure should take about 15 minutes to complete and it can be returned to me by email or by US mail.
2. An individual face-to-face or telephone interview. You will be asked five questions during this interview. This procedure should take no longer than 45 minutes and you will be voice recorded to ensure your responses are accurate.
3. Finally, you will be expected to complete a reflective journal consisting of your answers to three prompts. You may address more than three prompts, should you decide to, but only three are required. This process should take around thirty minutes.

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Benefits to society include helping future educators faced with implementing BYOD technology into their classrooms and a form of mentorship to younger teachers who may be interested in trying some of your recorded opinions and techniques.

Compensation: Participants will be compensated for participating in this study. The compensation participants should expect to receive from taking part in this study are the receipt of a small gift card to a local restaurant for you to go out to lunch as a thank you from me for your participation.

Confidentiality: The records of this study will be kept private. In any sort of report, I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. I may share the data I collect from you for use in future research studies or with other researchers; if I share the data that I collect about you, I will remove any information that could identify you, if applicable, before I share the data.

- Participants will be assigned a pseudonym. I will conduct the interviews in a location where others will not easily overhear the conversation.].
- Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or the school in which you are employed. If you decide to participate, you are free to not answer any question or withdraw at any time, without affecting those relationships.

How to Withdraw from the Study:

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, will be destroyed immediately and will not be included in this study.

Contacts and Questions: The researcher conducting this study is Alexander Randolph Grey. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at 704-604-6298 or at argrey@liberty.edu. You may also contact the researcher's faculty chair, Dr. Tierce, at krtierce@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record me as part of my participation in this study.

_____

Signature of Participant   Date

_____

Signature of Investigator   Date

APPENDIX F: INTERVIEW QUESTIONS

Interview Questions: Educator's personal feelings regarding technology in the classroom

1. Tell me about your background and experience in teaching, including your use of technology as an instructional tool.
2. What are your perceptions, thoughts, beliefs, and memories of the lived experience of implementing a BYOD program into your classroom instruction?
3. What are your perceptions of the ways professional development has impacted your acceptance and implementation of a BYOD program into your classroom instruction? In your answer to this question, please include your thoughts and perceptions of professional development prior to implementing a BYOD program, during implementation, and as continuing education following implementation.
4. What are your perceptions of the ways a BYOD program impacts student learning?
5. Is there anything else that may have been overlooked during this interview that you believe is important to the study and would like to share with me regarding the implementation of a BYOD program into your classroom instruction?

APPENDIX G: REFLECTIVE JOURNALS

Please record your answers to the following three reflective journal prompts. Additional journal entries will be accepted, but only the three posted prompts are required for participation in this study.

1. What were your initial thoughts of using BYOD in your classroom?

2. How have you grown as an educator over the course of the year, since introducing BYOD technology into your classroom?

3. Describe how your views on BYOD technology have changed during the year.

APPENDIX H: TECHNOLOGY USE SURVEY

Please answer the following questions with the response closest to your view regarding your use of the following types of technology in the classroom: Daily, Weekly, Infrequently, Never.

1. Creating podcasts.

2. Classroom response systems (Clickers).

3. Database software (Excel, Word, etc.)

4. Simulations

5. Spreadsheets

6. Apps

7. Social networking sites (Twitter, Facebook, Edmodo, Etc.)

8. Gaming

9. Websites

10. Coding

11. Classroom management