

HIGH SCHOOLS IMPLEMENTING BRING YOUR OWN TECHNOLOGY: A  
PHENOMENOLOGICAL STUDY OF CLASSROOM TEACHERS' PERSPECTIVES

by

Allison Leigh Hurston

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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## ABSTRACT

Despite the increased unfolding of new Bring Your Own Technology (BYOT) initiatives, confusion exists regarding the defining characteristics of a BYOT classroom. Using the Technology Acceptance Model (TAM), the purpose of this qualitative transcendental phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state define, plan, and implement BYOT within their classrooms. The study took place in a southeastern U.S. state and included 10 BYOT teachers. It was designed to answer four research questions: (a) What are BYOT teachers' definitions and descriptions of BYOT? (b) What planning and implementation strategies do BYOT teachers use? (c) What, if any, obstacles may inhibit the learning in a BYOT environment? (d) What, if any, resources may enhance the learning in a BYOT environment? Data were collected from interviews completed by 13 BYOT teachers with at least one year of BYOT experience and at least three years of traditional classroom experience. From this group, 12 participated in journaling and 10 joined the focus group. The data were analyzed and three themes emerged: (a) Instant Access, (b) Student Engagement, and (c) Battling Distractions. Participants identified that BYOT allows the opportunity for teachers and students to access information immediately while keeping students engaged in their work; however, students had a difficult time knowing when technology was acceptable to use in the classroom and when it was not permitted. The themes of this study represented a snapshot in time for participants from a school system where 21<sup>st</sup> century classrooms were enhancing and expanding classroom instruction.

*Keywords:* BYOT, mobile learning, Technology Acceptance Model, TAM, 21st century learning

### **Dedication**

Mom, this is for you. You taught me to never settle for average and that whatever I put my mind to, I could accomplish. You gave me self-worth and confidence to never quit anything I started. Thank you for instilling in me a love for learning. It saved my life. There are so many things that I wish I could share with you now, but in everything I do, I know you are here with me. I miss you more than you could ever imagine, but I'm excited to take you with me on my next adventure.

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Thank you to two LaGrange College mentors that molded me into the student and teacher I am today. Dr. Hurd, thank you for instilling in me a passion for science and demonstrating what it was like to bring a classroom to life. I can still recall walking around the campus of LaGrange College with my butterfly net looking for specimens to add to my insect collection and you were even more excited than I was about it! You were taken from us far too soon, but your legacy continues to live on. Dr. Paschal, you taught me that it is possible to make a class exciting while maintaining high expectations. It is the ultimate form of flattery to be told that my class is a student's favorite yet hardest course they have taken. I learned how to accomplish that from you.

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Thank you to my husband and entire family. Thank you for giving me someone to call when I needed to talk. Having someone to share all the emotions of this experience with made this journey a little less lonely. Your constant encouragement and support pushed me through to the end and gave me a reason to keep going.

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**List of Abbreviations**

Bring Your Own Technology (BYOT)

Mobile Learning (M-learning)

Technology Acceptance Model (TAM)

## **CHAPTER ONE: INTRODUCTION**

### **Overview**

Research is needed to address the growing trend of BYOT and how teachers are currently implementing BYOT in their own classrooms. As BYOT programs become more prevalent throughout schools in the United States, teachers need professional development instructing them on how to adequately implement BYOT strategies in their own classroom (Armstrong, 2014; Len-Kibinkiri, 2014; Sakunthala & Wishart, 2014). Without concise descriptions of the characteristics of BYOT classrooms, teachers and school leaders may struggle on the proper way to implement BYOT strategies within in their schools. This study sought to identify how ten teachers at three different high schools in a southeastern U.S state define and implement BYOT in their own classroom. For this study, I took a phenomenological approach using interviews, focus groups, and journaling to collect data from BYOT teachers. With the Technology Acceptance Model as its framework, the purpose of this study was to identify the essence of a shared, lived experience, of a particular group, in this case the teachers involved in BYOT classrooms, which made a phenomenological approach appropriate (Andrews, Tynan, & James, 2011; Creswell, 2013; Moustakas, 1994). The following sections provide details about the background, situation to self, purpose, and significance of this investigation into the phenomenon of BYOT use in a secondary educational setting.

### **Background**

Twenty-first century learners are entering 20th century classrooms that are ill equipped with outdated technology (Stevens, 2011). As education continues to move into the second decade of the 21st century, schools must become better equipped with 21st century technology (Armstrong, 2014). Many school administrators continue to restrict the use of smart phones

within the classroom and instructing students to close their laptops in lecture halls because they are seeing devices as more of a distraction than a benefit to learning (Oostveen, Muirhead & Goodman, 2011). While financial restraints continue to impact school-wide decision-making regarding the purchasing of new technology, Bring Your Own Technology (BYOT) programs are becoming more widespread across the nation as a money-saving opportunity (An & Reigeluth, 2012; Nelson, 2012; Ullman, 2011). In an attempt to enhance the learning process, BYOT involves students bringing their own technological devices to school rather than relying on school-provided technology. Despite the increase of BYOT initiatives, confusion exists regarding the defining characteristics of a BYOT classroom (Richardson, McLeoud, Flora, Sauers, Kannan, & Sincar, 2013).

BYOT has been defined as

An educational development and a supplementary school technology resourcing model where the home and the school collaborate in arranging for the young's 24/7/365 use of their own digital technology/ies to be extended into the classroom to assist their teaching and learning and the organization of their schooling and where relevant the complementary education outside the classroom. (Lee & Levins, 2012, p. 11)

Schools administrators across the country are beginning to take notice of this new initiative and are implementing BYOT programs in their classrooms. Chandler stated, "The pent-up demand for BYOD and 1:1 is a tidal wave and it's going to come, regardless of our readiness for it. Either we surf or we drown" (as cited in Salpeter, 2012, p. 32). While there has been some resistance to the implementation of BYOT, many schools are open to accepting BYOT initiatives (Wu et al., 2012). In a 2014 survey administered by the Software and Information Industry Association (SIIA), 981 educators were interviewed, and results indicated



that BYOT is expected to increase (SIIA, 2014). Participants in the K-12 range anticipate an ongoing increase of BYOT with “85% of Secondary, 66% of Elementary, and 83% of K-12 district participants predicting that mobile devices will be allowed within the next five years” (SIIA, 2014, p.4). Part of the SIIA survey was used to investigate the perception of current technology integration and the results indicated that while there has been an increase in overall technology integration in K-12 classrooms, the importance level of using technology in the classroom has decreased. Currently, there is a significant gap between the integration of technology in the classroom and the perception of importance of using technology in the classroom (Lim, Zhao, Tondeur, Chai, & Tasi, 2013; SIIA, 2014).

Instead of viewing hand-held devices such as cell phones and tablets as a nuisance, some schools are looking at them as tools of opportunity. Teachers and school administrators alike are viewing technology as more than just cool gadgets that students can play with throughout the day. Instead, the mindset is changing to viewing technology as a tool that can be used whenever (Ullman, 2011). Educators are revolutionizing the learning environments by employing today’s technologies to make material engaging and accessible (Stevens, 2011). The role of technology in the classroom has accelerated over time and will continue to be a factor in education of the future (Knott, Steube, & Yang, 2013). Many students in 21st century classrooms have never known life without the Internet. The Illinois Association of School Boards understands that the current generation of students are incredibly dependent on technology to which, ‘technology is like an appendage to most students and educators underscore the major reason fueling bring-your-own-technology or BYOT policy (as cited in Armstrong, 2014). Lee (2103) has coined the phrase “digital normalization” to which technology is used, “so naturally, so normally in every facet of a school’s operations as to forget the technology is there” (p. 4). Lee (2013) stated that

students and parents have already normalized the use of technology, and schools are now teaching the children of digitally empowered “Net Generation parents” (p. 4).

Today’s students have spent their entire lives using computers or cell phones and integrated technology into almost everything they do, yet when they come to school, they are not allowed to use these devices (An & Reigeluth, 2012; Jeng, Wu, Huang, Tan, & Yang, 2010). Participants in the School CIO Technology Summit were unanimous in the belief that schools can no longer afford to ask students to power down upon entering the classroom (Salpeter, 2012). While more schools are embracing the digital age, the vast majority of schools are still operating within a paper-based operational mode, and this lags well behind societal expectations (Lee, 2013). BYOT allows students to develop Digital Literacy in which students discover how to find and use reliable sources of information as well as how to evaluate and interpret the information they are accessing (Grabiec, 2013).

If students are to be successful in their studies, as well as life beyond school, teachers must equip them with the knowledge and tools they will use on a daily basis (An & Reigeluth, 2012). In fact, society needs people capable of managing increasing amounts of information to solve complex problems. According to Sheringer (2012), it is the job of educators to do everything in their power to give students the best learning opportunities possible, and allowing students to bring their own devices to school helps to meet this lofty goal. Students already have the devices as well as the access (Nelson, 2012). Educators must find a way to grasp the opportunity to use devices in ways that go beyond covering curriculum. Using devices in classrooms is an opportunity educators cannot afford to miss.

With BYOT initiatives comes an increase in mobile learning technology, also known as M-learning. El-Hussein and Cronje (2010) defined mobile learning as “any type of learning that

takes place in learning environments and spaces that takes account the mobility of technology, mobility of learners, and mobility of learning” (p. 20). M-learning has also been defined as learning across multiple contexts, through social and content interactions while using personal electronic devices (Crompton, 2013). Students work different with M-learning devices than they do with desktop computers as they are more personal devices that are kept with them at all times (Alexander, 2004). M-learning may be bridging the gap between the classroom and community members that may have been previously inaccessible (Koszalka & Ntloedibe-Kuswani, 2010). BYOT and M-learning coincide as many of the technological devices that are brought in for a BYOT classroom are mobile devices such as smartphones and tablets. These devices provide rich and interactive learning content for educational purposes as well as allow educators to facilitate the learning process to achieve their educational goals (Jeng et al., 2010). The BYOT environment also opens many opportunities to educators and students alike in which students can work together collaboratively while integrating technology at the same time (Vesisenaho et al., 2010).

BYOT initiatives also have the capability of changing the way of delivering instruction through offering effective ways to reach a variety of learners (Knott et al., 2013). However, to properly implement BYOT, teachers must partake in thorough and intentional professional development that addresses practical application of BYOT strategies (Fairbanks, 2013). In an article by Yoon, Duncan, Lee, Scarloss, and Shapley (2007), evidence revealed more than 1,300 studies addressing the efficacy of professional development on student achievement; the authors concluded that a teacher who receives substantial professional development (an average of forty-nine hours) can boost their students’ achievement by about 21 percentile points. The aim of BYOT initiatives is not to replace classroom teachers, but to enable teachers to become

facilitators in a learning community in which they are guiding and enhancing the learning process (Lee, 2014).

While there is ample research regarding the use of technology in the classroom, BYOT and M-technology research is still in its infancy (Koszalka & Ntloedibe-Kuswani, 2010). Of the literature available regarding M-technology and BYOT, scholarship is scarce and lacks rigor (McNeal & van't Hooft, 2006). Even with the number of investigative BYOT studies increasing, there are still significant gaps in the literature regarding teacher perceptions of BYOT initiatives and the impact they have on student achievement, as well as how individual devices influence student learning (James, 2011; Koszalka & Ntloedibe-Kuswani, 2010; Palmarova & Lovaszova, 2012; Rossing, Miller, Cecil, & Stamper, 2012).

### **Situation to Self**

To gain an understanding of teacher perceptions of defining, planning, and implementing BYOT classrooms, I approached this study from a social constructivist frame of reference. Social constructivism allows an individual to seek understanding of the world they live in through their interactions with it (Creswell, 2003). The individuals in this study were high school BYOT teachers from a school district located in the southeastern United States, and the views of the participating BYOT teachers were central to the study. My personal, cultural, and historical background shaped my views and interpretations of this study. My intent was to interpret the shared experiences of BYOT teachers, while addressing my own bias concerning the phenomenon.

I am part of “Generation Y” which means I was born between 1982 and 1995 (Deloitte, 2009). Characteristics of my generation include phrases such as “Techno-savvy and connected; 24/7; Optimistic; Confident; Comfortably self-reliant; Entrepreneurial; Success driven; Inclusive;

Environmentally minded” (Deloitte, 2009, p. 2). Bringing up Gen Yers in an area of rapid technological change, they have never known a life without computers, and this has influenced my view of technology and the future world of technology.

As a child, I had to look up information in encyclopedias and understood the Dewey Decimal System, as that is what was used in my school library. Computers were available to the public at that time but were too expensive and ran too slowly for utilization in my school setting. I can remember my first family computer, which brought my first American Online (AOL) and email experience. I remember having to connect to the phone line and if anyone picked up the phone to make a call it suspended the login process or kicked you off the Internet. I remember the familiar sounds the computer made as it connected to the Internet and the social satisfaction I received from chatting with my friends through AOL Instant Messenger (AIM). I remember when I turned 16 and received my first car and first Nokia cell phone and the status it afforded me with my friends as well as the instant access it provided to me with my mom. I was not allowed to text others on this phone, except my mom in case of emergencies, because of the expensive cost to send a text message; therefore, I used it to call home when needed and to play my favorite cell phone game, Snake.

This all seems so foreign today as I use my personal MacBook Air with instant Wi-Fi access wherever available and casually check my email, Facebook, and Instagram accounts through my Apple iPhone using my Long Term Evolution (LTE) service. Today, I live in a world where I can send iMessages without cell service, I can chat through FaceTime with my husband when traveling to a foreign country, and I can text my students with a reminder when we have a big test the next day. This early introduction to technology has fascinated me with the

latest and greatest technology being introduced every single day. It has molded my professional life as a teacher, and my family and social life as a wife, daughter, and friend.

As a doctoral student, a ninth grade STEM AP Biology teacher, and Title I committee member, my interests have included not only traditional classroom research topics related to student achievement, but also the influence BYOT has on the traditional classroom setting. My interest in BYOT started my first year I agreed to become a BYOT teacher. As I developed lesson plans and prepared for my BYOT classroom, I wondered if other teachers were experiencing some of the same rewards and obstacles I was encountering in the BYOT environment. As my experience in BYOT grew, so did my desire to conduct research on the topic.

In addition to describing how this study situated to my personal narrative, I brought certain philosophical assumptions and beliefs into this research. Creswell (2013) labels these beliefs as ontology, epistemology, axiology, and methodology. I utilized an ontological philosophical assumption to guide this study in which I allowed for multiple realities to exist as multiple perspectives exist. This study allowed for and revealed that multiple realities were present in individual participants and their experiences were unique and different. As a BYOT teacher, I also utilized an axiological belief in positioning myself within the study and acknowledging the participants' lived experiences and my personal biases while exploring the research.

### **Problem Statement**

Implementation of BYOT in classrooms across the country continues to rise exponentially. According to the results of surveys of digital activities held by districts each year, BYOT programs have increased from 22% to 55% (Grenslitt, 2014). Research of BYOT

literature revealed a lack of defined explanations of BYOT and its influence on student achievement. Despite the increase of BYOT initiatives, confusion exists regarding the defining characteristics of a BYOT classroom (Richardson et al., 2013). Lacking a clear definition of BYOT has caused teachers and students to have negative perceptions of BYOT initiatives because there is not a common understanding of how a BYOT classroom is structured (Corbeil & Valdes-Corbeil, 2007; El-Hussein & Cronje, 2010). The way BYOT is defined inevitably emphasizes specific aspects and favors certain perceptions about it (Laouris & Eteokleous, 2005). Without a common definition of BYOT, school leaders cannot guarantee that the device a student brings in is suitable and appropriate for learning tasks (Sweeney, 2012). Teachers also have concerns about BYOT, including the lack of professional development to prepare them for best practice and the possibility of increasing the digital divide in the classrooms where socio-economic status vary (Chadband, 2012).

A study that investigates how varying teachers perceive, define, and implement BYOT by a phenomenological method may provide clarity to BYOT teachers as to how to plan for a BYOT classroom and how that classroom should operate. Information gathered in this study may be used to better direct stakeholders making BYOT decisions as well as administrators planning for BYOT professional development. It is imperative that teachers and school leaders have a shared vision, a clearly defined idea of what a BYOT classroom should look like, and common goals that unite BYOT teachers. Without a clear understanding of what a structured BYOT environment should look like, it may be difficult to construct common goals of BYOT and school leaders may lose leverage to use technology for learning.

### **Purpose Statement**

The purpose of this qualitative phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state define, plan, and implement BYOT within their classrooms. The TAM served as the theoretical framework for this study. This investigation sought teachers' perceptions of defining, planning, and implementing BYOT. The participants in this study included teachers who were teaching in a BYOT environment. Results of this study may provide insight for school administrators to develop working BYOT plans that include defined processes, purposes, and parameters that are best suited to their school's learning environment as well as provide leverage to school leaders to use technology in the classroom. At this stage in the research, BYOT is generally defined as a classroom environment in which the students bring their own technological device to school.

### **Significance of the Study**

Research indicated that the use of M-learning enhances student engagement and encourages independent and collaborative learning experiences (Ackerman, 2010; James, 2011; Palmarova & Lovaszova, 2012). Most BYOT environments use M-learning technology, and studies indicated that the use of mobile devices fosters a feeling of ownership of a learner's work which again, enhances student learning (Suki & Suki, 2011). While research has been focused on the use of technology in a classroom environment, a gap still exists in looking at implementation of emerging technology as well as a definition and planning of BYOT by current BYOT teachers. As schools continue to tighten budgets and conserve funding to purchase technology, districts must be creative in how they will develop 21st century classrooms (Ullman, 2010).



The significance of this study is to provide insight for school administrators to develop working BYOT plans that include defined processes, purposes, and parameters best suited to their school's learning environment. By analyzing feedback from the teachers participating in a BYOT classroom, teachers who are contemplating adopting BYOT may have a clearly identified idea of what a BYOT classroom should look like. Because it is left to the teachers to implement the technology in their classrooms, school administrators need to dissect teacher perceptions of BYOT. By examining current teacher perceptions, school district leaders may make informed decisions regarding technology funding as well as develop goals and provide assistance to teachers who are establishing BYOT environments in their own classrooms. By having a clear definition of what a BYOT classroom environment looks like, school leaders may have leverage to promote and use technology for learning.

### **Research Questions**

To help define BYOT from a teacher's perspective, more information about BYOT implementation in classrooms is needed. Therefore, the following research questions guided this study of teachers' perceptions of the BYOT classroom.

#### 1. What are BYOT teachers' definitions and descriptions of BYOT?

Examining this question may yield clear themes that definitions of BYOT have in common. Answers to this question may provide insight for school administrators to develop working BYOT plans that includes a defined purpose that is best suited to their school's learning environment.

#### 2. What planning and implementation strategies do BYOT teachers use?

Examining this question may yield clear strategies that are common among the participants in this study. Answers to this question may provide insight for school administrators

to develop working BYOT plans that include defined processes and parameters that are best suited to their school's learning environment.

3. What, if any, obstacles may inhibit the learning in a BYOT environment?

Examining this question may yield negative implications BYOT may have in the classroom. Answers to this question may provide information by which administrators and school stakeholders may provide support for effectively handling issues that may arise from a BYOT classroom.

4. What, if any, resources may enhance the learning in a BYOT environment?

Examining this question may yield information about additional resources teachers may be using that could improve the learning environment in a BYOT classroom. Answers to this question may provide information by which administrators and school stakeholders can provide support to equip teachers with said resources to enhance the BYOT classroom.

The first and second research questions were designed to identify how teachers define and implement BYOT strategies in their classrooms. By identifying how BYOT is defined in the classroom, stakeholders who read this research are better prepared to decide whether they would consider implementing a BYOT program at their own school. The first and second research questions related to the theoretical framework from which this research stemmed. Using Davis' (1986) TAM, the research was conducted to understand how the interactions with technology could shape and define the overall perception of such technology.

The third and fourth research questions pertained to understanding the obstacles or resources that affect the overall environment of the BYOT classroom. Discussions in the literature illuminated many problems that relate to implementing a BYOT program (Hill, 2011; Quillen, 2011; Williams, 2012) and research question three was developed to identify if teachers

encounter obstacles in the BYOT environment and if so, how these obstacles influence their overall perceptions of BYOT. Along with obstacles that could inhibit the learning environment, teachers may have also identified resources that could enhance the BYOT classroom as well.

### **Research Plan**

The purpose of this study was to investigate how teachers define and implement BYOT in their own classrooms. Davis' (1986) TAM provided the theoretical framework for this study. The TAM is used to explain why individuals choose to adopt or not adopt a particular technology when performing a task. For the purpose of this study, BYOT devices represented the particular technology and the task was instructing a BYOT classroom. A variety of research designs may have been used to address this purpose. Although a quantitative methodology, such as a survey, would be successful in gauging teacher perceptions of BYOT, Likert scale surveys often restrict the participants' answers and do not allow them an opportunity to clarify what they mean or reveal their true experience of the phenomenon (Creswell, 2013). A case study may have also been implemented, but BYOT is a shared experience and limiting the results to a single participant may limit the scope to which this study may be applied. Therefore, exploring the perceptions of defining, planning, and implementing BYOT from multiple participants gave greater understanding of the observed perception. Of the multiple types of qualitative research, the method best suited to investigate the experiences and perceptions of BYOT teachers was the phenomenological method. The phenomenological research design is used to study areas in which there is little knowledge making this research design suitable for this study since research of teacher perceptions of BYOT is still unclear (Donalek, 2004).

Phenomenological studies examine human experiences afforded by the people involved, and the goal of phenomenological research is to describe the meaning that experiences hold for

each subject (Creswell, 2013; Nieswiadomy, 2008). A phenomenological approach was appropriate for this research as opposed to a narrative approach because it is looking to explore a single phenomenon and not an individual's life (Kahn, 2014). The central focus of this study was to explore teachers' perceptions of defining, planning, and implementing BYOT classrooms. Utilizing a phenomenological approach allowed me the flexibility to work with individual participants to gain a greater understanding of the phenomenon.

I was able to focus less on my interpretations and more on a description of the experiences of participants by utilizing a transcendental phenomenological research design (Creswell, 2013; Moustakas, 1994). Parts of conducting transcendental phenomenological research is to recognize researcher bias yet emphasize the phenomenon identified by the participants. Transcendental phenomenology focuses on bracketing, in which investigators set aside their personal experiences to take a fresh perspective toward the phenomenon being investigated (Moustakas, 1994). Hence, "transcendental" means, "in which everything is perceived freshly, as if for the first time" (Moustakas, 1994, p. 34). This qualitative, transcendental phenomenological study relied on the collection of data centered on authentic experiences of BYOT teachers rather than experiences created by the researcher.

In this investigation I sought teachers' perceptions of their current definitions of BYOT as well as specific characteristics of a BYOT classroom. The purpose of this qualitative phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state defined, planned, and implemented BYOT within their classrooms. Data were collected through semi-structured interviews, focus groups, and journals. Creswell (2013) suggested that interviews, focus groups, and journaling are appropriate for a qualitative, phenomenological study, as they will provide thick, rich data about the overall essence and

phenomenon of study. Additionally, these three data collection sources validated a credible study because the data were triangulated as well as gave participants adequate avenues of expressing their perceptions of the BYOT environment.

### **Delimitations and Limitations**

Delimitations are purposeful decisions made to limit or define the boundaries of the study (Creswell, 2013). To limit this study, the participants were all teachers in Greenridge County. The teachers who participated in this study received BYOT professional development within the school system where the study took place. To be eligible to participate, teachers must have taught in a traditional classroom setting for at least three years and in a BYOT environment for at least one full year. Participants in this study were from three high schools in the district that included varied demographic and socioeconomic levels.

To obtain objectivity in this study, phenomenological reductionism, also known as bracketing, was used. This process involves the researcher identifying his/her own assumptions about the phenomenon being studied and setting aside those assumptions in effort to see the phenomenon as it really is (Husserl, 2001; Moustakas, 1994). Bracketing assisted in limiting bias and preconceived notions of the research. Identifying and setting aside prior assumptions allowed me to see the phenomenon through the perspective of the participants.

Limitations are defined as potential weaknesses that are unable to be controlled by the researcher (Creswell, 2013). Potential limitations of this study included teacher efficacy and how technology was integrated in the different content areas taught. There was no set lesson plan to which all teachers had to use BYOT technology. It was up to the individual teachers on how to implement BYOT in their classrooms. The differences in technology implementation and teacher experience with technology may limit the extent to which results can be transferred. The

participants also included a representation of different content areas. One content area may have utilized BYOT in a different way than another content area. The results of this may also play into limiting transferability. This research was conducted strictly at the high school setting; therefore, the relevancies to elementary or middle schools are unknown.

### **Definitions**

1. *Bring Your Own Technology (BYOT)* - An educational development and a supplementary school technology resourcing model where the home and the school collaborate in arranging for the young's 24/7/365 use of their own digital technology/ies to be extended into the classroom to assist their teaching and learning and the organization of their schooling and where relevant the complementary education outside the classroom (Lee & Levins, 2012).
2. *Generation Y* - Includes any persons born between 1982 and 1995 (Deloitte, 2009).
3. *Mobile Learning* - Learning across multiple contexts, through social and content interactions while using personal electronic devices (Crompton, 2013).
4. *Technology Acceptance Model (TAM)* - Model used to explain and predict user acceptance of technology from measures taken after a brief period of interaction with a particular system (Davis, 1986).

### **Summary**

The role of technology in the classroom has accelerated over time and will continue to be a factor in education in the future (Knott et al., 2013). As schools continue to see an increase in the use of technology among their students, BYOT programs are becoming more widespread across the nation (An & Reigeluth, 2012; Nelson, 2012; Ullman, 2011). With BYOT initiatives comes an increase in M-learning technology. BYOT initiatives also have the capability of

changing the delivery of instruction by offering effective ways to reach a variety of learners (Knott et al., 2013). However, to properly implement BYOT, teachers must go through thorough and intentional professional development that addresses practical application of BYOT strategies (Fairbanks, 2013).

Research is needed to address the growing trend of BYOT and how teachers are currently implementing BYOT in their classrooms. Currently there is a significant gap between the integration of technology in the classroom and the perception of the importance of using technology in the classroom (Lim et al., 2013; SIIA, 2014). Research of BYOT literature indicted there is a lack of defined explanations of BYOT and its influence on student achievement. Despite the increase of BYOT initiatives, confusion exists regarding the defining characteristics of a BYOT classroom (Richardson et al., 2013). A study that investigates how varying teachers perceive, define, and implement BYOT by a phenomenological method may provide clarity to BYOT teachers as to how a BYOT classroom should be established and operated.

Using Davis' (1986) TAM as the framework, I sought to identify how 10 teachers at three different high schools in a southeastern U.S. state defined and implemented BYOT. The purpose of this phenomenological study was to identify the essence of a shared, lived experience, of a group of teachers involved in BYOT classrooms, which made a phenomenological approach appropriate (Andrews et al., 2011; Creswell, 2013; Moustakas, 1994; Williams, 2012). By examining current teacher perceptions, school district leaders may make informed decisions regarding technology funding as well as develop goals and provide assistance to teachers who are establishing BYOT environments in their own classrooms. By having a clear definition of

what a BYOT classroom environment looks like, school leaders may have leverage to promote and use technology for learning.



## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

Classroom implementation of BYOT continues to rise exponentially (Grenslitt, 2014). However, despite the increase of BYOT initiatives, confusion exists regarding the defining characteristics of a BYOT classroom (Richardson et al., 2013). This study is based around the experiences of secondary teachers and their use of BYOT in their classrooms. I built this literature review with a theoretical framework that is used to predict user acceptance of technology from measures taken after an interaction with a system. The review investigated the characteristics associated with BYOT and a synthesis of previous research about BYOT implementation. The synthesis noted how BYOT initiatives have shown to have both positive and negative applications in terms of classroom teacher perceptions. The literature concludes with a summary of what is known about BYOT research and explains gaps in the literature that may warrant further research.

### **Theoretical Framework**

The TAM developed by Davis in 1986 guides the research for BYOT. When technology began entering users' everyday lives, there was a growing necessity to comprehend the reasons why the technology is accepted or rejected (Marangunic & Granic, 2014). The original source in attempting to explain and predict those decisions is in the field of psychology; thus, the Theory of Reasoned Action (TRA) represents the origin of the TAM. The TAM is an adaptation of the TRA model developed by Fishbein and Ajzen in 1975 (Davis, 1986). The TRA model looks at the behavioral intentions rather than attitudes as the main predictors of behaviors (Marangunic & Granic, 2014). The TRA theoretical model suggested that a person's actual behavior could be determined by considering his or her prior intentions along with beliefs that the person would

have for the given behavior (Davis, 1986). As the TRA model began to increase in popularity in the social sciences, it became obvious that this model was not adequate and had several limitations (Marangunic & Granic, 2014). One of the major limitations of the TRA theoretical model was with participants “who have a little or feel that they have little power over their behaviors and their attitudes as being on a continuum from one of little control to one with great control” (Marangunic & Granic, 2014, p. 84). Davis adapted the TRA model and proposed his TAM (1986). Davis made two major changes to the TRA when proposing the TAM in which he did not consider subjective norm when predicting and actual behavior, instead only considered the attitude of a person toward it. Secondly, Davis identified two beliefs, perceived usefulness and perceived ease of use (Marangunic & Granic, 2014). Each was sufficient to predict a user’s attitude toward a system.

The purpose of the TAM is to explain and predict user acceptance of technology from measures taken after a brief period of interaction with a system (Szajna, 1996). TAM explains why individuals choose to adopt or not adopt a particular technology when performing a task (Davis, 1986). Predicting a user's view of technology is by relating it to an external stimulus that consists of actual system features and capabilities. People form intentions to adopt technology or a behavior based on their beliefs about the consequence of adoption. Through a statistical meta-analysis of the TAM, results have shown that TAM is a valid and robust model that though is widely used, has potential for further applicability (King & He, 2006).

In a BYOT environment, teachers are using a variety of technology systems each with their own set of capabilities and functions. TAM supports the belief that users of a particular device or technology may be willing to tolerate a difficult system to access functionality that is shown to be important (Davis, 1986). On the other hand, no matter how easy a system is to use,

it will not compensate for one that does not perform a useful task. Davis (1986) described that two main factors explain the acceptance of technology: perceived ease of use and perceived usefulness, both of which contribute to overall attitude toward using the system. Davis hypothesized that the attitude of the user toward a system was a major determinant of whether the user would use or reject the system (as cited in Chutter, 2009).

Perceived ease of use is the degree to which a person believed a system would be free of effort (Tarcon, Varol, Kantarci, & Frilar, 2012). Ease of use has a significant effect on users' attitudes toward using the system and is characterized by two mechanisms: self-efficacy and instrumentality (Davis, 1986). The easier a system is to interact with, the greater the user's sense of self-efficacy (Bandura, 1982). In education, it is possible for teachers to believe that the technology they are using could be useful; however, at the same time believe it to be too difficult to use, and that the effort of using the application or system outweighs the performance benefits (Davis, 1986). Wong and Teo (2009), found that perceived ease of use is significant determinants of the attitude and intention to use technology among student teachers.

While ease of use is clearly important in determining overall attitude of a system, perceived usefulness is even more important and should not be overlooked (Davis, 1986). Perceived usefulness is the degree to which a person believes that using a particular system enhances his or her job performance. In education, technology enhances pedagogy only if the teacher understands it as another pedagogical means to achieve teaching and learning goals (Wong, Osman, Gho, & Rahmat, 2013). TAM proposes that perceived usefulness has a direct effect on one's intention to use technology; more so than one's attitude toward the system Davis' (1986) research shows that perceived usefulness is a major determinant of people's intention to use technology (Davis, 1986). In the BYOT environment, teachers may choose to

use or not use an application based on the extent to which they believe it will enhance their job performance (Wong et al., 2013). In relation to perceived perceptions of technology in a BYOT classroom, teachers' attitudes toward their device may play a role in the overall acceptance of the device. Teachers who are not instinctive users of technology outside of the classroom may perceive BYOT as more of a challenge than teachers who are more prone to use their own device on a regular basis (Armstrong, 2014).

Multiple international studies have implemented the use of the TAM to assess the intention of teachers to use technology in their classrooms (Elkaseh, Wong, & Fung, 2014; Kung-Teck, bt Osman, Choo, & Rahmat, 2013; Nair & Das, 2012; Teo, Lee, & Chai, 2008). In a study conducted by Teo, Ursavaş, and Bahçekapili (2011), the efficiency of the TAM was addressed to explain pre-service teachers' intention of using technology in Turkey. A total of 197 pre-service teachers from a Turkish university participated in the study and were asked to complete a questionnaire measuring their responses to three constructs that explain their intention to use technology in their classrooms: attitude towards computer use, perceived usefulness, and perceived ease of use. Results of this study revealed that the TAM is an efficient model to explain the intention of pre-service teachers to use technology (Teo et al., 2011). Overall, the TAM is a well-tested and validated model used to explain the intention to use technology.

### **Related Literature**

After building the study within the theoretical framework, I examined previous research on the characteristics associated with BYOT. Studies on the practicality and relevancy of BYOT dominated much of the literature review, but also illuminated the scarcity of research about actual teacher perceptions and definitions of BYOT within the secondary classroom. Lastly, I

research how models had been used by research to describe the use of BYOT in different learning environments.

### **BYOT and Affordability**

The first trend in BYOT literature is the issue of affordability. BYOT allows students to choose the tools they bring to school without having schools support it financially (Hill, 2011). When schools do not have to set aside resources to purchase technology for their students, “schools instead can devote their resources on the back end” and provide a solid infrastructure that can support the devices the students are bringing (Ullman, 2011, p. 55). Programs like BYOT represent savings to schools because students use their own devices as well as pay for their data plans (Hill, 2011). Many schools have issued school-owned mobile devices for lower-grade levels but fail to retain financial resources to extend such programs to upper grades, putting a strain on graduation and retention rates (Quillen, 2011).

BYOT classrooms, where mobile devices are used, have the potential to achieve a large-scale impact due to their portability, low cost, and array of features (Kim, 2009). With affordable technology and improving digital networks, many people are turning to mobile devices as their first choice of connectivity (Rossing et al., 2012). Due to the availability and affordability, mobile devices in the BYOT environment offer promising opportunities to even the most destitute of areas (Kim, 2009). Osseo Area Schools in Minnesota have adopted BYOT techniques and policies and their reports have shown that of the 21,000 students in the district, the number of student- and teacher-owned devices has grown to around 3,000 and even this small margin is beginning to make a huge impact (Schachter, 2012). Even if not every student can afford to bring their device, students can share, which encourages collaboration among

groups. The BYOT program allows districts to use their resources and to supplement students with devices.

Results in another district show similar findings (Williams, 2012). Anderson County Schools in Kentucky serve approximately 4,000 students and have completed their second full-year of BYOT at all grade levels. The money the district saved from BYOT enhances wireless access for student devices. BYOT is an investment, but providing children with better technology enables them to use their personal devices more effectively (Williams, 2012). Technology is ever changing and trying to keep up with it is extremely tough and costly. With BYOT, apart from making it possible for students' devices to connect to the network, the children and parents are responsible for maintaining their devices (Lee, 2014). This option of allowing students to bring in their devices that they maintain themselves is a money-saving strategy that many districts are choosing.

### **BYOT and Student Engagement**

The second trend in BYOT research is the relationship of BYOT to student engagement both in and out of the classroom (Backer, 2010; Lee & Levins, 2012; Robb & Shellenbarger, 2012). Most teachers understand that to have an impact on students, teachers must first grasp students' attention and keep them engaged in the learning process; and BYOT allows students with their different learning styles to use technology that suits them best (Lee & Levins, 2012). Current students thrive on immediate gratification and learn better by doing and discovering which also leads to a low threshold for boredom, memorization, and busy work (Robb & Shellenbarger, 2012). To capitalize on the technology that is available, many teachers are shifting their view of cell phones as a distraction to considering them as a way to enhance and engage the learning environment. This generations' activities are deeply embedded in

technology; therefore, it is important for students to know their content as well as the technology (Backer, 2010). Generation Y students have lived in a technology-rich world; therefore, it seems sensible to take advantage of technology to increase students' motivation.

In a study completed by Liu et al. (2014) 63 studies related to M-learning in K-12 education were investigated. Of the 63 studies, 13 were comparative studies that compared the effectiveness of M-learning to traditional teaching. Of the 13 comparative studies, nine showed a positive learning outcome, that is, students in M-learning classrooms showed greater achievement than those who received traditional instruction without access to technology. Of the comparative studies, students in the M-learning environments had significantly better achievement and improved learning attitude. Out of the 13 comparative studies, three studies showed mixed findings in terms of outcomes between learning acquisition and mobile device use, which indicated M-learning had neither a positive nor negative effect on student achievement.

BYOT teachers must treat students like 21st century adolescents since many of them own and use devices outside of school (Sheringer, 2012). Currently, there is a disconnect that exists between the experience of students who have a high level of access, skill, and interest in using technology in their lives, and the learning experience that is being offered to them in school (Fuller, 2014). For today's students, pencils and textbooks are considered old school while giving students a keyboard or touchpad is much more likely to elicit a positive learning attitude (Armstrong, 2014). Today's students are comfortable in image-rich environments that are a by-product of a BYOT environment, and they like to construct their own learning (Robb & Shellenbarger, 2012). Another component of these devices is the nature in which they are well

suited to engaging learners in individual learning experiences that may give them increased ownership over their work.

BYOT is enhancing the learning experience for students and changing the learning process by, “transforming students into explorers and teachers into guides” (Armstrong, 2014, p. 41). When assigning work, classroom teachers that integrated BYOT found that students suggested ideas for digital assignments and projects as well as ways to better present the curriculum (BYOD One Year Later, 2013). With the implantation of BYOT, students are naturally collaborating with their peers as well as teachers because they used authentic tools. Results from a study commissioned by Verizon in 2012 indicated that more students who used mobile devices in the classroom show a stronger interest in STEM subjects than students who did not use devices (As cited in Armstrong, 2014, p. 40).

Studies have shown that BYOT is a tool that engages students to be active members of their education (Brown, Thomas, & Thomas, 2014; Fuller, 2014; James, 2011; McLester, 2011; Messinger, 2011; Naimie, Siraj, Ahmed Abuzaid, & Shagholi, 2010; Ullman, 2010). After being in a BYOD classroom, students are taking responsibility in technology use and are engaging in more critical thinking (Ullman, 2010). Technology and BYOT devices encourage kids to become more involved in their education. If students use what they know, it’s easier on teachers. Making use of tablets and smartphones encourages students to explore the Internet as a legitimate resource as well as collaborate with other students in ways that lectures and textbooks cannot (Armstrong, 2014).

The use of technology, specifically mobile devices, in the classroom has shown to have a positive impact on student collaboration in which students will peer-coach one another on how to use specific devices or allow classmates to share their devices (Murray, 2010). According to the



TAM, motivation can predict a users' view of technology, which is directly related to an external stimulus that consists of system features and capabilities (Davis, 1986). In this case, a students' motivation to use technology is rooted in social connectedness they receive when using their devices. Mobile devices in a BYOT environment allow learners to use technology to develop a community where the students can tutor and help one another in the learning process, and this, in turn results in high-level learning (Ally & Prieto-Blazquez, 2014). In a M-learning environment, the ability to access content and communicate with peers at any point has proven to be an important benefit of BYOT programs (Liu et al., 2014). Mobile devices support the cooperative and collaborative creation, and students can grow relationships that enhance their academic understandings. Looking to the future of M-learning, mobile devices are shrinking the global virtual space and connect student from different parts of the world to create and share information with one another (Ally & Prieto-Blazquez, 2014). When students use mobile technology, they create a process that provides an opportunity to foster and develop relationships. It is important for educators to examine the way educational resources are designed and delivered, and take into consideration the needs and characteristics of current and new generations of students to foster a collaborative environment using BYOT technology (Ally & Prieto-Blazquez, 2014). Mobile devices communicate with other devices enabling learners to share data, files, and messages (Naismith, Lonsdale, Vavoula, & Sharples, 2004). In a BYOT setting, mobile devices are primarily used in a group setting; therefore, interactions and collaborations are a natural side effect.

BYOT increases student-to-student peer collaboration as well as student-to-teacher and teacher-to-teacher collaboration (Murray, 2010). While students have already exploited the nonacademic purposes of advanced note-taking, there are many opportunities offered through

BYOT technology to promote collaboration for educational purposes. Several platforms allow students to submit assignments via email to the teacher and to communicate with other students (Pilgrim, Bledsoe, & Reily, 2012). Regarding student-to-student and student-to-teacher collaboration, student performance data has revealed that students showed increased skills in teamwork and interpersonal skills (Murray, 2010). In a recent study by Santos and Ali (2012), students, when using their mobile devices, were in control of their learning activities without teachers' directions. The students were also engaged in supporting their formal education with their own mobile devices. When students are actively engaged in meaningful lessons, less discipline problems ensue and students have an overall better-projected outlook on their education experience. By integrating technology into instruction, this expands possibilities for creating learning activities that engage students' multiple intelligent styles (Naimie et al., 2010). Student engagement in technology-rich educational environments appears to encourage independent as well as collaborative learning experiences (James, 2011).

Schools that have initiated BYOT or similar programs are showing higher student engagement, fewer suspensions and discipline problems, and in some places, significant increases in math and science scores because of the program (McLester, 2011). It is a simple relationship in that students are engaged in their academics because their favorite toys, such as their hand-held mobile devices, link them to the lessons they are learning in school (Sucre, 2012). Research has indicated that students are both capable and willing to bring their own technology into the classrooms to enhance their learning experience (Brown et al., 2014).

Research has also shown a variety of ways that BYOT integrates into classroom lessons. From fifth-grade students writing with Storyboard, to students leaving messages on Google Voice for a world language class, and even teachers posting homework on Facebook, BYOT is

opening new and creative doors to bring the student/teacher interactivity to a whole new level (Nelson, 2012). In a typical classroom, when a teacher asks a question, perhaps a minimal number of students will raise their hand, but with BYOT accessible programs such as Poll Everywhere, every student must answer the question (Puente, 2012).

BYOT is an integral technological necessity in today's classroom because students are using the same technology outside of the classroom on a daily basis (Backer, 2010). Students are generally comfortable and confident in their own use of digital technologies outside of school, and to restrict students to shared computers in school seems counterintuitive when such a model of digital integration is available (Lee, 2014). A study completed by Soloway showed that students spend more time doing schoolwork on their personal devices than they would with paper pencil because they are more comfortable with their devices and it can be second nature to use them (As cited in Ullman, 2011). In fact, Dr. Soloway stated that a 30% improvement was evident when children used mobile devices on the same curriculum they used to cover without them. Regardless of the importance of BYOT and student engagements, teachers and school leaders need to understand that a place still exists for traditional teaching tools and methods.

### **BYOT and Student Accessibility**

Student engagement stems from the fact that technology is constantly on-the-go and easily accessible in a variety of locations (Hill, 2011; McLester, 2011; Nelson, 2012; Rossing et al, 2012). These any-time accesses to learning opportunities allow students to work at their own pace as well as monitor their own progress and access additional help outside the classroom (Liu et al., 2014). The most important M-learning benefit is autonomy (Estable, 2013). With autonomy, the student is allowed the advantage of the anytime, anywhere convenience of personalized learning. However, student autonomy only comes from good instructional design

that provides self-guided access to the learning content on a variety of devices. On the other hand, poor M-learning designs may lead to confusion and may interfere with student learning. To take advantage of BYOT and student accessibility, the design and organization of an M-learning environment becomes the keystone to successful learning.

Accessibility of technological devices begins with the motives of parents when purchasing such devices for their children. Parents and teens view cellphones as a mixed blessing in that they say their devices make their lives safer and more convenient, yet both also cite new tensions related to cell phone use (Lenhart, Long, Campbell, & Purcell, 2010). Ninety-eight percent of parents in a Pew Survey affirmed that their motive behind purchasing their child their own cell phone was so that they could be in touch no matter where the teen was. With the purchase of devices such as cell phones, students access a plethora of information at their fingertips anytime and anywhere.

Many employees may find it difficult to being told to power down a personal device and enter a Wi-Fi-Free zone for most of a work day, yet that is what schools all over the country are asking their students to do (Salpeter, 2012). A prime feature of mobile technology is the flexibility of learners to engage in the educational process anytime, anywhere (Dew, 2010). Another term used to describe the immediate and constant access to mobile technologies is ubiquitous (Stanton & Ophoff, 2013). Ubiquity is referring to the interconnectedness of the mobile device with its environment, as well as other devices, and it is more than just moving about, it is about accessing information simply and fluidly in any situation (Patokorpi, 2006). Ubiquity is also referring to the spontaneity of M-learning (Stanton & Ophoff, 2013). M-learning has allowed students to access information and communicate with people at any time from any location (Ali & Santos, 2012). BYOT environments have also provided to students

“increased autonomy and control of learning activities, meaning that they can choose when, how and what to learn” (Ali & Santos, 2012, p. 63). While laptops are probable enough to be a common classroom tool, technologies such as iPads and iPods offer even more mobility (Pilgrim et al., 2012). Screen-based technologies are becoming commonplace in elementary and secondary classrooms and their mobility allows students to engage in classroom activities during time that might otherwise be wasted. BYOT initiatives allow schools to put technology into each student’s hands where and when they need it (Lee, 2014).

When used in a BYOT environment, mobile devices allow students to explore and learn beyond the school setting and provides access to additional information not given in a formal lesson (Liu et al., 2014). Technology users create M-learning opportunities no matter where they are and invite situations of informal learning. Informal learning describes intentional or accidental learning episodes that take place outside the confines of a classroom (Eraut, 2000). Studies of informal learning have shown that most an adult’s learning happens outside formal education and while informal learning is a reality in people’s lives, they may not recognize it as learning (Tough, 1971). Technology is now used to support learning that is blended with daily living and with mobile devices reduced sizes and ease of use, they provide the potential to support such casual learning opportunities (Naismith et al., 2004). BYOT technology and mobile devices offer accessibility wherever the student is to accompany an informal learning experience and the personal nature of mobile technologies make them reliable sources for recording, reflecting, and sharing informal learning. With student devices, technology becomes seamless and students access information whenever they need it because their learning links to the content through technology (Hill, 2011; Nelson, 2012). Under careful guidance, technology in the BYOT environment puts an endless amount of information in the hands of the students and

this access to technology keeps students engaged in their learning. The use of mobile devices in a classroom can extend the schools' boundaries and go beyond the walls of the classroom.

As of 2009, there were over 600,000 different apps available for 3G cell phones (Caverly, Ward, & Caverly, 2009). Apps that are available for students offer a variety of services that are accessible anytime and anywhere. There are apps, such as "myHomework" that allow students to keep track of homework, classes, projects, and tests (Caverly et al., 2009, p. 38). Other apps even offer students the ability to upload Microsoft Word or Excel documents on their phones and then edit the documents wherever they are. Applications offered through Apple store and droid devices allow educators to look to mobile phones as potential resources for learning rather than a classroom disruption.

When students have access to a variety of technological devices and applications, there is a convenience factor in knowing a wide variety of information is at their fingertips. Students of today's society expect to have a device that meets their needs 24/7 to have direct access to information (Hill, 2011). According to the results from a 2013 survey commissioned by Pearson, of 2,350 U.S. students "one-third of elementary, middle, and high school students have said they have used a tablet for school work in their academic year . . . and 44% said they have used their smartphone for school work" (Pearson, 2013, para. 3). Of the students who are using a device for schoolwork, more than half (53%) use a device they own personally, rather than borrowed from school. Students anticipate using technology to work and learn whenever and wherever they want (Johnson & Christensen, 2012).

While BYOT fosters student accessibility to a multitude of devices as well as applications, bandwidth is one reason that students are not using BYOT technology more often at school (Armstrong, 2014). The most advanced classroom technology, regardless of the platform

or ownership, is worthless if there is not adequate bandwidth to support the total range of frequency required to support many devices. Having a network infrastructure that can support BYOT initiatives is crucial to BYOT success (Simmons, 2014). Access to adequate bandwidth may be an insurmountable problem for some districts, particularly in rural areas and cause excessive spending to support BYOT technology that was originally meant to be conserved (Armstrong, 2014). Even in areas where adequate bandwidth exists, some districts may still not have the means to buy it (Armstrong, 2014). Many school districts report they anticipate declining IT budgets in upcoming school years. One way that schools are combating the growing bandwidth problem is by limiting bandwidth at certain times of the day (Bruder, 2014). Also, teachers and IT personnel may have students store information on online storage sites such as Google Docs, Edmodo, or Dropbox as opposed to network drives.

### **BYOT and Equity**

With BYOT comes the stress of ensuring students are equipped with their own electronic devices that they may bring to school to interact with fellow classmates as well as the curriculum. Younger age groups, such as school-aged children, are having the tendency to want mobile devices to be part of the status quo of their peers (Nor Shahriza, Ishaq, & Mahmud, 2010). In a BYOT classroom, one common concern of the teachers is that the student who does not have a smartphone or tablet will feel ridicule from their peers (Armstrong, 2014). According to the results from a 2013 survey of Advanced Placement and National Writing Project conducted by the Pew Research Center, teachers worry about the digital divide although more than half (54%) of the teachers surveyed say that all or almost all of their students have adequate access to mobile technology at school (Lanhart et al., 2010). However, only a fifth of these teachers (18%) say all, or almost all, of their students have this same access at home. Results

from this same study also revealed that teachers of the lowest income students were the least likely to have students with sufficient technology both in school and at home. Both urban and rural settings have their own sets of difficulties in regards to sufficient technological devices. Teachers in urban areas expressed that their students were least likely to have adequate access to digital tools in school while rural teachers struggle with their students having adequate access to technology at home.

Results from another study conducted by the Pew Research Center revealed that BYOT devices, such as cell phones, helped to bridge the digital divide by providing internet access to underprivileged teens (Lenhart et al., 2010). While equity of equipment may be a concern for schools, as BYOT enters the classroom, data showed that there was the same access to devices across all income levels (Nelson, 2012). In fact, Soloway claimed that by 2015 *all* students in *all* grades would have a smartphone, thereby eliminating the divide among equipment (Hill, 2011). As of 2011, “41% of teens from households earning less than \$30,000 a year use their cellphones to go online, whereas only 70% of teens in this household income category own their own computers at home” (Hill, 2011, p. 23). In some cases, BYOT closes the equity gap that may exist among devices. Sheringer (2012) has found that when a class has 25 students and a laptop cart of only 20 devices, student-owned devices can close that gap. Other schools have picked up on this use of devices as well by allowing students to utilize their own devices, thus leaving computer labs open for students who do not have their own equipment (Williams, 2012).

In a M-learning environment, research has shown that devices have helped reduce socio-economic inequities among students when devices are provided (Liu et al., 2014). In a BYOT environment, students bring their own devices to school; therefore, this frees up school-provided devices for students who do not have their own device to use. Even disadvantaged students



benefit academically from having tablets in the classroom. Lastly, school-sponsored programs, partnered with BYOT initiatives, may contribute to socio-educational equity.

After an interview with teachers a year after implementing BYOT into their classrooms, one teacher saw that students who had their own device would rally around those without in a similar way to a no classmate left behind scenario (BYOD One Year Later, 2013). Schools still provide individual devices for students who do not have their own, and with BYOT schools afford those devices because they do not have to buy them for every student. While some districts have the resources to give out free tablets to students, others are implementing a rent-to-own program for tablets (Armstrong, 2014). Schools are looking to outside sources for help in raising funds to purchase devices. Technology is available regardless of income level. Affluent families can afford to provide devices for their children, while low-income families are given devices through bond packages (Sucre, 2012). No matter the challenge, if a school wants BYOT to be successful they must be ready to provide some students with equipment, so they can collaborate with their classmates.

### **Managing a BYOT Environment**

The majority of BYOT research revolves around helping schools effectively implement the BYOT curriculum into their classrooms (Liu et al., 2014; Quillen, 2011; Sucre, 2012; Ullman, 2011). There have been mixed reviews regarding the M-learning environments and some studies have shown BYOT environments increase interruptions, while others advocate using the devices as a tool for learning (Liu et al., 2014). When searching BYOT articles, a common theme found was the issue of BYOT management and the use and misuse of devices. Stead (2006) explained that M-learning could form two perspectives: safe learning and disruptive learning. While these two terms sound contradictory, they complement each other when they

come together to mean, “open access to resources (safe) and collaborative learning (disruptive)” (Koszalka & Ntloedibe-Kuswani, 2010, p. 143)

### **BYOT and Disruptions**

The most common argument against the use of mobile phones in the classroom is the disruptions they may cause that prevent student collaboration (Lenhart et al., 2010). Mobile technology may be distracting to teachers and students when phones ring and students text, which disrupts the learning environment. Most schools treat cell phones and other BYOT devices as a disruptive force and try to manage and exclude them from classrooms. Mobile technology research results have revealed that teachers in a BYOT environment observed students engaging in off-task activities while using their mobile devices, and this was viewed with a negative connotation, being seen as disruptive; however, these disruptions may provide positive knowledge gains (Liu et al., 2014). In the Pew Internet and American Life Project Survey, 12% of students surveyed claimed to be allowed to have their cellphones in class while 62% said they are allowed to have their phones in school but not in the classroom (Lenhart et al., 2010).

### **BYOT and Cheating**

One common concern for teachers and policy makers in allowing BYOT devices in the classroom is misuse such as cheating. Results from the Pew Survey indicated that 58% of cell phone owning teens at schools that ban cellphone use in the classroom have sent a text message during class. Common discipline issues associated with BYOT devices that districts have encountered go beyond cheating by copying and transmitting tests, testing, and move to “sexting,” taking pictures of inappropriate behavior and places, as well as cyber bullying (Armstrong, 2014). One study confirms that students are using their mobile phones to cheat as

well as send sexually explicit pictures and messages (Common Sense Media, 2009). One school is showing that BYOT has allowed teachers to have conversations with their students about Digital Citizenship and their students are starting to recognize the difference between a productive device and a secondary consumer device (BYOD One Year Later, 2013). The students are learning to consider the pros and cons of devices as a learning tool.

### **BYOT and Digital Citizenship**

Perhaps the answer to ensuring digital security is to implement policy changes in regards to Digital Citizenship. Schools should undergo as little policy change as possible when moving to a BYOT curriculum; for example, changing your current cheating policy to cover cheating via cell phone or laptop (Quillen, 2011). Disrupting class with a text message would be treated the same as talking out of turn or passing a note across the room. Explicit expectations is the key to managing a successful BYOT environment. Some schools use an acceptable use contract to explain expectations for proper computer usage. Hicklin shared how their teachers taught their students procedures and expectations (Sucre, 2012). To help control and manage the BYOT environment and alleviate the stress on IT personnel, one school system, Walled Lake, recruits high-school juniors and seniors to serve as interns that keep the 3,000 schools laptops up-to-date. When they finish serving their times as interns at the schools, they graduate with a Cisco certification that speaks very highly of their accomplishment and grants them better access into the colleges of their choosing (Ullman, 2010)

### **BYOT and Accessibility**

Beyond trying to save money, security is of utmost importance when integrating BYOT into schools. Firewalls are a necessary component in BYOT classrooms but may interrupt the learning process if they are keeping teachers and students from adequate resources. It is

important for teachers to know whom to contact to unblock filters to grant their students access to much-needed information (Ullman, 2011). Outside the classroom, BYOT is already common in many businesses. A survey conducted by Cisco (2012) in the United States indicated that 95% of participants said that their job and/or workplace permits employee-owned devices in some way. Yet, no matter the location implanting BYOT, security issues are still a deterrent. When an employee attaches a personal device to an organizational network, it makes sense to worry about overall security. When attaching a device to the network, malware could move from the personal device into the company's machines and over the company's network (Miller, Voas, & Hurlbert, 2012).

### **BYOT and Security**

Common concerns held by many districts are finding ways for schools to monitor one-on-one devices while not jeopardizing school security (Ackerman & Krupp, 2012; Ullman, 2011). Whether or not a formal policy of BYOT is in place, people are using their personal electronic devices that may bring various security concerns (McCaney, 2012). Security issues include a variety of sources such as infrastructure, bandwidth wireless networks, and access points (Ackerman & Krupp, 2012). There are different options in addressing security issues associated with BYOT, such as setting up separate wireless networks for students, teachers, and administrators.

From an industrial standpoint, an area that is seeing a rise in BYOT policies is the health industry where workers are carrying more digital devices than ever before. The goal in these industries is to manage the device but not interfere with the private, personal aspect of the device itself (Mace, 2014). People should not interfere with an individual's personal apps and setup, but

ensure that a device is secure when it is in a private network (Mace, 2014). BYOD may always bring a risk, but policy, education, and awareness can control acceptable use.

### **BYOT and Teacher Development**

When viewing BYOT from a pedagogical standpoint, “the potential of mobile technology can be significant” (Keengwe & Bhargava, 2013). Mobile technology may benefit pedagogy, organization, strategy, and content with their abilities to speak to different learning styles of the learners as well as make educational materials available to anyone, anytime, anywhere, and in different versatile formats. However, if schools want to implement strong BYOT initiatives, they must have teachers who are on board, trained, and ready to embrace technology in their classrooms. The device itself does not create an improvement in achievement, the changes in instructional strategies do (Fairbanks, 2013). One commonly misunderstood belief is that BYOT forces teachers to abandon common teaching practices and instead build their curriculum around a technological device. Instead, student learning needs to be the core business of education. In doing so, many educators, researchers, and conference presenters are sending the message that integration of technology should not be about the tool but about learning (Lee, 2014).

There is currently a large disconnect between student access to technological devices outside of school and access they have as part of their school day. The disconnect may exist because teachers are not aware of the technology interests of students since more of their use takes place outside of school due to current district policies that ban the use of cell phones in school (Fuller, 2014). Many teachers who are unsupportive of BYOT have a fear of the unknown based on the poor decisions of a few students making bad choices with their personal technology, and if teachers are not on board with BYOT, it’s not going to be successful (BYOD One Year Later, 2013). Teachers are not the only ones who may feel disconnected when

implementing BYOT initiatives; there are several components to effective partnerships of BYOT plans that extend beyond the walls of the classroom teacher (Ackerman & Krupp, 2012).

Stakeholders must be well-informed and see the importance of BYOT integration as it may affect everyone beyond the classroom environment. Complete stakeholder buy-in enables observation of how BYOT will transform the model of education where learning will be continuous, and the school will not be the sole proprietor of information transfer.

In an SIIA survey of 981 educators, results indicated that many teachers aspire to a high ideal level of BYOT integration within their classrooms, but only 22% of K-12 and 37% of postsecondary teachers are integrating technology to which they would classify at a high level (SIIA, 2014). There seems to be a clear divide between the innovative teachers who are excited by the opportunities to incorporate technology and make a difference to student engagement and learning from those who are intimidated by the fast change of technologies available for learning (Murray, 2010). Research shows that implementing BYOT without a clear understanding of the vision or purpose, teachers will establish a routine way to use BYOT in a more teacher-directed manner (Cardoza, 2013). Perhaps one reason teachers are not integrating BYOT to the highest degree in their classroom is due to lack of support beyond professional development. The 2012 SIIA survey showed that there was a significant decrease from 2011-2012 in the number of K-12 teachers that had access to the level of technology resources, training, and support common to other professionals (SIIA, 2014). These results show that educators have a desire to integrate technology at a much higher level than they currently have, but need support and assistance to make that happen.

Many teachers also have a poor outlook on technology in general based on their personal use of devices and TAM explains why individuals choose to adopt or not adopt a particular

technology when performing a task (Davis, 1986). TAM supports the belief that users of a particular device or technology may be willing to tolerate a difficult system to access functionality that is shown to be important. Teachers must see the benefit of using technology in the classroom before they will buy-in to BYOT programs. BYOT initiatives may come with challenges that educators must meet directly; however, for teachers who are not instinctive users of technology, this challenge may be insurmountable (Armstrong, 2014). The Pew study found that teacher use of digital tools could run counter to their concerns about perceptions of student use. Many teachers have a poor understanding of how to utilize technology in the classroom and may view devices as a nuisance that has nothing but a social network function rather than a potential learning tool. Some teachers blame students for not allowing BYOT in the classrooms, but it is the teacher that does not want to change (Hill, 2011). Now teachers must focus more on what they want students to know and to do rather than the tool that they used to get there (Hill, 2011). However, for teachers to be open-minded to BYOT in their schools, professional development is essential.

The future of BYOT education suggests a challenge for educators and technology developers will be to ensure that this new form of learning, such as learning in a BYOT environment, is highly situated, personal, collaborative, and long term (Naismith et al., 2004). The future of M-learning is here and regardless if BYOT is welcome right now or not, mobile devices are finding a way into classrooms. Teachers need proper training to ensure that educational practice may include these technologies in productive ways and schools need proper professional development to advance to a higher level of M-learning integration.

Technology offers educators a variety of tools of which they may use in their classrooms; however, these tools do not magically solve all problems a classroom teacher may face which is

why it is important for school districts to provide teachers with practical training and technical support (Armstrong, 2014). Educators must be trained properly and have appropriate tools when implementing technology in their classrooms. A challenge noted by teachers when implementing BYOT into their classroom was the need for ongoing technical and material support (Baran, 2014). After employing M-learning opportunities, many teachers report receiving minimal technological and pedagogical assistance regarding effective implementation of M-learning (Cushing, 2011). Due to the lack of support, teachers have lower perceptions related to the use of mobile devices as learning tools (Ismail, Azizan, & Azman, 2013). School leaders cannot just drop a new laptop into a classroom and expect the learning environment to change. To implement M-learning technologies and BYOT programs successfully, teachers need to have proper professional development and access to mobile devices as part of their training (Cushing, 2011). It takes a lot of professional development to change how technology in the classroom is used (McLester, 2011).

A source of extreme criticism is one-day workshops that offer professional development to teachers in a superficial and disconnected atmosphere (Ball & Cohen, 1999). Professional development for teachers must be ongoing and significant. In reviewing nine different case studies, a substantial amount of professional development, an average of 49 hours, could increase student achievement for teachers' student by twenty-one points (Yoon et al., 2007). Professional development must be ongoing and put into practice (Joyce & Showers, 2002). Skills and knowledge gained from professional development must be applied into the classroom to affect the learning environments of students in a positive way. Professional development affects student achievement in three main ways. First, professional development enhances teacher knowledge and skills. Second, better knowledge and skills improve classroom teaching; and



third, improved teaching raises student achievement (Yoon et al., 2007). All three of these links must be present because if one is weak or missing, enhanced student learning cannot be expected.

Integrating technology into the classroom may alter the relationship between teacher and students in which effective technology integration moves instructors into the role of advisor, content expert, and coach (Knott et al., 2013). On the other hand, if students are unclear of their learning objectives and if the technological tool that students use to not require enough guidance to learn, then there will be confusion among classmates (Kahveci, 2010). Research shows that when schools provide proper training to their teachers when implementing BYOT, teachers are confident and excited to use technology in unique, creative, and interactive ways in their classroom (An & Reigeluth, 2012). Due to lack of training, some teachers still do not offer learning experiences where students and utilize their own devices because they are unsure how it will work in their classrooms (BYOD One Year Later, 2013). One system discusses the importance of professional development programs in which they are creating online resources which address topics teachers identify as barriers to help them plan for effective use of devices (Nelson, 2012). Teachers must be well equipped and have confidence in technology to implement BYOT successfully. TAM states that people form intentions to adopt technology or behavior based on their beliefs about the consequence of adoption (Davis, 1986). In this case, teachers must see the benefit of such an adoption before they will be willing to implement BYOT initiatives. Teachers have to change their mindset, and instead of using technology only occasionally, they need support so they can improve lessons that take advantage of technology (McLester, 2011). After hiring and training skilled teachers to use technology in a BYOT

environment, technology becomes a powerful tool that fosters collaboration and creativity (Peunte, 2011).

### **Gaps in BYOT Research**

While students and teachers may find discussion using technology engaging and interactive, research about the impact technology is having on academic achievement is not consistent (O'Sullivan-Donnell, 2013). There is currently little to no research on teachers' or students' perceptions of being in a BYOT classroom, especially at the high school level. Because of the lack of investigation related to BYOT technology, recommendations for future research in many studies investigating M-learning technologies suggest more rigorous research on the use of mobile technology in learning to enhance the use of M-learning in education (Alley & Prieto-Blazquez, 2014). One suggestion is that there is a need for more extensive qualitative and quantitative research studies on M-learning to advance the implantation of M-learning in BYOT environments (Alley & Prieto-Blazquez, 2014).

One research article observed student perceptions on learning with mobile tablets at the college level (Rossing et al., 2012). For this research design, the researchers chose a mixed methods survey design in which their purpose was to explore student perceptions of learning and engagement that occurred as the result of using iPads in the classroom. This research took place at Indiana University - Purdue University Indianapolis (IUPUI) with 209 undergraduate students in a variety of courses of study. The quantitative data of the survey analysis resulted in some interesting findings; one being there was a mean score of 4.092 out of 5 on the Likert-Scale on the question stating that the iPad helped student apply course content to solve problems (Rossing et al, 2012). There was an even higher mean score of 4.343 that students shared the iPad helped them to connect new ideas in new ways. Qualitative data showed interview responses in which

students explained that iPads made it easier to find new information and important tools are easily accessible. The one negative response to iPad usage was some claimed they could work faster using paper-pencil method than using the iPad to take notes. The research for this study was sound in design; however, there were too many variables in place. Allowing students of different majors threatens the reliability of the data, and while some majors may have found the iPad to be useful, it may have been a hindrance to others.

In a different study, Serin (2012) analyzed M-learning perceptions of prospective teachers studying at a private Turkish university with a focus on the participants' departments and gender. The researchers used a mixed-method survey design and consisted of 355 participants completing the "Mobile Learning Perception Scale" which is a five-point Likert-Scale survey (Serin, 2012, p. 222). The first sub-question on the survey asked, "What are the mobile learning perception levels of the prospective teachers?" (Serin, 2012, p. 228). Results showed that the prospective teachers' M-learning perspective is at a low level. Further analysis of the data revealed that the gender of the prospective students did not play a role in the overall perceptions of M-learning. The qualitative portion of the study included asking the prospective teachers how they would define M-learning. Some interesting responses included, "I don't know what it is. I don't have any idea what it is. I don't know what it is because I am against technology" (p. 230). Another response was, "Mobile learning is computerized learning. It is a learning process in which students listen to a computer instead of the teacher" (p. 231). Overall, Serin's study was reliable in design in that the analysis of data was thorough. However, the choice of participants and setting was narrow; therefore, it would be hard to generalize this data to a broader group of participants.

### Summary

BYOT allows students to choose the tools they bring to school; therefore, schools do not have to provide as financial, technology support. Rather than setting aside funds for the purchase of new technology each year, BYOT allows schools to devote resources to infrastructure and student support services (Hill, 2011). With affordable technology and the improvements to digital networks, many people are using mobile devices as their first choice of connectivity (Rossing et al., 2012). Another advantage of BYOT is the enhancement of learning experiences for students by personalizing and transforming the learning process by giving students instant access to technology and information (Armstrong, 2014). The use of mobile devices in a BYOT classroom has shown to have a positive impact on student-to-student peer collaboration as well as student-to-teacher and teacher-to-teacher collaboration (Murray, 2010). BYOT provides students with easy access to information in a variety of locations (Hill, 2011; McLester, 2011; Nelson, 2012; Rossing et al., 2012). Used in a BYOT environment, mobile devices allow students to explore and learn beyond the school setting that provides access to additional information not given in a formal lesson (Liu et al., 2014).

While BYOT fosters students' accessibility to a multitude of devices as well as applications, bandwidth is one reason that students are not using BYOT technology more often at schools (Armstrong, 2014). Equity is another factor that comes into play in a BYOT classroom as there may be added stress of ensuring students have devices that they can bring to school to interact with their classmates as well as the curriculum. Concerning managing a BYOT environment, there are common challenges that BYOT teachers face. A shared argument against BYOT is the disruptions the devices may cause as well as device misuse such as cheating (Armstrong, 2014; Lenhart et al., 2010). Finally, a lack of professional development for teachers

may negatively affect teacher perceptions of BYOT initiatives (Ismail et al., 2013). BYOT teachers need to be properly trained to adequately implement BYOT procedures in their classrooms (Baran, 2014; Cushing, 2011).

There is a need to conduct more research in BYOT classrooms. Because introducing BYOT curriculum is new to schools, teachers and school leaders need reliable studies to help guide the implementation of BYOT programs into their schools. The TAM provides this study with a sound foundation to which to base this research around. Current research shows the benefit of BYOT in terms of affordability and accessibility; however, there are still concerns regarding equity of devices and the safety of children granting Internet access and cheating using electronic devices. Curriculum leaders must be familiar with BYOT and have a clear plan when implementing such initiative in their own school.

M-learning devices are part of current students' everyday lives and because the technology is already here and it is time for schools to embrace the opportunity BYOT may bring to their students. After all, as noted by Foote (2012), "technology has already become an invisible part of their learning" (p. 26) because students are using the technology regardless if it is allowed or not. Technology is a part of today's society, and schools must be adamant about educating children to be effective leaders of their time; without technology implementation that is impossible.

### **CHAPTER THREE: METHODS**

Research must address the growing trend of BYOT and how teachers are currently defining BYOT in their own classrooms. As BYOT programs become more prevalent throughout schools in the United States, professional development needs to instruct teachers on how to adequately implement BYOT strategies in their own classroom (Armstrong, 2014; Len-Kibinkiri, 2014; Sakunthala & Wishart, 2014). Without concise definitions of what a BYOT classroom should look like, teachers and school leaders will struggle on the proper way to implement BYOT strategies within in their schools.

#### **Overview**

Research must address the growing trend of BYOT and how teachers are currently defining BYOT in their own classrooms. As BYOT programs become more prevalent throughout schools in the United States, professional development needs to instruct teachers on how to adequately implement BYOT strategies in their own classroom (Armstrong, 2014; Len-Kibinkiri, 2014; Sakunthala & Wishart, 2014). Without concise definitions of what a BYOT classroom should look like, teachers and school leaders will struggle on the proper way to implement BYOT strategies within in their schools.

For this study, a phenomenological approach was taken using interviews, focus groups, and journaling. The purpose of this qualitative phenomenological study was to investigate how 10 teachers at three different high schools in a southeastern U.S. state defined and implemented BYOT within their classrooms. This investigation sought teachers' perceptions of defining, planning, and implementing BYOT classrooms. The participants in this study included teachers who were currently teaching in a BYOT environment. Results of this study may provide insight for school administrators to develop practical BYOT plans that include defined processes,

purposes, and parameters best suited to their school's learning environment. At this stage in the research, BYOT is generally defined as a classroom in which the students bring their own technological device to school.

### **Design**

I chose a qualitative research design to investigate how teachers defined and implemented BYOT within their classrooms. Qualitative research is a very broad methodology that consists of a wide range of approaches and methods found within different research disciplines (Ritchie, Lewis, Nicholls, & Ormston, 2014). Denzin and Lincoln (2011) describe qualitative research as being associated with specific kinds of data that usually involve words or images rather than numbers. Qualitative research focuses on the what, why, and how rather than the how many (Ritchie et al., 2014). In qualitative research, topics emerge as the study progresses (Strauss & Crobin, 1998). This emergent design theory allowed me to describe the experiences of participants.

Of the various types of qualitative available, the method best suited to investigate the shared experiences and perceptions of BYOT teachers is the phenomenological method. The purpose of this study was to identify the essence of a shared, lived experience, of a particular group, in this case the teachers involved in the BYOT classroom, which made a phenomenological approach appropriate (Andrews et al., 2011; Creswell, 2013; Moustakas, 1994; Williams, 2012). Phenomenological studies examine human experiences provided by the people involved, and the goal of phenomenological research is to describe the meaning that experiences hold for each subject (Creswell, 2013; Nieswiadomy, 2008). The phenomenological research design is generally used to study areas in which there are little knowledge which makes

this research design suitable for this particular study as research of teacher perceptions of BYOT is still unclear (Donalek, 2004).

In this study, I used the transcendental phenomenological research design to which the research was focused less on my interpretations and more on a description of the experiences of participants (Creswell, 2013; Moustakas, 1994). Transcendental phenomenology focuses on bracketing, in which investigators set aside their personal experiences, as much as possible, to take a fresh perspective to investigate the phenomenon. Hence, “transcendental” means, “in which everything is perceived freshly, as if for the first time” (Moustakas, 1994, p. 34). The phenomenon investigated was the experience of high school teachers in a BYOT classroom setting. This qualitative, transcendental phenomenological study relied on the collection of data centered on authentic experiences of BYOT teachers rather than experiences created by myself. Data collection involved interviews, focus groups, and journaling to ensure a triangulation of data.

### **Research Questions**

To help define BYOT from a teacher’s perspective, more information about how to implement BYOT in classrooms is needed. Therefore, the following research questions guided this study of teacher perceptions of the BYOT classroom.

1. What are BYOT teachers’ definitions and descriptions of BYOT?
2. What strategies are BYOT teachers using?
3. What obstacles, if any, may inhibit the BYOT environment?
4. What resources, if any, may enhance the BYOT environment?



## **Setting**

Greenridge School System (pseudonym) is located in the southeastern United States. This school system serves 22,563 students and contains 31 total schools with 19 elementary schools, six middle schools, three high schools, one middle and one high alternative school, one charter school for career-ready pathways, and one center for visual and performing arts (Greenridge County School System, 2013). Each high school serves students in grades nine through twelve from both urban and rural communities. There are approximately 6,987 students in grades nine through twelve. The student population consists of 63% White, 28% Black, 5% Hispanic, and 3% Multi-Racial. One of the three high schools in Greenridge County has approximately 43% of students eligible for free or reduced lunch that makes this school a Title I school which receives Title I funding (Georgia Department of Education, 2010).

Greenridge School District is known for its excellence in academics and its competitiveness in athletics. This school district was chosen as the site for this study because part of its 2014-2019 Strategic Plan is to provide “innovative opportunities for student success” and a large amount of money is being budgeted to increase bandwidth and infrastructure to support such innovative tools (Greenridge County School System, 2013). Another part of the Strategic Plan is to enhance and expand 21<sup>st</sup>-century classrooms throughout the school system by increasing personalized opportunities for learning through the use of BYOT and virtual learning (Greenridge County School System, 2013). This forward-thinking mentality makes Greenridge School System a prime setting for BYOT studies.

## **Participants**

To gain an understanding of teacher perceptions of defining, planning, and implementing BYOT, only participants who lived the experience were selected. In this case, the lived

experience was participating in a BYOT classroom at the secondary level. The method used for selecting participants was criterion sampling. Criterion sampling is useful for quality assurance in which all of the participants meet a certain criterion (Miles & Hubbard, as cited in Creswell, 2013). In the case of this study, the participants represented the prospective faculty members from three high schools in the third year of BYOT implementation. Each participant had at least three years of teaching experience in a traditional classroom setting. The three years of experience was a vital part of the study because the location of the school district within the state deems a teacher experienced and qualified after three years of successful teaching (RESA Statewide Network, 2003). Requiring participants to have prior experience in a traditional setting provided the participants with a point of reference from which to compare the new educational environment of BYOT. Participants also had to have at least one-year experience in a BYOT classroom. The subject or content taught was not a factor in the selection of the participants.

While there are no specifics on the number of participants in a transcendental phenomenological study, sample sizes range from two to 25 (Klenke, 2008). Boyd (2001) suggests two to 10 participants as an acceptable saturation point, and Creswell (2013) recommends interviews with up to 10 people. The sample size of this study included a maximum of 15 participants teaching grades nine through grade twelve. There were no restrictions placed on participants' age, gender, or race.

I identified experts in the field of qualitative research and BYOT implementation to construct a referral list of potential candidates from all of the three high schools in Greenridge School System. The referral list consisted of 20 candidates that the referrers believe to be a good fit for the study as well as fit the recommendations identified to participate in this study. Next,

contact with potential candidates was made about the referral list either in-person or through e-mail with information about the purpose of the study, procedures to follow, and possible risks involved in participating in the research (see Appendix B). For this study, there were 13 participants selected; however, only 10 participants completed all parts of the data collection process.

### **Procedures**

Before conducting the research, I obtained IRB approval (see Appendix C). Prior to submitting the IRB application, I contacted the superintendent of the school district to request approval to conduct the research in the school district. Upon receiving a permission letter from the superintendent, I selected participants using criterion sampling and administered interviews, focus groups, and journals. Before conducting interviews, I consulted a few experts the field of qualitative research as well as BYOT to review the questions and pilot the interview questions with a small sample group outside of the participants to ensure clarity of questions and wording. Once all data were collected using the three data collection methods, the next step was for it to be organized and transcribed. Next, data were analyzed using phenomenological reductionism and bracketing to see the overall essence of the phenomenon (Creswell, 2013; Schutz, 1967).

### **The Researcher's Role**

I am a doctoral student in Liberty University's School of Education, a ninth-grade Biology Teacher, and Title I committee member. Starting in 2012, I began attending Title I committee meetings regarding decisions being made on the purchasing of new technology. While Title I money is available for teachers to request specific technological devices, there is a critical lack of funds that does not allow for a school-wide 1:1 initiative. With that lack of funding, BYOT classes have opened up in my school, and I have been teaching BYOT classes

for one year. As a teacher at a BYOT school, I provided in-depth analysis of the BYOT initiative. As such, axiological philosophical assumptions were used in this study because some of the stories represented my interpretation and presentation of the research topic.

As a BYOT teacher, I may enter the study with preconceived notions about how BYOT teachers perceive and define the BYOT classroom. However, to obtain objectivity in this study, phenomenological reductionism, also known as bracketing, was used. This process involves the researcher identifying their assumptions about the phenomenon being studied and setting aside those assumptions in an effort to see the phenomenon as it is (Husserl, 1931; Moustakas, 1994). Bracketing assisted in limiting bias and preconceived notions of the research. By identifying and setting aside prior assumptions, this allowed me to see the phenomenon through the perspective of the participants.

### **Data Collection**

For this study, I collected data from three different sources, including interviews, focus groups, and journals. Creswell (2013) suggested that interviews, focus groups, and journaling are appropriate for a qualitative, phenomenological study, as they provide thick, rich data about the overall essence and phenomenon of study. Additionally, these three data collection sources validated a credible study because of triangulating the data. Triangulation is a method used by qualitative researchers to check and establish validity in studies (Guion, 2002). Triangulation is defined as the combination of methodologies in the study of the same phenomenon (Denzin, 1978). Researchers improve the accuracy of their judgments by collecting different kinds of data bearing on the same phenomenon, and in this case, that phenomenon is the shared experiences of teaching in a BYOT classroom (Jick, 1979).

The data collection methods used also contributed to reaching data saturation. Interviews were structured to facilitate asking multiple participants the same questions, otherwise the research would not reach saturation, as it would always be a moving target (Guest, Bunce, & Johnson, 2006). Secondly, a focus group also elicited a variety of perspectives on the topic of BYOT to reach data saturation. Having three different methods of data collection not only enhanced the reliability of the results, but also explored different levels and perspectives of the BYOT phenomenon. Saturation is important in both qualitative and quantitative studies, and the participants and data collection methods for this study as well as data triangulation, all contributed to data saturation for this phenomenological qualitative study addressing teacher perspectives of BYOT.

## **Interviews**

Semi-structured interviews included a set of prepared questions that deviate where necessary to maximize the information obtained (Adams & Cox, 2008). I consulted with a few experts in the field of qualitative research as well as BYOT to review and pilot the interview questions with a small sample group outside of my participants to ensure clarity of the questions. For this study, each semi-structured interview took place during my planning period and lasted approximately 10 minutes, with at least two teachers per week for the duration of one nine-week period. These semi-structured interviews (see Appendix A) consisted of open-ended questions (Patton, 2002). Open-ended interview questions allow teachers to tell their story regarding being in a BYOT environment (Creswell, 2013).

### *Standardized Open-Ended Interview Questions*

#### *Teacher Perceptions of BYOT Classes*

1. Is this your first experience participating in a BYOT classroom?

2. Did you self-register for a BYOT class or were you placed?
  - a. If self-registered, why did you choose to register in a BYOT course?
3. Did you receive any help or training on how to use your device of choice?
  - a. If trained, what sort of training did you experience?
  - b. If not trained, how did you learn to use your device?
4. Describe a time(s) when you felt technological devices were particularly useful in a lesson.
5. Describe a time(s) when you believed technological devices were not useful in a particular lesson.
6. What advantages do you see to using BYOT in the classroom?
7. What disadvantage do you see to using BYOT in the classroom?
8. Are there any limitations you came across when using devices?
9. How compatible were the devices among students in your classroom?
10. Were there any instances in which students had to share devices due to equity issues?
11. How has being in a BYOT classroom affected students' learning?
12. How has being in a BYOT classroom affected your confidence in your technology?
13. What else would you like to tell me about BYOT that I have may have not asked about?

\*\* Each question provides a starting point for further probing questions.

The first three questions of the interview pertained to the participants' background information and how they became involved in a BYOT setting as well as how much prior knowledge they had using technological devices in an educational setting. It is important for teachers to not only know the content, but to know technology as well (Backer, 2010). I had to

ensure that I am familiar with the participants' involvement with technology and whether or not they have used it in an educational setting before.

Questions four through eight provided feedback regarding the students' overall usage of their technology in a BYOT environment. There is a current gap in the literature in regards to teacher perceptions on the use of educational technology for learning (Kahveci, 2010). Answers to these questions may help to fill the current void that exists in regards to BYOT research.

Questions nine and 10 worked together to address the issue of equity among devices in a BYOT environment. There are many challenges that work against a smooth implementation of a BYOT classroom and equity of devices is one of those challenges (Hill, 2011; Nelson, 2012). Students may appear to enjoy using technology in an educational setting, but if they do not have a device that is conducive to a BYOT environment, then that may change their whole view of a BYOT educational setting.

Questions 11 and 12 sought to understand the overall experience students had when participating in a BYOT environment. The purpose of the phenomenological study was to identify the overall essence of a shared experience that a group of people have together (Creswell, 2010). I was interested to see how participating in a BYOT environment may hinder or help the achievement of students in using technology in an educational setting as well as how participating in such an environment impacted overall learning.

Finally, I added question 13 in case I missed something a teacher was trying to express but could not in the previous twelve questions. Phenomenological research describes a shared experience; therefore, teachers needed an ample chance to reveal all information that may help to contribute to the overall essence of the study (Moustakas, 1994).

## **Focus Groups**

Focus groups are an important method of data collection in phenomenological research (Creswell, 2013). Focus groups are a form of group interview that takes advantage of communications between research participants to gather data (Kitzinger, 1995). There are three major advantages of using focus groups in qualitative research. One, it is limited to verbal behavior. Two, focus groups consist only of interaction in a discussion group, and third, they are created and managed by the researcher (Morgan, 1997). The idea behind the focus group method is that the group process can help participants to explore and clarify their views in ways that would be less accessible in a one-to-one interview setting (Kitzinger, 1995). The data I received from focus groups data contributed to answering my research questions in which they revealed aspects of the BYOT environment that I may have missed in one-on-one interviews.

I conducted one focus group with 10 BYOT teachers. The focus group took place at the high school where I currently work in Greenridge County. The focus group lasted for approximately thirty minutes, and we discussed the four research questions related to this study as well as additional questions formed from themes discovered during the interviews and journals.

## **Participant Journals**

The final source of data collection was journal entries through Google Docs, a technological platform that allows participants to share documents electronically. The act of typing their thoughts and observations encouraged participants to process and reflect on their experiences in different ways than thinking about them or discussing them with others (Johnson & Christensen, 2012). The major strengths of using journals to collect data are that they can provide a direct path into participant insight, provide flexibility for participants to make entries at



their leisure, and guide the direction of other data collection methods (Hatch, 2002). Journals, along with interviews, have been identified as the best means of assessing rich, first person accounts of the participants' experiences (Smith, Flowers, & Larkin, 2009).

Each participant was asked to journal two to three times a week for the duration of the study (approximately two to four weeks) about his or her observations and feelings towards teaching in a BYOT environment. They utilized the four research questions used in this study as a guide to help formulate their journal entries.

### **Data Analysis**

After conducting interviews, journal entries, and focus groups, no new data or themes materialized; therefore, this indicated data saturation (Morse, Lowery, & Steury, 2014). I collected and converted data into Word document files, then separated the files by data collection type: interviews, observations and surveys. An organized system of data allowed for more thorough analysis (Creswell, 2013). I analyzed the data using phenomenological reductionism (Schutz, 1967). This form of data analysis uses bracketing which suspends internal and external judgments so I could focus on a specific phenomenon (Given, 2008; Schutz, 1967).

I began by looking for significant statements throughout data and wrote notes in the margins of field notes and transcripts (Creswell, 2013; Schutz, 1967). During this process, I listed every quote relevant to the four research questions. Then, I used reduction and elimination by looking at the identified quotes and asked myself if the expression contained a moment of the experience that was necessary and sufficient, as well as was the expression possible to abstract and label (Moustakas, 1994). If the expression did meet those two requirements, I considered it a horizontal experience. If not, it was eliminated. As I took notes, I looked back for larger, more broad thoughts. In addition to phenomenological reductionism, I also used enumeration.

Enumeration is the process of quantifying data by counting the number of times a particular word, category, or theme appears in the data (Johnson & Christensen, 2012).

Following phenomenological reductionism and enumerations, I made textural and structural descriptions. Essentially, this step described what the participants in the study experienced, and strived to answer what is was that happened. Textural descriptions are important to determine the essences of the overall phenomenon (Creswell, 2013; Moustakas, 1994). Structural descriptions are different from the textural descriptions. Instead of looking to “what” happened, structural seek to determine “how” the experience happened. To do this, it is important to look to the setting and context in which the phenomenon was experienced. In this case, the setting and context would be the BYOT class. Again, these descriptions were important determining the essence of the overall phenomenon.

Employing triangulation of research methods: semi-structured interviews, focus groups, and journaling enhanced the dependability and validity of this study. When synthesizing data, these sources of data went through the same process to ensure that the themes appearing in one source were consistent among all sources. As the culminating task of this qualitative, phenomenological study, I determined the essence of the BYOT experience (Creswell, 2013). To find the essence of the experience, I took the textural and structural descriptions and presented the culminating aspect of the study. The essence explained what the students experienced in the BYOT classes and how they experienced it together.

### **Trustworthiness**

Four criteria provide trustworthiness in a study. Lincoln and Guba (1986) list the four criteria as credibility, confirmability, transferability, and dependability. To address these four areas of trustworthiness, I used triangulation, member checking, external audits, and thick, rich

data. Data collected included interviews, observations, and free-response surveys.

“Triangulation” refers to the use of collecting data from three different sources (Creswell, 2013).

Triangulation produces a credible study because it helps to provide the overall essence of the phenomenon and increases the overall validity of the results (Lincoln & Guba, 1986).

Triangulation of data ensures that three different sources are used to collect data so comparisons can be made between the varying experiences (Creswell, 2013; Lincoln & Guba, 1986).

### **Credibility**

Credibility is the medium between the participants’ experience and the researcher’s interpretations of the findings (Schwandt, 2007). I achieved credibility through member checking, triangulation, and peer audits (Lincoln & Guba, 1986). Through member checking, I solicited reviews from participants in the BYOT classes to ensure sound interpretations of the findings. I used focus groups to complete this process. Member checking increases the reliability of the research as it ensures the interpretations of the findings are credible (Lincoln & Guba, 1986). I conducted a pilot interview which contributed to the credibility of the interview questions. The pilot interview allowed an expert in the field of qualitative research and BYOT to identify any unclear or biased questions. The participants of the pilot group offered feedback as well as any additional information to help redesign the questions.

### **Confirmability**

External audits ensure confirmability by assuring that documents kept are support by the data found (Lincoln & Guba, 1986). Once I had the data collected, I submitted the findings to the external auditor. Using an audit trail provides an external auditor with documents needed to assure the consistency of the study. My external auditor was completely unrelated to the study and I asked them to confirm that the findings were supported by the data.

**Dependability**

Dependability suggests the research should show that the findings are consistent and replicated easily (Lincoln & Guba, 1986). To maintain consistency, I asked each participant the same questions from the interview protocol. I also used the same methods for arriving for the interview, and conducting the interview, and recording the interview for each participant.

**Transferability**

Transferability of data provides the findings of the study are applicable to other contexts (Lincoln & Guba, 1986). To ensure transferability of the data, I used thick, rich descriptive details pertaining to the participants, setting, and methodology. By providing such data, it allows the reader to transfer information to other settings and to determine whether the findings can be transferred due to shared experiences (Creswell, 2013; Erlandson, Harris, Skipper, & Allen, 1993).

**Ethical Considerations**

Anonymity, informed consent, and data security are ethical issues to address in qualitative research (Creswell, 2013). Participants did not experience any risks or ethical dilemmas in this phenomenological study of teacher perceptions and definitions of BYOT. The participants did not engage in any unethical actions. After being granted IRB approval, I solicited participants and provided informed consent that included information about the study and let them know their rights in participating in such a study. I strictly protected the anonymity of all participants so they would feel comfortable sharing their thoughts and ideas without feeling judged. I used pseudonyms for all individual accounts transcribed in the final publication. Some participants wanted to make comments “off the record,” and I deleted such information from record and did not include it in the report.

I stored all data collected in a locked filing cabinet or password-protected file on the computer. Additionally, conducting the research at my place of work required that I take additional steps to reduce any potential conflicts of interest. I made teachers who participated in this research aware that their association with this study was not connected to my role in the school, and they could remove themselves from the study at any time.

### **Summary**

The purpose of this phenomenological research was to explore teacher perceptions of working in a BYOT environment and identify how teachers defined, planned, and implemented BYOT in their classroom. The research focused on Greenridge School System found in the southeastern United States and identified the growth of technology as part of their district-wide strategic plan. The focus of the research was on faculty members who have taught at least three years in a traditional classroom setting and at least one year in a BYOT setting.

Use of semi-structured interviews, focus groups, and journals supported exploration of the phenomenon. A small group of teachers piloted the interview questions to ensure clarity. I then followed the interview schedule at the three different high schools in the Greenridge School System. BYOT teachers from all three high schools participated in focus groups. Finally, each participant journaled about the BYOT experiences at least two to three times week and I collected these entries at the conclusion of the study. Through phenomenological reductionism, I identified themes using data from interviews, focus groups, and journals; and collected and analyzed data to address the four guiding research questions.

## CHAPTER FOUR: FINDINGS

### Overview

The purpose of this qualitative, phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state defined, planned, and implemented BYOT within their classrooms. This study was centered on four research questions: (a) What are BYOT teachers' definitions and descriptions of BYOT? (b) What planning and implementing strategies do BYOT teachers use? (c) What, if any, obstacles may inhibit the learning in a BYOT environment? (d) What, if any, resources may enhance the learning in a BYOT environment?

Audio recordings and transcriptions of face-to-face interviews, journal entries, and a focus group by a criterion sample of 10 teachers from a suburban school system provided thick, rich, data. Teachers who had been implementing BYOT for at least one year and had at least three years of teaching experience in a traditional classroom setting were invited to participate in this study.

Participants in this study were asked to describe their perceptions of defining, planning, and implementing BYOT classrooms. Data analysis, using phenomenological reductionism (Schutz, 1967), resulted in the identification of themes across all data collection methods: interviews, journal entries, and a focus group. These themes may provide insight for school administrators to develop working BYOT plans that include defined processes, purposes, and parameters best suited to their school's learning environment. By conducting an in-depth qualitative, phenomenological study with 13 different BYOT teachers, and analyzing participant responses from interviews, journals, and focus groups, teachers who are contemplating adopting BYOT may have a clearly identified idea of what a BYOT classroom should look like as well as the challenges they may face in a BYOT environment. Through the examination of current

teacher perceptions of BYOT, school district leaders may make informed decisions regarding technology funding as well as develop goals and assist teachers who are establishing BYOT environments in their own classrooms. By having a clear definition of the environment in a BYOT classroom environment, school leaders may have leverage to promote and use technology for learning.

### **Participants**

A selection of 13 teachers participated in this study. The criterion-sampling plan sought to interview participants based on a list of BYOT teachers in the system. A total of 27 potential participants met the criteria of three years of traditional teaching experience and one year of BYOT experience; however, only 13 volunteered to participate. Of the 13 volunteers, 10 completed the duration of the study. Pseudonyms were used to uphold confidentiality of the participants. The 13 teachers represented a variety of secondary school teachers from three different suburban high schools in a Bring Your Own Technology classroom.

Participants of this study offered a wide-range of classroom and BYOT experience. Of the participants, the least amount of BYOT experience was two years, and the most experience was four years. In terms of traditional classroom experience, the average for all thirteen participants was 14.4 years of experience. The participants chosen for this study were all heavily involved in their schools in Greenridge County. Some participants served as department chairs while others headed and served on various committees within their schools. The content areas of the teachers were varied and diverse. The participants represented two different elective classes in addition to the four core content areas. The strong retention rate of teachers might have indicated that Greenridge County offered teachers a positive working environment in which teachers felt comfortable and confident.

Initial contact with the participants included a letter requesting participation prior to setting up interview sessions. Thirteen teachers were selected for participation with 10 completing the duration of the study. Pseudonyms, rather than actual names, upheld the confidentiality of the participants. Face-to-face interviews were scheduled during planning periods, as this was the most convenient time for each participant. All teachers participating had at least three years of teaching experience in a traditional classroom setting, and at least one year of teaching experience in a BYOT classroom. Table 1 provides participant background data in this qualitative study.

Table 1

*Participants General Background Information*

<u>Participant</u>	<u>Content Area</u>	<u>Years of Experience</u>	<u>BYOT Participation</u>
Sarah	Science	27	4
Amanda	Foreign Language	27	3
Tara	ELA	18	4
Sharon	CTAE	17	3
Elise	Science	17	4
Cole	Social Studies	14	3
Lisa	Science	13	2
Cade	Foreign Language	13	2
*Bill	Science	12	4
Richard	Social Studies	11	2
Suzanne	Math	9	3
*Diane	Science	5	2
*Katie	Math	4	1
Mean Score		14.4	2.8

*Note.* \* means participants did not complete duration to the study



**Sarah**

Sarah was a science teacher with 27 years of traditional teaching experience and four of those years spent in a BYOT classroom.

**Textural.** Sarah was a 50-year old female. She was born in Holland and moved to the United States at the age of four. She was a working mom of one daughter and married to her husband for 17 years. She was a veteran science teacher and had been teaching for 27 years with 11 years at her current school. Her passion was Biology, but she had taught Chemistry, Forensics, and has even served a brief stint as a part-time counselor. She spent her first 16 years of teaching in California where she described her students as, “diverse and enthusiastic (personal communication, January 5, 2016). At the time of the study, she was serving as the department chair while teaching AP Biology as well as general and collaborative biology courses. Outside of teaching, Sarah loved to cook and would frequently bring home-baked goodies to her students and her colleagues knew her for her made-from-scratch pasta dishes.

Sarah had a fourth block planning period, and in terms of planning for BYOT, she used her planning time to test out BYOT activities that required new apps or technology in hopes to “work the bugs out” (personal communication, January 25- 29, 2016). When discussing the advantages of BYOT, Sarah expressed that, “. . . it gives kids access to the most current information. I think it does it in a way that is relevant and important for the way society works” (personal communication, January 5, 2016). Sarah also brought up the idea that students needed to learn to use their devices appropriately for non-social related uses. She stated, “I think it’s good for them to practice having to find things and answer questions and solve problems independently” (personal communication, January 5, 2016).

While Sarah discussed the advantages of BYOT, she also was outspoken in the disadvantages that BYOT brings into the classroom as well. Sarah suggested that BYOT was, tempting for kids that are not focused to veer off-path. It certainly requires extra discipline and policing of kid behavior because you can't just look at their faces and see if they are doing something wrong. So, you have to be in 32 places at one time monitoring them. There is also an integrity issue and making sure the kids are using it for research purposes and not directly using copy and paste and using it inappropriately for tests. (personal communication, January 5, 2016).

**Structural.** As one of the more veteran participants, Sarah had extensive teaching experience prior to the technology boom in education. She was knowledgeable about technology in the classroom and even with her prior experience in teaching in traditional classrooms; she was open to ideas that involved integrating more technology in the classroom; especially if the technology helped streamline her instruction. During interviews, Sarah was confident and direct in her responses. While passionate about BYOT, she had reservations about how much it was used in the classroom and did not agree with the notion that it could replace teacher-led instruction.

## **Cole**

Cole was a social studies teacher with 14 years of traditional teaching experience and three of those years spent in a BYOT classroom.

**Textural.** Cole was a veteran social studies teacher and highly involved in educational policy and served on the on the State Board of the Teacher Retirement System. Cole had 14 years of teaching experience and previously taught civics where he also served a brief stint as Social Studies Department Chair at his previous school. He was married to his wife who was

also in the public service profession. They enjoyed traveling together, both domestic and internationally, and he also enjoyed supporting his wife in her fine art endeavors as she opened up her own art exhibition.

Cole always had a love/hate relationship with technology in the classroom, and prior to becoming a BYOT teacher, he was unsure just how useful the introduction of technology would be. His apprehension to using technology in the classroom stemmed from his belief that, “Sometimes (technology) is very distracting to the kids” (personal communication, January 5, 2016). While Cole believed that students needed to concentrate in the classroom, he volunteered to become a BYOT teacher to, “explore opportunities to see if I could meet them half way instead of always wanting to insist on learning the way I did in high school” (Cole, personal communication, January 5, 2016). Since his self-registration as a BYOT teacher three years prior to participating in the study, his view of technology in the classroom has evolved.

Throughout the duration of the study, Cole maintained that technology in the classroom could still be a distraction, regardless of the hands-on lessons in which his students were involved. While his view of technology as a distraction was still apparent, Cole did recognize that his own confidence in technology had grown due to adopting a BYOT classroom. Cole explained, “I’m always playing with [technology] and trying to find new things. I do like exploring options. I’ve gotten more confident. At first, it was hard, but I’ve gotten better at it now” (personal communication, January 5, 2016).

**Structural.** Cole was very confident in his ability to teach his classroom, but before he became a BYOT teacher, his aptitude to teach in a classroom that was being overtaken by technology worried him. While he still battled distractions, his ability to recognize that his students could not concentrate without their phones motivated him to adopt BYOT policies and

input more technology in his lessons. Through the use of technology in the classroom, his viewpoint has softened, and he has recognized the benefits that BYOT can offer. While skeptical, Cole was honest and straightforward during his interviews.

### **Lisa**

Lisa was a science teacher with 13 years of traditional teaching experience and two of those years spent in a BYOT classroom.

**Textural.** Lisa was well versed in multiple sciences in which she has taught at the introductory level in Physical Science and the college level in Advanced Placement Chemistry. Lisa regularly had students who had already graduated from the high school she taught to come back to visit and discuss with her their journey in their college chemistry classes. She always made time for them, and this reaffirmed that she was fulfilling her goal of instilling a passion for science in her students. She also served at the Science Technology Engineering and Math (STEM) Coordinator for her school. In that role, she was responsible for keeping track of the students who were enrolled in the STEM program and ensuring that they were meeting all STEM requirements. Lisa was born in Ireland and moved to the United States when she was in her early twenties. She was married to her husband of twenty-six years, and they had two children who were college-aged. Her oldest child was receiving his degree in science while her youngest child has found a love for literature and was pursuing English as a degree option.

Lisa was open-minded to everything technology. If a new option was out there, she was going to try it and then decide if it had a place in her classroom. She followed multiple blogs and social media accounts of technology-savvy teachers and would often take direction from those individuals. As a BYOT teacher for only two years, she was excited about opportunities with technology that could enrich the learning experience of her students. She volunteered to

become a BYOT teacher at her school because, “STEM & AP Chemistry are very technology-driven classes and it seemed like a good choice” (personal communication, January 8, 2016). Instead of focusing her entire classroom around technology, she explained that, “BYOT is just one aspect of my classroom that I can use to support my focus on learning concepts through experimentation” (personal communication, January 8, 2016). Rather than designing her classroom around technology, she designed her classroom around the content and then looked for ways students could incorporate their technology to assist with the lesson.

Lisa used student-devices most when completing laboratory exercises. Through research, word-of-mouth, and trial and error she had found apps that students could download free to their phones that could replace a number of outdated items in her classroom. While Lisa was very optimistic about BYOT, she did recognize some setbacks included with BYOT implementation. She stated that using BYOT in the classroom has made “cheating easier to do,” especially if technology is used to take quizzes (personal communication, January 8, 2016). To combat cheating among students with using BYOT, Lisa no longer uses BYOT for graded assignments.

**Structural.** Lisa continuously looked for new routes that she could take technology in her classroom. Her love and passion for science contributed greatly to her optimistic attitude on technology, and Lisa lived and breathed the content she taught, and passion like that would be hard ever to extinguish. When her children were living at home, they were highly involved with extracurricular activities and much of Lisa’s time was devoted to supporting her children. Now that both of her kids had moved out and attend different universities, she has poured herself into her teaching and her passion for science. This passion for science education was continuing to open doors for technology with her students and she was having a fun journey implementing different strategies in her classroom.

## Sharon

Sharon was a Career, Technical, and Agricultural Education (CTAE) teacher with 17 years of traditional teaching experience and three of those years spent in a BYOT classroom.

**Textural.** Sharon was a teacher in the CTAE department of her school. In terms of dedication to her school and students, Sharon went above and beyond. She was the cheerleading coach, homecoming committee member, pep-rally coordinator, and co-sponsor of the Family, Career, and Community Leaders of America (FCCLA) club. She had a self-described, “type-A” personality in which she was very controlling of all things in her classroom and personal life (personal communication, January 5, 2016). She had been a teacher for 17 years with 11 years spent at her current school. Before coming to her current school, she taught Physical Education at the elementary level for six years. She had an older daughter that was close to graduating with her degree in nursing and two younger twins (boy and girl) that were in the middle of their sophomore year of college. She had been married to her husband for 24 years and they enjoyed spending their weekend in their mountains with their two dogs.

Sharon was very decisive in her responses during the interview and focus groups. She had been a BYOT teacher for three years and had many opinions about the use of student-owned devices in the classroom. She first recognized that technology in the classroom was a necessity in which students had the ability to, “access information that pertains to the lesson I am teaching” (personal communication, January 5, 2016). Sharon was also very verbal about the disadvantages to BYOT in the classroom. She found that,

People forget how to communicate, and that drives me crazy. One of the work ethics I have in my classroom is to learn how to communicate with each other. We talk to them about how their communication if 90% their body language and with technology, body

language cannot be perceived; therefore, we are not adequately communicating with each other when using devices. (Sharon, personal communication, January 5, 2016)

Throughout the interviews and focus groups, Sharon had a difficult time straying away from the lack of communication that could stem from student-owned devices instead of focusing on how these devices could be used to benefit the classroom.

**Structural.** Sharon's self-proclaimed "type-A personality" made it difficult for her to fully let go of parts of her classroom to technology. She was very controlling of all parts of her lessons and was not one to allow technology to be embedded into curriculum if she was not in control of it. Sharon also had difficulty distinguishing the difference between BYOT and classroom technology. Many of her responses about the benefit of BYOT were directed at the overall use of technology, not student-owned devices. For example, she used county-provided responders and Chromebooks and some of her responses were about these devices, which were not examples of BYOT devices.

### **Elise**

Elise was a science teacher with 17 years of traditional teaching experience and four of those years spent in a BYOT classroom.

**Textural.** Elise was a veteran science teacher of 17 years with 11 years at her school at the time of the study. She spent the beginning of her teaching career in the coastal area of her state before relocating to a more centralized location. She was married to her husband of five years and with her marriage she gained two more sons for a total of four children. She enjoyed spending time at the ballpark, soccer complex, and recreation fields to support her children's baseball, soccer, and cross country dreams. When not busy at the ballpark, she and her husband like to get away to the beach as much as possible.

In terms of technology in her classroom, Elisa was optimistic about the use of BYOT. Her biggest concern when registering to become a BYOT teacher was that not all students would have access to a device. After being a BYOT teacher for four years, she realized that her concern of equity was not much of an issue and almost all of her students had access to a Smartphone and those that did not shared or use a school-owned device. In regards to advantages of BYOT in the classroom, Elisa suggested that students could, “relate more to their learning experience because they are using devices they are comfortable with” (personal communication, January 25-29, 2016).

While Elise used technology relatively openly in her classroom, she did have a problem with BYOT being a distraction at times. She reflected in saying,

Whenever I’m lecturing, students have a hard time powering down their devices and focusing on the instruction I’m delivering. They will use their devices at inappropriate times to watch Netflix, text or Snapchat each other. They can’t seem to understand when to use their device and when not to use their device. (Elise, personal communication, January 25-29, 2016)

To combat misuse of devices, Elise implemented a policy in which students could only use devices if they had permission and the consequence of misuse was the loss of their device for that day. After implementing this policy, most students started to abide. Even through the distractions, Lisa focused most of her attention and answers on the benefits of technology in the classroom. She tried to incorporate the use of devices whenever possible; especially if other technology was not available.

**Structural.** Elise was a bit more soft-spoken during her interviews and focus groups, but her ability to adapt to a changing classroom allowed her to be extremely flexible with devices.



She used devices as she saw fit in her classroom, regardless of the lesson. She thought of BYOT as an extra tool in her toolbox, not as the whole toolbox itself. Because of the positive experiences she has had thus far with technology in her classroom, she was open to the use of devices in her classroom in the future. Her chief apprehension with equity of devices proved to be a non-issue; therefore, she saw technology as a positive force in her classroom that the large majority of kids could use.

### **Suzanne**

Suzanne was a math teacher with nine years of traditional teaching experience and three of those years spent in a BYOT classroom.

**Textural.** Suzanne was one of two math teachers in the study and had been a math teacher for nine years with all of her years spent at her current school. She was highly involved in her workplace and was the Senior Class Representative and served on multiple committees. She had advanced degrees and was pursuing different leadership roles at her school in hopes of acquiring an assistant principal position in the coming years. She was well-liked by her faculty and trusted with department and school initiatives. She was married to her husband, who also worked in the public-service field, for seven years and they had a three-year-old son. Any spare time they had that was not spent chasing their toddler around was spent with their family at the beach.

Suzanne was an extremely confident teacher in her content area yet not as confident in the use of technology to enhance instruction in her math classroom. Instead of using BYOT in her lessons, she incorporated the technology when they were working on projects to, “look up formulas, information, and build upon information without necessarily waiting on me to guide them” (personal communication, January 25- 29, 2016). She saw BYOT as more of a tool in

looking up information rather than enhancing her instruction. She discovered that finding information was a skill her students would need in the real world. She stated, “I think we need to make sure that our students are ready for the real world and the real world is going to use involved technology. They need to be able to search out and find the answers they need rather than just knowing everything” (personal communication, January 6, 2016).

In regards of disadvantages in the classroom, Suzanne identified that students were cheated on assignments when using their devices; therefore, that prevented her from implementing BYOT to the degree that she would have wanted to. She also found that in her classroom they work with Microsoft Excel a lot and there are very few devices that are Excel friendly; therefore, she relied more on chrome books and school-provided technology for those assignments.

**Structural.** Suzanne was still trying to find a place for technology in her classroom. While she recognized the practical application of BYOT, she had yet figured out how it could best be used in her math classroom beyond the use of a calculator or aid in research. Suzanne was confident in her responses during the interviews and focus groups, but had yet to really buy-in to the initiative. To her, math was math and there wasn’t a true need for devices in the classroom to enhance instruction.

## **Cade**

Cade was a foreign language teacher with 13 years of traditional teaching experience and two of those years spent in a BYOT classroom.

**Textural.** Cade was a Spanish and AP Spanish teacher, highly involved with student life at his school, and was the co-sponsor for the Student Government Association. Not only did he help prepare on-campus activities for his school, but he also offered international travel

opportunities for his students with his most recent trip being to Spain. Cade devoted much of his time to his classroom, but he also had a large family back home consisting of his wife and six children. He spent many of his summers serving both locally and internationally on missions with his family.

In regards to technology, Cade was one of the more confident users. He was never shy to try new devices in his classroom and liked to applaud his students for finding new ways that technology could enhance their learning experience. Cade discussed the benefits of BYOT in a foreign language classroom, in which he stated,

The textbook doesn't have audio, but they can go online and access the audio, record themselves speaking and submit it. It simplified doing out-loud activities immediately. It streamlined in a super easy way. Without that, I would have had to play the audio on the big speakers and have them all doing the exact same thing, but with BYOT devices they can do it at their own pace which is so much easier that way. (personal communication, January 25-29, 2016)

Cade was transparent in that if BYOT was going to allow his classroom to function in a more streamlined manner, he was going to use it. He recognized that today's students are comfortable with their phones, more so than a lot of other technological devices.

**Structural.** Cade's laid-back approach to technology in the classroom allowed himself to be open to different devices, regardless of his confidence in using them. He realized that if there was a device or app that can make his students comfortable in their learning process, he was going to use it. His attitude also stemmed from the structure of his own household. Having six children, Cade was on board if there was a way to make the household run smoother. He did not feel the need to be in control of every aspect of his classroom and allowed students to make a

lot of decisions on their own in regards to their education and BYOT had become a tool to help him with that.

### **Richard**

Richard was a social studies teacher with 11 years of traditional teaching experience and two of those years spent in a BYOT classroom.

**Textural.** Richard was a 37-year old male and taught twelfth grade Economics and ninth grade Civics. He served in the United States Army for six years before going into the teaching profession. He was a father of three with two sons and a daughter and married to his wife for 17 years. He also was heavily involved in his school as he was a coach for the football team and had prior coaching experience in baseball and softball. When not coaching or teaching, Richard liked to spend quality time at home with his family and take frequent vacations when possible.

Richard was a proponent of BYOT in the classroom, but had little experience with the technology his students had access to. He was one of the novice BYOT teachers with two years of experience. Regarding his decision to register to become a BYOT teachers, he had noticed his fellow teachers were using a new student responder website called, “Kahoot.” What started as interest in one website, soon became more involved and Richard began using more BYOT strategies in his classroom. Throughout his two years as a BYOT teacher, Richard found that the biggest advantage of BYOT in his classroom was, “the access to information that students have in their hands and the speed at which students can find out certain information” (personal communication, January 7, 2016). Richard was also straightforward about the disadvantages he had with BYOT in which he added, “When the Wi-Fi is down, it’s not accessible. The students I teach don’t want to use their data so if they can’t get on the schools’ Wi-Fi, they’re not going to participate in the lesson with their device” (personal communication, February 10, 2016).

**Structural.** Richard was not only a novice BYOT teacher, but he was also a novice technology user. It was not until the year of this study that Richard purchased his first smartphone. Since he purchased his first phone, he had always used a flip phone with no data package. He was not one to jump at the idea of using technology in the classroom, but when he noticed his peers were finding interactive strategies using BYOT, he decided to give it a chance. The department that Richard worked in was extremely technology-savvy and Richard did not want to be out of the loop in terms of using technology in his own classroom when his peers were raising the BYOT bar.

### **Amanda**

Amanda was a foreign language teacher with 27 years of traditional teaching experience and three of those years spent in a BYOT classroom.

**Textural.** Amanda served as the foreign language department chair of her school. She came into the study with twenty-seven years of teaching experience and three years of BYOT experience. She taught multiple levels of French including AP French and French II. She worked every day alongside her husband who was also a department chair at the same school. Together they had three college-aged children that kept them busy, but during their spare time, they enjoyed traveling abroad and immersed themselves in different cultures.

Amanda was well-versed in different technological opportunities offered to her students and enjoyed providing chances for her students to use technology in the classroom. She decided to self-register to become a BYOT teacher because she was constantly looking for ways to make her classroom more engaging. Amanda had a unique perspective of technology in the classroom because she used technology in a very purposeful way in her foreign language class. She found that Google offers an app called Google Voice that she used nearly every week in her classroom.

She allowed students to use their devices to call a number and record themselves speaking a particular passage in French. She stated, “It [Google Voice] is wonderful in French for allowing me to hear students individually. It is an awesome piece to use in foreign language” (personal communication, January 25, 2016- January 29, 2016).

In regards to her view of technology in the classroom, Amanda believed students today were, “learning more than they did twenty years ago, because of the technology” (personal communication, January 5, 2016). While she saw many benefits to technology in the classroom, she expressed her disdain with students using devices inappropriately. Amanda’s biggest concern was students using their devices at unsuitable times.

**Structural.** Amanda was a leader in the BYOT initiative and one of the first teachers at her school to request to incorporate BYOT into her classroom. As a department chair, she was expected to lead the charge in adopting BYOT techniques so she could share what she had learned with the rest of her department. This strong leadership quality made her calm and poised during her interviews. She demonstrated a passion for exploring new technology for her students as she continued to pave the way for technology within her department and school. Being a veteran teacher in a traditional classroom also gave her the confidence she needed to be open to trying new things with her students. She had a firm grasp on who she was as a teacher and did not have any apprehensions about offering new opportunities for her students.

## **Tara**

Tara was an English language arts teacher with 18 years of traditional teaching experience and four of those years spent in a BYOT classroom.

**Textural.** Tara was an American literature and composition teacher at her school with eighteen years of teaching experience. She was highly regarded and respected in her field of

teaching, as she was a voice for teachers and educational policy throughout the county as well as the state. As the English department chair at her school, she was a pioneer in bringing BYOT initiatives in her classroom. She was a mother of three and devoted her spare time to not only improving her classroom, but also spending time with her husband and children. Their favorite pastime is attending SEC college football games every Saturday.

As the English Department Chair, Tara was a pioneer at her school for investing in BYOT initiatives in her classroom. When asked why she decided to self-register herself as a BYOT teacher, Tara replied, “They’re [students] are basically carrying a computer in their pocket! Why not use it in the classroom” (personal communication, January 5, 2016)? While she identified some advantages that were associated with BYOT, Tara also identified a vast disadvantage, social media.

**Structural.** Tara was one of the more reserved participants in the group. She was less likely to speak up when prompted, but when she did, she provided rich description and sentiment in explanations regarding BYOT. Tara was a member of educational blogs where she regularly voiced her opinion regarding educational policy and teacher interest pieces. As a pioneer in the educational world, many seek her advice and willing to try new initiatives in her classroom to test their success. BYOT was one of those initiatives. She had found a lot of success using BYOT in her classroom and has passed those feelings on to her peers. Due to her willingness to try new things in her classroom, as technology continued to evolve, her classroom continued to as well

## **Bill**

Bill was a science teacher with 12 years of traditional teaching experience and four of those years spent in a BYOT classroom.

**Textural.** Bill was a 39-year old male who taught General Chemistry, Advanced Chemistry, and Astronomy. While he was an active member of his school, he devoted much of his time to leading his son's Boy Scout troop. As an avid outdoorsman, he was an active cyclist and farmer. When not teaching he, his wife, and son enjoyed working outside and partaking in trail racing and 5K road races. While Bill was an active participant of this study, he was unable to participate in the final focus group.

In regards to technology in the classroom, Bill was a teacher willing to try anything once. He had played around with Google Classroom before becoming a BYOT teacher, and once he saw the benefits that it held, he decided to adopt more technology into his classroom. He defined BYOT as an initiative in which students, "brought it whatever technology they had" (Bill, personal communication, January 13, 2016). He used technology as an extension of his teaching rather than a replacement. While he was positive in his efforts with BYOT in the classroom, he still recognized the possible limitations of BYOT. Bill explained, "The major obstacle of BYOT in my classroom is the lack of devices and constant correction on appropriate use" (personal communication, January 11, 2016).

**Structural.** To define Bill as an, "old school" teacher would be a bit of a stretch, but if he did not find an immediate use for a policy in the classroom, he stated he was not going to use it. He tried a number of technological initiatives in his classroom before, such as student responders, Google Forms, and Edmodo, but if the initiative did not provide an immediate application, it was not going to stay. Bill's no-nonsense take on classroom procedures and policies made him a tough critic when it came to questions pertaining to technology.



## **Katie**

Katie was a math teacher with four years of traditional teaching experience and one of those years spent in a BYOT classroom.

**Textural.** Katie was the youngest participant of the group at just 27 years of age. She was a math teacher for four years and a BYOT user for one. She was actively involved in her school where she served as the assistant softball and volleyball coach. Katie only participated in the initial interview and was unable to complete her journal and focus group, but she provided rich feedback of her BYOT experience thus far. When not teaching, Katie enjoyed traveling with friends, spending time on the river, and attending football games on the weekend.

Katie was asked by her principal to become a BYOT teacher at her school as there were few in her department using BYOT tools in the classroom. The biggest benefit of BYOT that Katie saw in her classroom was, “the usefulness the devices provided when differentiating lessons” (Katie, personal communication, January 5, 2016). Using BYOT, she was able to, “. . . make three different videos and hands-on assignments that students could work on. Each student worked on the lesson that they needed” (Katie, personal communication, January 5, 2016). At her location, the disadvantage she saw with BYOT was the unreliability of Wi-Fi. When relying on BYOT technology to deliver a lesson, if the Wi-Fi does not cooperate, this can ruin the entire lesson and put a damper on the BYOT experience.

**Structural.** Being that Katie was still beginning her teaching experience, she was flexible in applying new concepts into her curriculum. She had not yet set what worked and did not work in her classroom; therefore, when applying BYOT initiatives, she tended to embed technology in her daily lessons rather than taking what she had already done and trying to apply

technology to it. Katie was willing to mold her teaching strategies to adapt to changes in technology in the classroom.

### **Diane**

Diane was a science teacher with five years of traditional teaching experience and two of those years spent in a BYOT classroom.

**Textural.** Diane was a 32-year old teacher with experience in teaching AP Biology, Advanced Biology, and Earth Science. For Diane, teaching was a second career. After college graduation, she worked in the research industry at a marine-science company. At the time of the research, Diane was in her fifth year of teaching and her second year as a BYOT teacher. When not focused on her classroom, Diane enjoyed spending time with her family that lived out of town, going to college football games, and crafting with friends. While Diane was one of the first participants to sign up for this study, she could not participate in the focus group.

Diane's experience with technology in the classroom began when she realized the limited access she had with school-provided technology. The idea of BYOT became attractive when she realized that, "students always have their cell phones, so why not use them" (Diane, personal communication, January 13, 2016). Diane mostly used BYOT initiatives to assess student understand in her upper-level classes. She stated, "Assessing students' understanding of a concept using Google Forms has been a huge benefit of BYOT" (personal communication, January 25-29, 2016). In regards to advantages of BYOT in the classroom, Diane communicated that students generally enjoy using their devices.

**Structural.** At the time of the study, Diane was getting ready to take a job at another school in another state. Due to this, she could not complete the focus group, as it was the same day as her visit with her new school. While she provided rich feedback, she tended to be

lackadaisical in applying technology in her own classroom, and much of her experience with BYOT occurred in her first year as a BYOT teacher. Her focus had moved from her current classroom to the new content area she would be teaching at her new school.

There were four male teachers and nine female teachers in this study. Five of the teachers taught in the Science Department, two in the Social Studies Department, two in the Foreign Language Department, one in the CTAE Department, two in the Math Department, and one in the English and Language Arts Department. The experience of the interview participants ranged from nine years to twenty-seven years. The mean number of years of experience for the participants in the research study was 16.6, and the mean number of years of experience in a BYOT classroom for the participants in the study was three years.

Reaching data saturation occurs when there is enough information to replicate the study (O'Reilly & Parker, 2012), by obtaining additional new information, and when further coding is no longer feasible (Guest et al., 2006). Regarding this study, it was best to think of data saturation in terms of rich and thick data as opposed to the size of the sample (Burmeister & Aitken, 2012; Dibley, 2011). Initially, there were 13 participants, but only 10 completed the study; however, data saturation is not about the number of participants, rather the depth of the data. The sample size in this study was such that it would allow for data saturation (Burmesiter & Aiken, 2012).

## **Results**

The 13 open-ended interview questions centered on four research questions: What are BYOT teachers' definitions and descriptions of BYOT? What planning and implementation strategies do BYOT teachers use? What, if any, obstacles may inhibit the learning in a BYOT environment? What, if any, resources may enhance learning in a BYOT environment? After

phenomenological reductionism and the culmination of discovering textural and structural descriptions, there were three core themes derived from this research design: Instant Access, Student Engagement, and Battling Distractions.

### **Theme 1: Instant Access**

The first identified theme was the core idea that using BYOT allows the opportunity for teachers and students to access information immediately. The power of immediate access provides teachers the ability to enhance their teaching experience by bringing real-time, real-world information into the classroom in a matter of seconds. Instantly accessing information using digital devices allows students to engage deeply with their learning experience by finding relevant and applicable information.

Eleven out of the 13 participants believed that BYOT contributed to instant access in terms of acquiring current and relevant content information for students and teachers. Sixty-two percent of the participants (8 out of 13) referred to an advantage of BYOT as allowing access to information that would not normally be accessible without a BYOT classroom. Seven out of the 13 participants denoted to not only the immediacy of information but of how the information they acquired was current and relevant to their instruction and lesson.

Many quotes emerged from the interviews, journal entries, and focus groups, and provided the shared experiences of the teachers entwined in the BYOT phenomenon. The key words and phrases provided by each participant contributed to the main theme of instant access. Sarah and Elise believed that BYOT provides relevant material to students. Sarah stated, “. . . it gives the kids access to the most current information. I think it’s relevant and important to the way society works” (personal communication, January 5, 2016). Elise added, “This [BYOT] can be used as a resource for information at any time” (personal communication, January 11, 2016).

Lisa described how BYOT transformed her ability to receive feedback when it allowed her to poll her students' understanding of concepts. The theme of instant access entwined in the responses of almost every participant. Sharon, Cade, Richard, and Tara all alluded to accessing information on an as-needed basis to dive deeper into the topic of study. Cade stated,

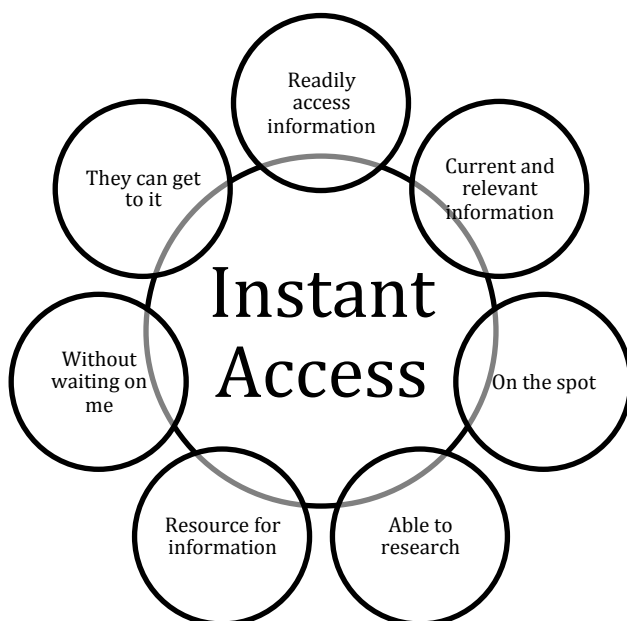
They have access to thousands of things that I don't have time, effort, or resources to collect here in the classroom. There's just no way I could find everything and get it all here, but it's all out there on the internet and they can get to it on their own little devices.

It's awesome! (personal communication, January 6, 2016)

Richard saw the advantage of BYOT in that, "When you're lecturing, it's good for kids to have that technology at hand and they can look information up" (personal communication, January 7, 2016). Tara saw the major advantage of the BYOT classroom as having immediate access to information. When trying to define BYOT within the confines of their own classrooms, Suzanne used the theme of instant access to aid in her definition. She stated, "BYOT just means that students are able to readily access information, as they need it" (Suzanne, personal communication, January 6, 2016). Lastly, Amanda made a profound statement when reflecting on the advantage to BYOT practices in her classroom when she added, "I think students can learn more in one semester than they used to learn because of the immediate access of technology" (personal communication, January 5, 2016).

Expressions and phrases that showed commonality in relation to the theme of instant access included, "current," "looking up/for information," "access," "obtaining information," and "readily available." During transcription analysis, each of these phrases had equal meaning. Sara's statement, "BYOT gives the kids immediate access to the most current information. I think that is relevant and important to the way society works," (personal communication, January

5, 2016) demonstrates a statement that contained main descriptors (see Figure 1) that were repeated enough throughout the data to be grouped together with other expressions that suggested instant access.



*Figure 1.* Theme one: Chief descriptors of instant access.

Results of this study have shown that BYOT allowed teachers and students to access information readily and this immediate access had the potential to convey current and relevant topics into the classroom within seconds of an event occurring. The BYOT phenomenon allowed teachers to provide real-time information to students that can drive and direct the topic of the lesson or discussion, and also provide an in-depth review of the subject matter. Through instant access, teachers needed proper time to prepare lessons that involve using access to such pertinent information as well as guide students on relevant and non-relevant material they may encounter.

## **Theme 2: Student Engagement**

The second identified theme was the idea that the BYOT environment creates an atmosphere where students are engaged in the learning process. Increased student engagement

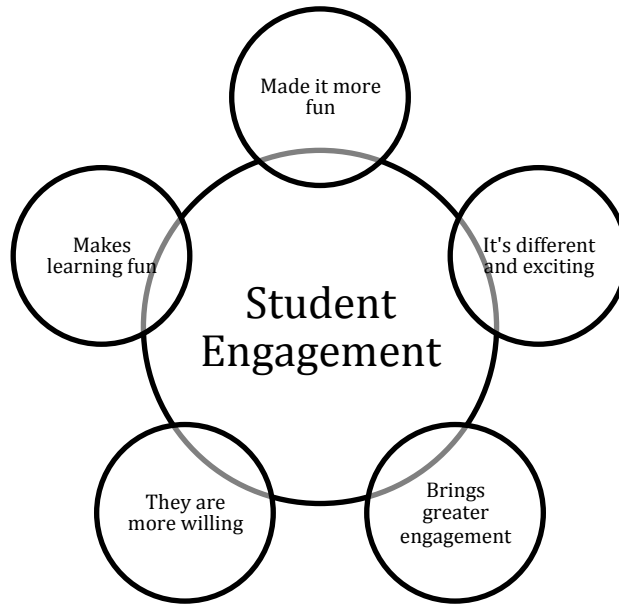
allowed teachers to dive further into their content as well as cover additional material within a given amount of time. While there was a difference in the lessons taught across different content areas in BYOT classrooms, the ability of devices to engage all students was a common theme across all content areas. Out of the 13 participants, 12 (92%) believed that BYOT had allowed their classrooms to be engaging for their students. The data showed that 61% of the participants (8 out of 13) stated that BYOT made students willing to participate and complete their assignments because they engaged in their learning. The term “more” within the set responses from participants appeared more than 15 times throughout conversations, which suggest that BYOT classrooms were providing students with an experience that was furthering their learning beyond what they are receiving in a traditional classroom setting.

The following examples of participant statements emerged from the transcripts of interviews, journal entries, and focus groups provided the shared experience of the teachers woven in the BYOT phenomenon. These keywords and phrases provided by each participant contributed to the theme of student engagement. Sarah identified that BYOT had transformed her classroom in a way that, “. . . made it more fun. We get to approach things in a fun way” (personal communication, January 5, 2016). Cole and Amanda noticed that their students are engaged and find learning to be fun. Cole stated, “It is more interesting to them than a workbook or textbook. They seem to like it” (personal communication, January 5, 2016). Richard added, “I would say my BYOT classroom looks engaged and makes learning fun” (personal communication, January 7, 2016). Lisa identified that one advantage of the BYOT classroom is, “[BYOT] brings greater engagement and ability for formative assessment. We are getting more assignments done during class time because they are more engaged” (personal communication, January 8, 2016). Sharon, Elise, and Amanda alluded to the engagement factor that amplifies in

a BYOT classroom. Sharon shared, “With BYOT assignments, members are engaged in the learning process” (personal communication, January 5, 2016). Amanda believed that her students were able to be more engaged with the various types of technology her students had access to. Because students were engaged with their learning and using familiar devices, participants Suzanne, Cade, and Tara found that their students were willing to do different types of projects where learning was more engaged and students connected with other students and classes to enhance their learning.

Expressions and phrases that showed commonality with the theme of student engagement included, “more fun,” “engaged,” “more interesting,” “hands-on,” and “different technology.” During transcription analysis, each of these phrases had equal meaning. Lisa’s statement that, “BYOT brings greater engagement and ability for formative assessment. We are getting more assignments done during class time because they are engaged” (personal communication, February 10, 2016), demonstrates a statement that contained descriptors (see figure 2) that were repeated enough throughout the data to be grouped together with other expressions that suggested student engagement.





*Figure 2.* Theme two: Chief descriptors of student engagement.

BYOT provided to teachers, and students access to an increasingly engaged and interactive classroom than non-BYOT classrooms. Without BYOT initiatives, teachers had to find other avenues to engage their students that did not involve using a device that was comfortable and appealing for their students. The BYOT phenomenon allowed teachers to provide to students a variety of lessons that were interactive and hands-on, regardless of their subject matter. Greater student engagement produced students that were capable of completing assignments and learning additional content in a single workday.

### **Theme 3: Battling Distractions**

While the overall themes of BYOT had been proactive and positive, the final theme of the BYOT phenomenon offered a different take. BYOT provided many new opportunities for students that allowed for instant access and increased student engagement, but with those opportunities came the new challenge of managing the distractions they caused. The theme of battling distractions derived from the shared experiences of 11 of the 13 participants repetitively and earnestly. The data showed that 87% of the participants felt they must be extra vigilant in

supervising work time because of the constant distractions and off-task behavior that could stem from students using their own devices. Over half of the participants (7 out of the 13) started to use signage within their classroom to appropriately advise when students were and were not allowed to use their devices. Lisa stated, “I have a sign indicating if devices are in use so there are clear boundaries on when devices are to be used” (personal communication, January 8, 2016). This method of controlling when to use devices was proving that BYOT strategies must address the misuse of phones and devices at appropriate and inappropriate times.

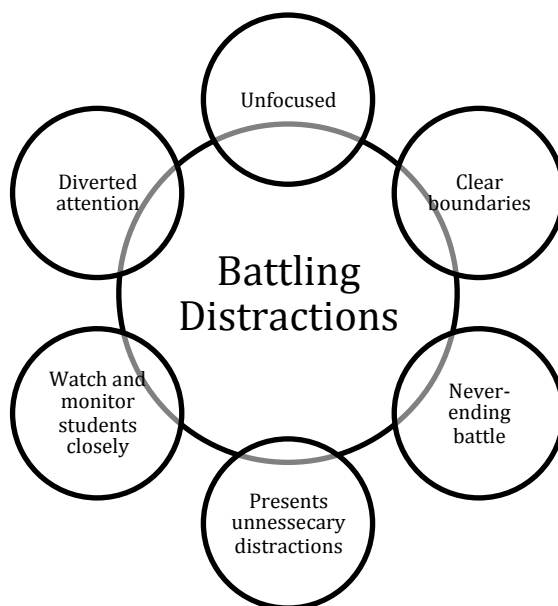
Participants alluded to the idea that BYOT could cause unnecessary distractions to their students in which Sarah stated, “It is tempting for kids that are not focused to veer off path” (personal communication, January 5, 2016). Suzanne followed up by stating she found BYOT to be a hindrance when students were using their devices at inappropriate times. Cole added,

To me, it is still an attention deficit thing. They can’t concentrate with or without their phones. It’s a never-ending battle with getting them to put away their phones when it isn’t tech time and constantly having to check it. (personal communication, January 5, 2016)

When asked to reflect on the disadvantages of BYOT, many of the teachers agreed that the biggest disadvantage was the disruptions the devices could cause. Elise stated, “A disadvantage I see to the use of BYOT is the distraction it causes during time of verbal instruction” (personal communication, January 11, 2016). Tara noted the distraction that social media can cause when using BYOT devices. Lastly, participants Sharon, Cade, and Amanda discussed how the use of BYOT devices and practices had pushed them to adopt stricter supervision and monitoring time in the classroom. Sharon stated, “I do watch closely for students off task and surfing other sites that are not part of the assignment” (personal communication, February 10, 2016). Amanda

went so far as to introduce a new policy in her room to instruct students when they could have their devices out and when they may not. Cade added that, “It takes more monitoring than just standing up here and lecturing. You have to go around and look at what every single student is doing because they get easily distracted” (Cade, personal communication, January 6, 2016).

Expressions and phrases that showed commonality in relation to the theme of battling distractions included, “tempting,” “policing kids,” “technology is a distraction,” and “social media.” During transcription analysis, these phrases had equal meaning. Cole’s statement, “In some ways, I think it has harmed kids’ ability to focus, concentrate, and mentally process on a deep level” (personal communication, February 10, 2016), demonstrates an expression that contained descriptors (see Figure 3) that were repeatedly discussed throughout the data. It suggests that a major theme of battling distractions was a large mutual essence of the shared BYOT phenomenon.



*Figure 3.* Theme three: Chief descriptors of battling distractions

Technology distractions were the biggest challenges the BYOT teachers faced and 11 of the 13 participants agreed that the distractions deterred from the learning environment. While

the immediacy and engaging property of student-owned devices enriched the classroom, the distractions they caused created a space in which teachers were having to become active monitors during independent or group working time. The addition of technology brought distraction to the students, but teachers were finding strategies to help battle distractions and teach responsibility to students when it was appropriate to have devices out and when to keep them away.

### **Research Question 1: What Are BYOT Teachers' Definitions and Descriptions of BYOT?**

Although there was variation among the participants' experiences with BYOT, in terms of defining and describing BYOT, several participants described BYOT as using technology to support student learning through immediate access to current and relevant information. Four of the participants mentioned that BYOT transformed their classroom from an area full of outdated information and supplies into a modern environment that allowed students to access information instantly. Sarah stated "BYOT gives the kids access to the most current information and that's relevant and important to the way society works" (personal communication, January 5, 2016). BYOT took the pressure off teachers to be up-to-date about everything that was taking place in their content area. Richard noticed that when he was lecturing and a question arose, "kids have the technology at hand and they can look the information up" (personal communication, January 25-29, 2016). BYOT practices had allowed teachers to dive deeper into their content areas due to the immediacy of access on their devices.

Data also suggested that a shared description of the BYOT environment was designed around student engagement. Eight of the 13 participants used the term "more" in front of words like, "engaged," "interested," "fun," and "hands-on." This descriptor indicates that BYOT is offering something grander to their students than their non-BYOT classes. Three participants

discussed the idea that their students completed additional work in a given class setting because they were further engaged in their work when using BYOT. Sarah added, “[BYOT] isn’t hum-drum. It’s different and engaging” (personal communication, January 5, 2016). Lisa noticed that her students were getting more work done in single class time because they were engaged in their learning. Lastly, Suzanne found that her students were more willing to do different types of projects because they were using real-world application of devices.

### **Research Question 2: What Planning and Implementation Strategies Do BYOT Teachers Use?**

Many of the participants expressed that the immediate access of information meant that they had to prepare ahead of time the way in which to apply information in the classroom lesson. Six of the participants discussed that they had to prepare lessons ahead of time to ensure that the materials they wanted their students to access were readily available and that the students would have enough time to access the information needed. Sarah immediately expressed that, “I test out any BYOT activity beforehand to work the bugs out. By practicing myself, I have a better sense of how much time might be necessary to complete a task” (personal communication, February 10, 2016). Even though access to information was immediate, for a student to siphon through credible information took time.

Richard discussed the addition of a new component to his lessons that he had not had to do prior to becoming a BYOT teacher. He had to teach students not only where to find information, but where to find credible information. Richard found that his students were often overwhelmed with facts when completing a simple Google search, but not all the information they found was reliable; therefore, he was not having to teach his students how to discern between factual and fictional data. Richard also pointed out that although his students cannot

trust everything they access, it still provides to them a good starting point. Due to this revelation, he must provide, “a lot of direction and an organized rubric that guides students into the lesson when using BYOT devices” (Richard, personal communication, February 10, 2016). Diane discussed that she had to pre-screen many sites that she knew her students would access when using BYOT devices to complete an assignment,

I don’t use devices in a particular way, instead, I let them use their devices as they see fit and many times that looks like them using their devices for research. Now I have to be diligent in searching what they will find before I assign the lesson so I know what they will be accessing. Not all the information that’s out there is correct or appropriate.

(personal communication, January 11, 2016)

### **Research Question 3: What, if any, Obstacles May Inhibit the Learning in a BYOT Environment?**

Even though the participants shared the idea that BYOT brought instant access and increased student engagement in their classrooms, 87% (11 out of 13) of the participants faced an obstacle of battling of distractions. Seven of the 13 teachers had to employ a system of when students were permitted use technology and when it had to be kept away to avoid distractions. The major obstacle that contributed to distracting students was the use of social media and text alerts sent to their phones. Cade discussed a time when “[students] will be doing something productive and an alert pops up for a new Snapchat or text from someone and their attention is diverted” (personal communication, January 6, 2016). To combat this, Cade recognized that the BYOT environment takes active and consistent monitoring.

Diane added her view in response to distractions of social media as an obstacle of the BYOT environment. While she had an overall positive outlook on technology in the classroom,

she stated that she wished there was a way to monitor what her students were doing on their devices at all times. Bill also struggled with constant correction on appropriate use of devices and explained he was more focused on making sure they were using technology appropriately rather than the content of his lessons. He followed up, however, by stating that he found when he explained his expectations of appropriate use of BYOT technology ahead of time, students did a better job of adhering to his rules.

While the distractions of social media and inappropriate use was the dominant obstacle to overcome in the BYOT environment, three of the 13 participants did discuss some of their BYOT classes had a lack of devices which required students to share. However, in the circumstances in which students had to share devices, the lessons taught continued, and instruction was not interrupted. Katie noticed, “Some of my students have to share their devices, but I have found that the students don’t mind sharing and it really hasn’t interrupted what we’re trying to do in class. It’s just a part of BYOT that the kids get used to” (personal communication, January 5, 2016). Sarah added extra devices into her classroom to combat the lack of devices by asking private donors to donate old smartphones to her classroom for students to use when they did not have access to a device.

Lastly, Wi-Fi and connectivity issues were also discussed as an obstacle to the BYOT environment. Eight of the 13 participants noted that they had at least one circumstance in which Wi-Fi was unavailable and students were unable to use BYOT devices. Five of the participants also discussed that they had planned their lesson around technology and due to connectivity issues, they had to abandon their original lesson and work from a book instead. Tara noted that “BYOT is great for our students when Wi-Fi is up and working, but when Wi-Fi is down, we can’t do anything with it and it’s a wash of a day” (personal communication, January 25-29,

2016). Elise added that she no longer planned her lessons around technology because she could not count on the technology to work like she needed it to; therefore, she embedded technology into her lessons when she could. Katie also furthered the discussion by stating, “The Wi-Fi at my school is spotty at times. If the device depends on Wi-Fi, it can be difficult to use” (Katie, personal communication, January 5, 2016).

#### **Research Question 4: What, if any, Resources may Enhance the Learning in a BYOT Environment?**

In regards to the enhancement of the BYOT environment, four of the participants discussed that the use of Chromebooks to help battle the obstacle of student distractions. After relying solely on student devices for a year, Sharon introduced Chromebooks into her BYOT classroom. Sharon found that Chromebooks were easier to monitor because they have large screens that afford teachers the ability to easily see what students are doing on their computers. Sharon added, “Student devices are good for surveys, quick assessments, and accessing information fast, but I really like the Chromebook for class assignments that are going to require them to use technology for a longer amount of time” (personal communication, February 10, 2016). Two out of 13 participants (15%) said additional professional development on how to battle distractions is a resource for preparing their BYOT classroom.

A resource that six of the participants found helpful was the use of signage around the BYOT classroom to control when technology is allowed and when it is not. Lisa introduced this to her class when she found that the kids were having a hard time understanding when they were allowed to have their devices out and when their devices should remain out of sight. The signage worked so well for her class that her school eventually adopted the sign policy as a resource to help in the BYOT classroom. Amanda admitted that distractions were difficult to overcome in



the BYOT classroom, but having a clear BYOT usage policy in her classroom had been a positive resource that helped define when students should have access to their device.

### **Summary**

The purpose of this qualitative phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state defined, planned, and implemented BYOT within their classrooms. Thirteen teachers from various content areas with at least three years of traditional classroom experience and one year of BYOT experience participated in this study. I used structured interviews, participant journals, and focus groups to obtain data for this study.

I focused on the following four research questions: What are BYOT teachers' definitions and descriptions of BYOT? What planning and implementation strategies do BYOT teachers use? What, if any, obstacles may inhibit the learning in a BYOT environment? What, if any, resources may enhance learning in a BYOT environment? I focused on the BYOT phenomenon and the lived experiences of using mobile technology in the classroom. Data from the research were organized into three major themes: Instant Access, Student Engagement, and Battling Distractions. These themes may provide insight for school administrators to develop working BYOT plans that include defined processes, purposes, and parameters best suited to their school's learning environment. By analyzing feedback of the teachers participating in a BYOT classroom, teachers who are contemplating adopting BYOT may have a clearly identified idea of what a BYOT classroom should look like as well as the challenges that they may face in a BYOT environment.

When addressing the theme of Instant Access, participants indicated that BYOT allowed the opportunity for teachers and students to access information immediately using digital

devices. This instant access provided to students the ability to engage deeply with their learning experience by finding relevant and applicable information. However, being as information was readily accessible, participants alluded to the idea that they had to plan ahead to ensure the information their students were trying to access was available and not blocked. Participants also had to teach their students the differences between credible and non-credible information as their students sifted through a plethora of information. Regarding the second theme of Student Engagement, participants discussed that BYOT created an atmosphere where students were engaged in the learning process. Increased student engagement allowed teachers to go further into their content as well as cover additional material within a given amount of time. Lastly, the third theme of Battling Distractions discussed the main disadvantage of participating in a BYOT classroom. While personal devices allowed for opportunities for student engagement, teachers had to focus on managing the distractions they cause. These distractions caused a response by teachers to become extra vigilant in supervising device-supported work time as well as instill new policies in their classroom to help control the misuse of devices.

When addressing the four research questions that guided this study, teachers described and defined BYOT as a tool teachers use to support student learning through immediate access to current and relevant information. Because technology allowed students immediate access, teachers found that they had to be extra diligent in planning a BYOT classroom and prepare their lessons ahead of time to see how information could be applied. Participants also suggested that they had to coach their students on the difference between credible and fabricated data that students may access as part of research executed with BYOT devices in the classroom. Through BYOT implementation, teachers also had to be diligent in the active monitoring of students as they used their BYOT devices to ensure proper usage. While the majority of the data suggested

that BYOT enhanced student learning, there were obstacles in the BYOT classroom that teachers had to overcome. The most substantial obstacle associated with BYOT was the battle of distractions as they related to social media. The participants found their students would get distracted easily from their assignment if not given set guidelines on proper usage of their devices. Another obstacle participants faced in the BYOT classroom was the limitation of Wi-Fi access. Many teachers had to plan around issues associated with limited connectivity to ensure that their lessons could continue if Wi-Fi was not working properly. To enhance the BYOT environment, participants suggested that BYOT devices with the addition of Chromebooks allowed teachers to observe what their students were working on easily. Lastly, many of the participants created signage to use around their BYOT classrooms as a guide to inform students when they are allowed to use their devices and when they are not.

Chapter four contains details of the findings and data analysis of this study and the BYOT phenomenon as shared by BYOT teachers. Textural descriptions of data revealed that there were resources and obstacles that both supported and hindered the BYOT environment and regardless of content area, BYOT teachers shared common descriptions to define their BYOT environment. While there were challenges encountered in the BYOT classroom, there were strategies that BYOT teachers have proven as helpful when planning for a BYOT policy.

## **CHAPTER FIVE: CONCLUSION**

The purpose of this phenomenological study was to describe the perspective of high school teachers in a southeastern U.S state regarding the implementation of BYOT in their classrooms. After identifying 27 potential participants, a group of 13 individuals agreed to be interviewed, 12 completed journal entries, and 10 participated in a focus group. Interviews and focus groups were recorded and transcribed. All data were then analyzed using phenomenological reductionism (Moustakas, 1994).

### **Overview**

This chapter begins with a summary of the findings produced from data analysis and continues with a discussion of the findings as they relate to current literature. Implications are described, followed by a discussion of limitations, and recommendations for future research.

### **Summary of Findings**

Through the analysis of participant interviews, focus groups, and journal entries, three themes were identified in regards to teacher perceptions of BYOT: Instant Access, Student Engagement, and Battling Distractions. Participants reported that BYOT contributed to immediate access of current and relevant information to use in classroom lessons and discussions. Eight of the 13 participants believed that the major advantage of using BYOT in the classroom was the access to information that would not normally be available in a traditional, non-BYOT environment. Through the immediacy of accessible information, participants realized that teachers needed adequate time to prepare lessons that involve using such information so teachers could better guide students on relevant and non-relevant material they may encounter. The opportunities given to students because of the immediate access of relevant information allowed students to dive further into their classroom discussions and assignments.

Several quotes and chief descriptors emerged from participant interviews, focus groups, and journal entries. Staple phrases and descriptors included, “on the spot,” “current and relevant information,” and “readily available.” BYOT afforded teachers the opportunity to create learning environments that were fluid in their makeup; meaning, lessons, and discussions could bend and change as classroom discussion flowed in different directions as new information became available. Participants that taught in science classrooms established that instant access to information was a useful tool in their classes because the science community is often offering new and updated information on topics. Without access to current topics, teachers may miss out on a teachable moment or may not be up to date on current news in the science community.

Beyond the immediacy of information, BYOT practices were also shown to provide engaging and interactive lessons. Ninety-two percent (12 out of 13) of the participants agreed that BYOT created a classroom environment where students were engaged in their learning process. Increased student engagement allowed teachers to go further into content as well as cover additional information within a given amount of time. Without BYOT initiatives, teachers had to find other avenues to engage their students that did not involve using a device that was comfortable and appealing for their students. Examples of staple expressions and descriptors include: “more fun,” “engaged,” and “more interesting.” The BYOT phenomenon allowed teachers to provide to students a variety of lessons that were interactive and hands-on, regardless of their subject matter. Greater student engagement produced students that were capable of completing assignments and learning additional content in a single workday. Some of the participants used technology in a very specific manner to build lessons. The teachers were very deliberate in how technology was to be used, and followed a specific lesson plan. Other participants preferred to allow the students to use technology as they saw fit in different lessons.

Rather than building a lesson around technology, technology was embedded in unique ways depending on student needs and accessibility. Regardless of the nature in which BYOT was used in the classroom, 61% (8 out of 13) of the participants agreed that BYOT compelled students to complete their assignments because they were engaged in their learning.

While there was a plethora of positive feedback regarding the usage of BYOT in the classroom, participants also voiced disdain for BYOT in terms of consistently battling the distractions the devices may cause. Eleven of 13 participants voiced the theme of battling distractions. To compensate, seven participants implemented the use of signage in the classroom to appropriately advise when students were and were not allowed to use their devices. Of all the distractions, text messages and social media distractions ranked the highest. No matter how engaging a lesson was, students had a difficult time ignoring notifications on their phones from their friends, parents, and phone apps. Teachers struggled to find the balance between allowing students the opportunity to use BYOT devices in their classroom and asking students to put their devices out of sight. Common phrases and descriptors in terms of battling distractions included: “tempting,” “policing kids,” and “unfocused.” While the immediacy and engaging properties of technology were apparent, the distractions BYOT devices caused created an atmosphere in which teachers were having to become active monitors during independent and group working time.

Teachers defined and described BYOT in various ways. Several participants described BYOT technology as a support mechanism for students through the immediate access to current information. Many of the participants were working in classrooms that contained outdated textbooks and materials; therefore, for them, BYOT was a tool that transformed their classrooms to a modern environment that allowed students access to relevant and up-to-date information.

The definitions the participants had for BYOT varied depending on how they used BYOT in the classroom. Participant definitions of BYOT varied depending on the implementation of BYOT in the classroom. Very few teachers used BYOT in the same way and the implementation of BYOT varied as the content that was taught varied. The one description that many of the participants could agree on was that BYOT is a tool that students could use to enhance their learning experience.

Regarding planning in the BYOT classroom, participants expressed that the immediacy of information access meant teachers had to prepare ahead of time of how to apply information to a classroom lesson. Participants felt that they needed to pre-screen a lot of the information the students would access in correlation with learning the lesson so teachers could better prepare students about what was acceptable and unacceptable information. This brought up another notion in that students now had to be taught how to decipher through a plethora of applicable and false information found on the Internet. Not only did participants find that they had to pre-screen information students may access, but they also had to do trial runs with BYOT activities to ensure that apps, links, and devices worked in the intended way.

While much of the data suggests BYOT is a positive element in the participants' classrooms, with some obstacles during the implementation process. The most obvious obstacle of the BYOT environment was the distraction the devices caused. Eighty-seven percent (11 out of 13) of all participants felt they were in a constant battle with BYOT distractions. The major obstacle contributing to distraction was social media including Twitter and Snapchat. Along with battling distractions, three of the participants voiced that some of their BYOT classes had a lack of devices which required students to share. However, during these circumstances, the teacher was still able to teach their lesson and instruction was not interrupted. Finally, Wi-Fi

connectivity was also discussed as an apparent obstacle to overcome in the BYOT environment. Many participants noted that they had at least one circumstance of a lack of Wi-Fi and BYOT devices were unable to be used. Participants noted an increased pressure to use technology in the classroom but a lesson built around technology could put teachers in a bind if the Wi-Fi failed.

In terms of enhancing the BYOT environment, participants indicated that Chromebooks helped battle the obstacle of student distractions. Participants discussed that Chromebooks were easier to monitor because they had a larger screen that teachers could easily see. Participants indicated smaller, individual devices were great for quick assessments and surveys, but using Chromebooks is a better option for assignments that require extended time on devices. Another resource that participants found to be helpful in the BYOT classroom was the use of signage to indicate when technology was allowed and when it must stay away. While technology distractions were difficult to overcome, having a BYOT usage policy with clear expectations was a positive resource that helped define when students should have access to their device.

### **Discussion**

The purpose of this qualitative phenomenological study was to investigate how teachers at three different high schools in a southeastern U.S. state defined, planned, and implemented BYOT within their classroom. The TAM served as the theoretical framework for this study. Current BYOT researchers indicate the benefit of BYOT in terms of affordability and accessibility; however, there are still concerns regarding equity of devices and the safety of children gaining Internet access and cheating using electronic devices.

### **Theoretical**

The purpose of Davis' (1986) Technology Acceptance Model (TAM) was to explain and predict user acceptance of technology from measures taken after a brief period of interaction



with a system (Szajna, 1996). The participants in this investigation used a variety of technology systems, each system comprised of different sets of capabilities and functions. Researchers use TAM to explain why individuals choose to adopt or not adopt technology when performing a task, and to support the belief that users of a particular device or technology may be more willing to tolerate a difficult system to access functionality that is shown to be important (Davis, 1986). Of the 13 participants, 11 believed that BYOT contributed to instant access of relevant and current information that could be of immediate use in the classroom and 92% of the participants agreed that BYOT allowed their classrooms to be engaging for their students. While seven participants indicated that BYOT devices brought unnecessary distractions in the classroom, teachers looked past many of these distractions because of the engaging effects BYOT brought to their rooms. They were willing to adapt their classroom environment and instill systems that indicated when BYOT devices could be used and when they must remain put away. To accommodate the benefits of BYOT, participants shared a need to identify clear and precise expectation of BYOT usage.

Davis (1986) also described that the acceptance of technology is explained by two main factors: perceived ease of use and perceived usefulness, both which contribute to overall attitude toward using the system. Six participants discussed that BYOT was relatively easy to use, but they were deliberate in making sure to prepare their lessons ahead of time and they gave themselves a trial-run to ensure that the materials they wanted their students to access were readily available and that students would have enough time to access the information. In terms of usefulness, one participant discussed that because of BYOT, her students accessed the most current information and immediate access was relevant and important to the way society worked. On the other hand, no matter how easy a system is to use, it will not compensate for a system that

does not do a useful task (Davis, 1986). When unable to rely on Wi-Fi access, teachers struggle to find the usefulness of technology in the classroom. One participant discussed that he stopped building technology into his lessons because he could not depend on the Internet to be accessible; therefore, when he planned his lesson he left technology out. If Wi-Fi happened to be working at the time of his lesson then he would allow his BYOT classes to use their devices, but if the Wi-Fi was down, he continued with his lessons without a hitch. In the initial stages of adopting BYOT strategies, many participants built their lessons around particular BYOT features and apps, but with the realization of unreliable Wi-Fi, participants focused on lesson planning without BYOT.

### **Empirical**

Much of the current literature of BYOT research alluded to the engagement factor of BYOT. Lee and Levins (2012) identified that BYOT allows students with different learning styles to use technology that suits them best and this type of usage keeps them engaged in their work. Ninety-two percent of the participants in this study believed that BYOT had allowed their classrooms to be engaging for their students and 61% stated that BYOT made students willing to participate and complete their assignments because of engaging with their learning. Today's students are comfortable in image-rich environments while pencils and textbooks are considered old school (Robb & Shellenbarger, 2012). One participant discussed that his students were comfortable with their devices and therefore, when permitted to use the devices, felt comfortable completing assignments. Another participant discussed that BYOT had transformed her classroom in a way that made it fun and she approached assignments in a new way that identified with her students. In a study completed by Lui et al. (2014), students in an M-learning environment had significantly improved learning attitude. Two participants in this study

indicated that their students found lessons that incorporated BYOT devices to be more fun and interesting. Students enjoyed working with their devices and found learning to be more engaging than in a traditional classroom setting and this is also indicated in current BYOT literature. Studies have also shown that BYOT is a tool that engages students to be active members in their education (Brown, Thomas, & Thomas, 2014; Fuller, 2014; James, 2011; McLester, 2011; Messinger, 2011; Naimie, Siraj, Ahmed Abuzaid, & Shagholi, 2010; Ullman, 2010). Twelve of the 13 participants in this study agreed that BYOT had allowed their classrooms to be engaging for their students. Today's students already find their devices engaging and are deeply connected to them. In a BYOT environment, harnessing that connectivity of student and devices allows for a more engaging atmosphere. Armstrong (2014) discussed that the use of technology in the classroom enhanced the learning experience for teachers and transformed the learning process by turning students into explorers and teachers into guides. One participant discussed the notion that his students have access to thousands of things he did not have time, effort, or resources to collect in his classroom. This participant added that there was no way he could find everything and now that his students can access the information, he is guiding them through the information they find. Current researchers also discussed the idea that BYOT has shown to have a positive impact on student collaboration in which students will peer-coach one another on how to use specific devices or allow classmates to share their device (Murray, 2010; Santos & Ali, 2012). While increased student collaboration was not evident in this study, three participants discussed that there were circumstances in which students had to share devices but did so without affecting the learning environment.

In regards to student accessibility, BYOT provides to students access to information that may not have been included in a formal lesson (Liu et al, 2014). In this study, the first emergent

theme was the core idea that BYOT allowed the opportunity for teachers and students to access information immediately. Out of the 13 participants, 11 believed that BYOT contributed to instant access in terms of acquiring current and relevant content information for students and teachers. In the BYOT environments, technology is now used to support learning that is blended with everyday life (Naismith et al., 2004). Seven of the 13 participants denoted to not just the immediacy of information but of how the information they acquired was current and relevant to their instruction and lesson. Under careful guidance, technology in the BYOT environment puts an endless amount of information in the hands of students and this access to technology keeps students engaged in their learning. Results of this study have shown that BYOT allowed teachers and students to readily access information, which had the potential to convey current and relevant topics into the classroom within seconds of the event occurring. Hill (2011) and Sucre (2012) believed mobile devices allowed teachers and students the ability to extend the schools' boundary beyond the walls of the classroom, and according to this study, 62% of the participants (8 out of 13) agreed.

While BYOT fosters students' accessibility to a multitude of devices as well as applications, bandwidth is one reason that students are not using technology more often at school (Armstrong, 2014). Eight of the 13 participants noted that they had at least one circumstance in which Wi-Fi was unavailable, rendering BYOT devices useless. Five of the participants also discussed that they had planned their lesson around technology and due to connectivity issues, they had to abandon their original lesson and work from a book instead. According to Armstrong (2014), even the most advanced classroom technology, regardless of the platform or ownership, is worthless if there is not adequate bandwidth to support the total range of frequency required to support a number of devices. One participant even noted that she no longer planned

her lessons around technology because she could not count on the technology to work like she needed it to; therefore, she embedded technology into her lesson when she could.

When searching BYOT articles, a common theme found in the majority is the issues of BYOT and the use and misuse of devices. There have been mixed reviews regarding the M-learning environments in which some studies have shown BYOT environments increase interruptions while others advocate using the devices as a tool for learning. While two of the three theme of this study had been proactive and positive, the third theme of the BYOT phenomenon offered a different take. The theme of battling distractions was heard from 11 of the 13 participants repetitively and earnestly. The most common argument against the use of mobile phones in the classroom is the disruptions they may cause that do not lead to student collaboration (Lenhart et al., 2010). Explicit expectations is the key to managing a successful BYOT classroom and the results of this study showed that 87% of the participants felt they must be extra vigilant in supervising work time because of the constant distractions and off-task behavior that could stem from students using their own devices. Mobile technology research has demonstrated that teachers in a BYOT environment observed students engaging in off-task activities while using their mobile device, and this was viewed with a negative connotation and seen as disruptive (Lie et al., 2014). According to a Pew survey, 58% of cell phone-owning teens at schools that ban cellphone use in the classroom have sent a message during class (Common Sense Media, 2009). To combat against these distractions, over half of the participants (7 out of 13) started to use signage within their classroom to appropriately advise when students were and were not allowed to use their devices. This method of controlling when devices are used was proving that BYOT strategies must address the misuse of phones and devices at the appropriate and inappropriate times.

Current researchers suggested that many educators, researchers, and conference presenters are sending the message that integration of technology should not be about the tool but about the learning (Lee, 2014). One commonly misunderstood belief is that BYOT forces teachers to abandon common practice and instead build their curriculum around a technological device. Instead, student learning needs to be the core business of education. For this study, several participants described BYOT as using technology to support learning, not as a mean to replace their current way of teaching. Research suggests that there seems to be a clear divide between the innovative teachers who are excited by the opportunities to incorporate and make a difference to student engagement and learning from those who are intimidated by the fast change of technology available for learning (Murray, 2010). Twelve of the 13 participants of this study volunteered to become BYOT teachers. This self-registration demonstrates teachers that are willing to try something new in their classroom that their peers may still be intimidated to try.

BYOT researchers indicated that implementing BYOT without a clear understanding of the vision or purpose; teachers would establish a routine way to use BYOT in a more teacher-directed manner (Cardoza, 2013). All 13 participants went through the same BYOT professional development that was hosted by the county in which they taught. Of the 13 participants, zero identified professional development as a possible resource that could enhance the BYOT environment. A challenge noted by teachers when implementing BYOT in their classrooms was the need for ongoing technical and material support (Baran, 2014). When participants identified that they had a problem in the BYOT environment, they took to their own accounts to identify strategies to use as means to manage. Rather than professional development, participants indicated the need for technological support in the form of strong Wi-Fi connections and increased bandwidth. Having a network infrastructure that can support BYOT initiatives is

crucial to BYOT success (Simmons, 2014). Of the 13 participants, eight noted that they had at least on circumstance in which Wi-Fi was unavailable and students were unable to use BYOT devices. Five of the participants also discussed that they had planned their lesson about technology and due to lack of connectivity, they had to abandon their lesson and work from a book instead.

### **Implications**

Participants of this study were motivated to try new methods in their classrooms that could potentially have a positive impact on student achievement. The participants understood that students in today's schools have been raised in a technology-rich world in which mobile devices are comfortable and familiar. This kind of motivation was key to getting an honest opinion regarding BYOT in the classroom. The participants indicated positive aspects that technology brings to the classrooms, but also present a level of skepticism in how this technology could fit into their daily classroom routines.

Many participants mentioned that the use of BYOT in the classroom brought a level of student engagement not visible in a traditional classroom setting. Students used devices with which they were familiar; and in return, when they were allowed to complete work on such familiar devices, they were engaged with their assignments and activities. Participants also indicated that access to current and relevant information came with BYOT technology. In a traditional classroom, teachers and students must rely on outdated textbooks and resources. BYOT provided to teachers and students real-time access to information that they used to go beyond the classroom walls and bring rich discussion to a classroom assignment. While participants noted the benefits of engagement and ease of access from the BYOT environment, the interactive quality of such devices brought a plethora of distractions. Students had difficulty

staying focused when using their devices because of the distractions of text messages and social media. To help manage the BYOT environment, BYOT teachers started to utilize classroom policies in which there were designated times for devices to be used as well as when to put them away. . In addition to managing the BYOT environment and safeguarding against distractions, participants also noted that spotty Wi-Fi was a direct hindrance of fully implementing BYOT strategies. Several participants alluded to the idea that there were multiple times when lessons relied on Internet capability, and when the Wi-Fi failed, their lesson failed. One teacher even noted that she had stopped planning her lessons around technology and instead just fit technology into lessons when she was could.

The implications regarding student engagement, instance access, and managing the BYOT classroom led to some specific recommendations for certain stakeholders. These recommendations relate to the following categories: policyholders, administrators, and teachers.

### **Policyholders**

Policyholders, in this case, refers to school board leaders, superintendents, and county office personnel making decisions that affect the day-to-day happenings of schools within their districts. For teachers to thrive in the BYOT environment, policyholders must equip schools with strong Wi-Fi signals and proper bandwidth to accommodate their students' devices.

According to Armstrong (2014), bandwidth and Wi-Fi are two reasons that students are not using BYOT technology often at school. Having a network infrastructure that can support BYOT initiatives is crucial to BYOT success (Simmer, 2014). Participants of this study indicated that BYOT brought greater student engagement and allowance of current and relevant information but, without the ability to access the information, the use of BYOT becomes null and void. While increasing the size of bandwidth and increasing the strength of Wi-Fi may cost the county



money, if the board vision is to utilize more technology in the classroom, policyholders must invest in greater connectivity for a multitude of devices.

According to Bruder (2014), one way that policyholders can combat the growing bandwidth problem is by limiting bandwidth at certain times of the day. Also, policyholders may have teachers, and IT personnel may have students store information on online storage sites such as Google Docs or Dropbox as opposed to network drives in an attempt to save crucial space. BYOT devices are part of students' everyday lives and it is second nature for them to use their devices during the day. Policyholders must recognize the growing need to support student devices so they may be used as a positive force in the classroom as opposed to a hindrance that is unable to connect with Wi-Fi for assignments. There was an increasing pressure to include more technology in the classroom and Greenridge School District made part of its 2014-2019 Strategic Plan was to provide innovative opportunities for student success, which included enhancing and expanding 21st century classrooms (Greenridge County School System, 2013). While technology-rich environments are valued if policyholders do not equip schools with basic bandwidth necessities to make this transition occur, the switch could be more of a hindrance rather than a benefit for students, teachers, and administrators.

### **Administrators**

I identified that there were many promising aspects of the BYOT environment including increased student engagement and instant access to current and relevant information; however, a major obstacle that teachers faced was battling distractions that the devices may have caused. Many of the participants in this study developed their own strategies to use in the classroom to help combat unnecessary distractions caused by BYOT devices. This information indicates that administrators need to be proactive in developing working BYOT policies that govern the use

and misuse of devices in and out of the classroom. One school in Joplin, Missouri created an acceptable-use contract to give to all students that explained expectations for proper BYOT usage. Parents and students signed each contract, and in addition, teachers taught lessons that reinforced the expected behavior of appropriate technology use in the classroom (Sucre, 2012).

Administrators having a school-wide plan on acceptable use of technology may allow teachers to enforce appropriate use of devices in their classrooms easily. Without a school-wide policy, an environment can be created that pits teachers against teachers and teachers against students. When some teachers do not have an appropriate-use policy in their classrooms and then another teacher does, this can create confusion for students as well as pit teachers against each other. A school-wide technology-use policy allows teachers to share a common language as well as give clarity to students regarding what is appropriate and inappropriate technology use.

### **Teachers**

Participants of this study indicated that there were many positive aspects of BYOT; however, teachers must have a structured environment if they are planning to implement BYOT strategies successfully. Of the participants, the teachers that had the most positive responses to BYOT were the ones who had a structured environment that held students accountable to using their devices appropriately. Research shows that implementing BYOT without a clear understanding of the vision or purpose, results in teachers establishing a routine way to use BYOT in a teacher-directed manner (Cardoza, 2013). BYOT teachers must have a sound understanding of how BYOT will be integrated into their classroom if BYOT is to have a positive impact on their students.

Another advantageous strategy posed by participants was the idea to visualize BYOT as another tool in the classroom instead of a program that replaces teachers' current teaching styles. Rather than changing the classroom to meet the needs of BYOT, another strategy teachers may use is to allow BYOT to be embedded in current teaching styles. There seems to be a clear divide between the innovative teachers who are excited by the opportunities to incorporate technology from those who are intimidated by technologies available for learning (Murray, 2010). Some participants of this study were not avid technology users outside of the classroom, but through BYOT, they gained the confidence to use technology more in the classroom and in their personal lives. Many teachers who are unsupportive of BYOT have a fear of the unknown based on poor decisions of a few students many poor choices with their personal devices (BYOD One Year Later, 2013). Results of this study indicated that BYOT might be something worthwhile for teachers to try if they are looking for an engaged and connected classroom.

### **Limitations**

There were factors beyond my control with the first being researcher bias. The phenomenon that I studied was the use of BYOT strategies in the classroom; part of the bias from this study comes from my own experiences as a BYOT teacher. The employment also influenced the bias in the county where I conducted my research. While I tried to put my experiences and judgments aside (Moustakas, 1994), human nature provided some amount of bias in how I reported the data and drew the conclusions. Next, the group of participants in the study may have also limited any conclusions drawn. Being that each participant, except one, chose to become a BYOT teacher may indicate that the participants were inherent risk takers by design and more prone to taking chances in the classroom. This factor may have resulted in conclusions that may not have been seen in a different, cautious, group of participants.

Limitations also included teacher efficacy and integration of technology into the different content areas taught. There was no set lesson plan to which all teachers had to use BYOT technology. It was up to the individual teachers on how to implement BYOT in their classrooms. Furthermore, only 10 of the 13 participants completed all data collection phases of the study. While saturation was met, limiting the number of participants may have inadvertently eliminated a potential discovery. These limitations, plus the design of a qualitative study, contributed to the lack of generalizability of the conclusions drawn by this study.

### **Recommendations for Future Research**

I set out to describe how high school teachers defined, planned, and implemented BYOT within their classroom. Based on the findings from this study, several recommendations for future research can be made. First, future researchers may want to consider interviewing middle and elementary school teachers to compare their experiences with BYOT as the grade level of students change. High school students may represent a different student with different ideals and needs than a middle or elementary school student. These differences could contribute to different conclusions of teacher perceptions of BYOT.

Second, changing the original timeframe from one semester to a full school year may produce different results. Time constraints may have limited the ability to collect data. A longer timeframe may provide a fuller picture in terms of how teachers reflect after a full year of BYOT implementation rather than one semester of data collection.

Third, future research may need to include the perceptions of students in regards to BYOT in the classroom. These perceptions may come from students ranging in grade levels with a blended schedule consisting of various content areas. Hearing from the students' perspective may provide different dimensions to the findings of this study.

Fourth, a study that included perceptions of non-BYOT users and their decisions to not incorporate BYOT into their classroom may also add different dimensions to this study. By comparing the views of BYOT and non-BYOT teachers, results may reveal what drives technology decisions in the classrooms as well as which demonstrates increased student achievement.

### **Summary**

Based on the theoretical framework of Davis (1986), I proposed a phenomenological design to study high school teacher perceptions of defining, planning, and implementing BYOT at three different high schools in a southeastern U.S. state. I identified three themes from the analysis of the data: Instant Access, Student Engagement, and Battling Distractions.

Recommendations were that policyholders must provide adequate bandwidth to support BYOT initiatives. Administrators must also support their teachers in the development of an acceptable use policy when using BYOT devices.

Another take away from this study was the importance of teachers being open to adopting new tools to be used in the classroom. Teachers who had positive responses to BYOT were ones who embedded BYOT strategies in their current teaching strategies rather than replace their approach to teaching. The participants of this study represented highly motivated, educational risk-takers who were willing to try new ideas in the classroom.

This study exemplified only a beginning to the research involving perceptions of BYOT. The qualitative design of the study limited the ability to generalize the results. Future research needs to focus on a more diverse group of participants in varying grade levels, student perceptions of BYOT, as well as a comparison of technology perceptions of BYOT and non-BYOT teachers.



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## APPENDICES

### Appendix A: Interview Questions

#### *Standardized Open-Ended Interview Questions*

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#### Questions

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#### *Teacher Perceptions of BYOT Classes*

1. Is this your first experience participating in a BYOT classroom?
2. Did you self-register for a BYOT class or were you placed?
  - a. If self-registered, why did you choose to register in a BYOT course?
3. Did you receive any help or training on how to use your device of choice?
  - a. If trained, what sort of training did you experience?
  - b. If not trained, how did you learn to use your device?
4. Describe a time(s) when you felt technological devices were particularly useful in a lesson.
5. Describe a time(s) when you felt technological devices were not useful in a particular lesson.
6. What advantages do you see to using technology in the classroom?
7. What disadvantage do you see to using technology in the classroom?
8. Are there any limitations you came across when using devices?
9. How compatible were the devices among students in your classroom?
10. Were there any instances in which students had to share devices due to equity issues?
11. How has being in a BYOT classroom impacted students' learning?
12. How has being in a BYOT classroom impacted your confidence in your technology?
13. What else would you like to tell me about BYOT that I have may have not asked about?

\*\* Each question provides a starting point for further probing questions.

## Appendix B: Consent Form

The Liberty University Institutional  
Review Board has approved  
this document for use from  
1/6/16 to 1/5/17  
Protocol # 2376.010616

### CONSENT FORM

High School Teacher Perceptions of Participating in a Bring Your Own Technology Classroom:  
A Phenomenological Study  
Allison Hurston  
Liberty University  
School of Education

You are invited to participate in a research study exploring the experiences and perceptions of faculty who have participated in a Bring Your Own Technology (BYOT) classroom. You were selected as a participant because you were identified as a BYOT teacher by your school administrator or academic coach. Please read this form, and ask any questions you may have before agreeing to be in this study.

This study is conducted by Allison Hurston, a doctoral candidate in the School of Education at Liberty University.

#### Background Information:

The purpose of this study is to investigate teachers' perceptions of participating in a BYOT classroom. The study will focus on how participants define BYOT, plan for a BYOT classroom, and implement BYOT technology within the classroom.

#### Procedures:

If you agree to participate in this study, I would ask you to participate in the following activities:

1. **In-depth Interview**- Participate in an in-depth interview with the researcher regarding your experience and perspectives of your BYOT classroom. You will be given a copy of the interview questions prior to the interview. The interview should last about twenty minutes and with your permission, will be audio recorded for validity purposes.
2. **Journal**- Maintain a daily Google Doc journal for two weeks documenting your experiences with BYOT along with any thoughts, feelings, or insights concerning these experiences. You will be provided with four research questions to help guide your journal entries.
3. **Focus Group**- Participate in a final focus group to discuss, as a group, your experiences and perceptions of BYOT and if participating in the study altered your perceptions of BYOT. The focus group should last about 1 hour and, with your permission, will be audio recorded for validity purposes.

#### Risks and Benefits of Participating in this Study:

The research in this study involves minimal risk, which is no greater than everyday activities.

There are no direct benefits to you in this study, but the results may benefit potential BYOT adopters including other teachers, principals, and parents by adding to the relatively small but growing knowledge base of BYOT in high schools.



The Liberty University Institutional  
Review Board has approved  
this document for use from  
1/6/16 to 1/5/17  
Protocol # 2376.010616

### Compensation

You will not be compensated for taking part in this study.

### Confidentiality:

The records of this study will be kept private. In any sort of report that may be published, any information that will make it possible to identify a subject will not be included. Pseudonyms will be used to protect participant confidentiality. Research records will be stored securely and only the researcher will have access to the records. The participant contact information, audio recordings, and all other data will be stored in a locked filing cabinet as well as a password protected computer. All the materials related to the data collection will be destroyed three years after the completion of the study. In reference to the focus group, I cannot assure that other participants will maintain the subject's confidentiality and privacy.

### Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether to participate or not will not affect your current or future relations with Liberty University or Coweta County School System. If you decide to participate, you are free to not answer any questions or withdraw at any time without affecting those relationships. If you choose to withdraw from the study, any of your audio recordings will be permanently deleted.

### Contacts and Questions:

The researcher conducting this study is Allison Hurston. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at [ahurston@liberty.edu](mailto:ahurston@liberty.edu), (678) 633-2190 or her faculty advisor, Dr. Billie Jean Holubz at [bjholubz@liberty.edu](mailto:bjholubz@liberty.edu).

If you have any questions or concerns regarding this study and would like to talk to someone other than your researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Carter 134, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*You will be given a copy of this information to keep for your records.*

### Statement of Consent:

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

☐ I give permission for my interview and focus groups with Allison Hurston to be audio recorded.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix C: IRB Approval

# LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

January 6, 2016

Allison Hurston

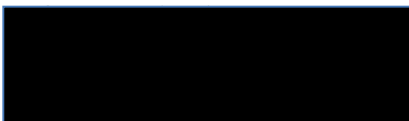
IRB Approval 2376.010616: High Schools Implementing Bring Your Own Device: A Phenomenological Study of Classroom Teachers' Perspectives

Dear Allison,

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

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

Sincerely,



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UNIVERSITY

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