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High school teacher's acceptance of technology and privacy concerns in the 1:1 Initiative Laptop Program

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By

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Prior research has shown teachers' attitudes, teachers' preparation for using technology, and the availability of technology had significant positive associations with technology integration. However, research has shown that teachers do not fully utilize technology, they fail to implement it thoroughly due to a lack of time needed for planning the implementation of technology into the curriculum, and they do not have adequate training which contributes to underutilization of technology. Due to a lack of research from the teachers' perspective of technology acceptance, the purpose of this study was to examine high school teachers' acceptance and use of technology and determine the relationships between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Privacy Concerns.

To investigate the current status of adopting and implementing laptops in high schools, this study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model with an addition of Privacy Concerns. The online survey was sent in the fall semester of 2018 to teachers who taught in a North Mississippi School District that has implemented a 1:1 initiative laptop program. A total of 121 high school teachers

made up the population and sample in the study, and 112 teachers replied with a 92% return rate.

Overall, this study found that Performance Expectancy and Social Influence had the highest mean score at 5.6 (agree), and Privacy Concerns had the lowest mean score 3.8 (neutral), on a 7-point Likert scale ranging from 1 for 'strongly disagree' to 7 for 'strongly agree.' The average mean score for Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns was 5 (somewhat agree), indicating that teachers perceived all 5 variables somewhat affect high school teachers' intention to accept and use of technology. When analyzing whether Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept technology, Effort Expectancy was the only variable that predicted teachers' behavior intention to accept technology. The findings of this study will provide valuable information with the current status of adopting and implementing technology in the context of 1:1 initiative programs in high schools.

DEDICATION

I would first like to dedicate this body of work to God, for blessing me with the knowledge and perseverance to complete it. Next, I dedicate this dissertation to my grandmother, Mary Augusta Smith, who would always tell me to "make sure I get my lesson out," which was her way of saying to study. I will always remember the smile you had when I graduated from high school, basic training from the Army, undergrad and with my Masters. It is the memory of that same smile that gets me through many times today. Thanks to my mom, Mildred Smith-Gatewood, and brother, Melvin Gatewood for always supporting me.

I would like to dedicate this to my 155 Brigade Combat Team family and the band of brothers I made in the military. A lot of time in the desert we would talk about our future endeavors, and never in a million years would I have thought that I would have been writing a dissertation. I dedicate this to all the soldiers who made the ultimate sacrifice, to the wounded soldiers, and the ones with scars that cannot be seen by the human eye. As I reach this goal, I remind myself that "The Marathon Continues!"

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CHAPTER I

INTRODUCTION

The No Child Left Behind (NCLB) Act of 2001 mandated active engagement by schools and districts to implement strategies for integrating technology into curriculum and instruction. On December 10, 2015, President Obama signed the Every Student Succeeds Act (ESSA) into law, replacing the previous version of the law, NCLB. The ESSA includes an increased focus on technology-related requirements to achieve educational outcomes and opportunities for all students and provides funds for school technology (Office of Educational Technology, 2018). Therefore, school districts implementing 1:1 technology initiatives have increased, according to the National Center for Educational Statistics (2016) report. Integrating technology into classrooms has been the expectation in the newest generation of teaching (Office of Educational Technology, 2018). Scholars agree that technology is essential to educating students because it allows teachers to reach students on their level and speak the language they speak (Fisher & Frey, 2010; Ormiston, 2011).

However, research has shown that teachers do not fully utilize or implement technology thoroughly. One reason technology is not utilized or implemented thoroughly is due to a lack of time needed for planning the implementation of technology into the curriculum (Coghlan, 2004). For some teachers, the belief that they will need to completely restructure their curriculum prevents them from integrating technology in the

classroom (Clarke & Zagarell, 2012). Learning new computer skills requires significant amounts of time, which in return, poses a conflict since teachers already have a limited schedule (Groff & Mouza, 2008). In addition, research has also identified that the lack of training (Mosley, 2012) and teachers' resistance to change (Common, 1983; Cuban, Kirkpatrick, & Peck, 2001; Li, 2007) as reasons as to why technology is not being fully utilized. Teachers' technology-centered training is inadequate due to a disconnect between teacher's expectations, and teacher's competencies (Storz & Hoffman, 2013). Moreover, teachers do not have adequate training to integrate technology into the classroom (Coghlan, 2004). Greg Limperis, Director of Educational Technology at Hampton School District, located in Hampton, New Hampshire, also discovered that same gap between K-12 leaders and those in other fields. He said "There's no talk of technology and how do we use it… There needs to be a real focus on that. We talk all the time about teachers needing professional development" (as cited in Finkel, 2013). Without a doubt, there needs to be more research on teachers' acceptance and use of technology.

1:1 Initiative

Twenty-first-century knowledge and skills consist of critical thinking, communication, collaboration, and creativity skills (International Society for Technology in Education, 2007; Partnership for 21st Century Skills, 2009). Mouza (2008) defined 21st Century skills as "informational and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills" (p. 448) needed by students to compete for jobs in the 21st Century. Penuel (2006) found that 1:1 initiatives can prepare students with 21st Century skills. As a result, school districts have implemented laptop

initiatives to give students access to the technology they need (Penuel, 2006). Research findings suggest that learning in a 1:1 classroom can contribute to students' acquisition of information literacy skills (Berger-Tikochinski, Zion, & Spektor-Levy, 2016).

Research shows that students' and teachers' technology skills significantly improved with increased access to technology (Dawson et al., 2008; Lei & Zhao, 2008; Murphy, King, & Brown, 2007). When the laptops are effectively integrated into instruction, student achievement scores can be increased (Gulek & Demirtas, 2005; Lowther, Ross, & Morrison, 2003; Zucker & Hug, 2008). Therefore, numerous laptop initiatives have been employed across the United States to increase students 21st Century knowledge and skills (Abell Foundation, 2008; Hayes & Greaves, 2008; Penuel, 2006). Examples of statewide programs include Maine's "Learning Technology Initiative," Michigan's "Freedom to Learn Program," Florida's "Laptop for Learning," and New Hampshire's "Technology Promoting Student Excellence" (Poole, 2009). The Maine 1:1 program provided middle-grade students with a laptop beginning in 2002, and the laptops were loaned out to students, similar to the way textbooks are loaned out to students every year (Zucker & Light, 2009). Pennsylvania's program, named "Classrooms for the Future," provided classroom sets of laptops to more than 500,000 high school students (Zucker & Light, 2009). Although these programs differed, the overall goal of both programs were to provide every student and teacher with their own laptop to reach a 1:1 ratio of one laptop for every student and teacher (Mills, 2010).

The benefits of a 1:1 laptop program resulted in students spending more time engaged in collaborative work, participating more in project-based instruction, accessing more information, and developing more research analysis skills (Mills, 2010). Research

also showed students who have been a part of a 1:1 laptop program reported higher achievement and increased engagement (Boston College, 2010). In addition to students, the laptop initiatives give teachers the opportunity to individualize the curriculum to fit student needs with a laptop (Silvernail, 2007). Teachers who use laptops utilize more of a constructivist approach for teaching and spend less time lecturing to students (Barrios et al., 2004). Also, policymakers are supporting the 1:1 initiative for many reasons: improving students' technology skills, developing a better-educated workforce, making the digital playing field level by providing technology to students from low-income families, and reforming educational issues (Zucker & Light, 2009).

Harper and Milman (2016) conducted a meta-analysis of empirical studies investigating the effectiveness of 1:1 programs. Harper and Milman (2016) examined forty-six studies published between 2004 and 2014. Their study was based around this one question: What does research tell us about 1:1 technology in K-12 classrooms? Their investigation confirmed that 1:1 technology integration has the potential to positively impact student learning in regard to student engagement, personalized learning, and allow teachers and students to be educationally powerful by having digital tools in their hands. Bebell and Kay (2010) found that teaching and learning practices were changed when students and teachers were provided laptops. In year two of the 1:1 program, they found that 7th-grade students showed statistically significant gains in English Language Arts (ELA) state assessment scores compared to students that were not in a 1:1 program (Bebell & Kay, 2010). Suhr, Hernandez, Grimes, and Warschauer (2010) compared ELA test scores of students in a 1:1 laptop program between students in the same school district that were not in a 1:1 laptop program and found that the students in the 1:1

program outperformed the comparison group (Suhr et al., 2010). Suhr et al. also found that classrooms that were part of the 1:1 initiative had higher levels of student engagement, and teachers specifically reported that students enjoyed using multimedia, searching the Internet, and writing their papers using computers (Suhr et al., 2010). At present, 1:1 computing has grown into a technology-rich educational reform that allows all teachers and students to have access to laptop computers, instead of sharing computers (Bebell & O'Dwyer, 2010).

1:1 Initiative in A School District in North Mississippi

Like many other districts, the school district used in this study has also implemented the 1:1 initiative, known as Engaged Learning Initiative (ELI). Since 2015, all middle school students, high school students, and teachers have been assigned a new laptop to enhance student learning and prepare students to be digitally literate. The students can use laptops in the classroom for instruction, and they can also take the laptops home.

The digital divide is a concern for much of America (Hurwitz, 2018). As a school district located in North Mississippi, the district had several reasons for implementing the 1:1 laptop initiative. The reasons consist of providing students the best in technology, providing the best learning environment, and providing students the best opportunity to compete in the 21st Century global world (Engaged Learning Initiative, n.d.). The district defines a 1:1 program as a program that represents a comprehensive technology integration program available for instructional purposes (Engaged Learning Initiative, n.d.). The technology department for the school district is responsible for purchasing, installing, and maintaining systems related to network infrastructure, student information,

video systems, telephones, and software programs. The Information Technology staff currently support 12 buildings with a 1 Gigabyte fiber backbone. Their ever-growing technology inventory includes approximately 3,900 MacBooks and 2,400 iPads. In addition, they also have Apple TVs, projectors, and interactive whiteboards available throughout the district.

The County that the school district is located in is rural, based on the rural definition defined by the Office of Management and Budget ("USDA ERS - What is Rural?," n.d.). The median age is 36.9 with a median household income of $41,219 (Data USA, 2018). When examining wages by gender, male's average salary is higher at $52,492, compared to female's average salary at $35,627. The median property cost is $118,000 and the homeownership rate is 61.2%. Manufacturing, Retail Trade, and Healthcare and Social Assistance are the most common employment sectors for those in the County (Data USA, 2018). Several industries were located in the County during the mid-20th century, including the world's largest toilet seat manufacturer, Sanderson Plumbing Products, and major mattress, furniture, and textile plants. Most of these had closed by 2000; however, the local economy was revitalized by new manufacturing companies moving to the area including Steel Dynamics factory, American Eurocopter factory, the Paccar engine plant, and the Aurora Flight Sciences facility.

The school district consists of three elementary schools, two middle schools, and three high schools. The district also has an alternative school, and a Career and Technical Center. The Career and Technical Center is shared amongst the district. The district has a long history of having sports rivals within the district, and Friday nights during football season is a highlight for the local communities. The district is an above-average public-

school district. The district has approximately 5,147 students and the student to teacher ratio is 14 to 1. According to Niche (2019), the school district is ranked number 16 of 144 as the most diverse school in Mississippi. It is also ranked 20 of 144 as the best school district in Mississippi (Niche, 2019).

Theoretical Background of the Study

The initiative to have technology in schools can help enrich the education level of students. Technology also helps assist teachers in their teaching duties. However, if the technology is not accepted by the teachers, then the technology will be underutilized and not used to its full potential. Therefore, it is important to continue to do research on technology acceptance and to find ways to better help teachers adopt and accept technology.

There has been different user acceptance models and theories to try to explain user acceptance of new technology, including the Technology Acceptance Model (TAM; Davis, 1989), Theory of Planned Behavior (TPB; Ajzen, 1991), Model of PC Utilization (MPCU; Thompson, Higgins, & Howell, 1991), Motivational Model (MM; Bagozzi, & Warshaw, 1992), the Innovation Diffusion Theory (IDT; Moore & Benbasat, 1991), Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975), Concerns-Based Adoption Model (CBAM; Hall & Hord, 1987), and Social Cognitive Theory (SCT; Compeau & Higgins, 1995). However, for the purpose of the study, this research adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Created by Venkatesh, Morris, Davis, and Davis (2003), the model combined research from previous acceptance models on individual acceptance into a unified theoretical model. One reason the UTAUT was used in this research is that Venkatesh et al. (2003) stated in their article

that more research is needed to incorporate more variables that will influence acceptance beyond what is currently included in the UTAUT model. Another reason UTAUT was used in this research is that Venkatesh et al. (2003) stated that the UTAUT represents a culmination of past research in the area of technology acceptance.

The UTAUT theory explains which factors determine user intentions to adopt technology and subsequent behavior. According to Venkatesh et al. (2003), the UTAUT model is based around four key determinants of use, three secondary determinants of use, and four moderators of individual use behaviors play a role of user acceptance and use behavior. The four constructs that are the direct determinants of usage, intention, and behavior are *Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions*. *Performance Expectancy* relates to the degree to which using technology is perceived as being better than using its precursor. Effort Expectancy is defined as the degree of ease associated with using the new technology. Social Influence is defined as the degree to which an individual perceives how important others around them believe they should use the new technology. Facilitating Conditions is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). *Attitudes towards using technology, self-efficacy towards technology*, and *anxiety towards using technology* are the three secondary determinants involved in the UTAUT model. Attitudes towards using technology can be defined by the degree to which an individual believes he or she should use a particular technology. Self-efficacy is the degree to which an individual judge his or her ability to use a particular technology to accomplish a particular job or task. Subsequently, anxiety refers to the anxious or emotional reaction

associated with the use of a particular technology. *Gender, age, experience*, and *voluntariness of use* are the four key moderators that affect the four direct determinants of UTAUT (Venkatesh et al., 2003). The moderators show the relationship between various variables and intention to use (Ahmad, 2014).

In this study, the researcher also investigated how Perceived Organizational Support may act as a moderator to the *Social Influence* variable that is a part of UTAUT. Employees' perceptions of support from the organization, and their commitment to the organization would influence relationships outline in the UTAUT model, ultimately predicting employee acceptance of technology acceptance (Keaton, 2008).

Adding the Privacy Factor to the Existing UTAUT Model

There have been notions that personal privacy is dead, and that we no longer have any privacy (Rambam, 2008). Scott McNealy, Sun Microsystems Chief Executive, is famous for his 1999 quote: "You have zero privacy anyway. Get over it" (as cited in Popkin, 2010). Eric Schmidt, Google Chief Executive, stated "[i]f you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place" (as cited in Popkin, 2010). Due to the lack of research on privacy and its relationship with technology acceptance, this research sought to study the privacy factor too. Since the researcher found no existing model of technology adoption and acceptance with privacy variable in the literature, this research adopted the variables of UTAUT with an addition of privacy to examine technology acceptance and use.

Information security and privacy is a major concern in the world today. Advances in technology cultivate improvement in the way we do things, but it can also leave the users of new technologies vulnerable and sensitive concerning the invasion of privacy.

The perception of a person's privacy being invaded can negatively affect the acceptance of new technologies, which might cause people to reject the technology completely, or only use it partially (Agarwal, 2000). Another vital issue stemming from the deployment of particular technologies is user resistance to utilize pervasive technology (Pons & Polak, 2008). Privacy concerns have also been shown to be associated with levels of perceived risk when it comes to technology acceptance (Thiess, 2007). Users can feel fearful, hesitant, or uncomfortable around specific information systems when they perceive them as a means for potential infringements into their privacy (Scott, Acton, & Hughes, 2005). Such users' feelings and perceptions increase the risk of technology rejection and can lead to the failure of technology implementation (Pons & Polak, 2008).

Research showed that computer technologies have generated an abundant of ethical problems and pressing concerns regarding the moral notion of privacy (Miller & Weckert, 2000). Allen, Coopman, Hart, & Walker (2007) stated that whether employers are using electronics as a form of control or caring, employee privacy may be eroded. When surveillance is framed as coercive control, privacy can become a line in the sand around which boundary turbulence exists, and resistance occurs (Allen et al., 2007). Employees may perceive monitoring technology to be an infringement on their personal space and privacy (Coovert & Thompson, 2003).

Based on the UTAUT model created by Venkatesh et al. (2003), the study sought to examine whether privacy affects teachers' technology acceptance, and further determine the usefulness of the UTAUT model that was modified in the context of privacy concerns. As a result, as shown in Figure 1, this study adopted the modified UTAUT, by adding Privacy Concerns as a determinant of use, in addition to the UTAUT

model's four key determinants of use*: Performance Expectancy, Effort Expectancy, Social Influence,* and *Facilitating Conditions*.

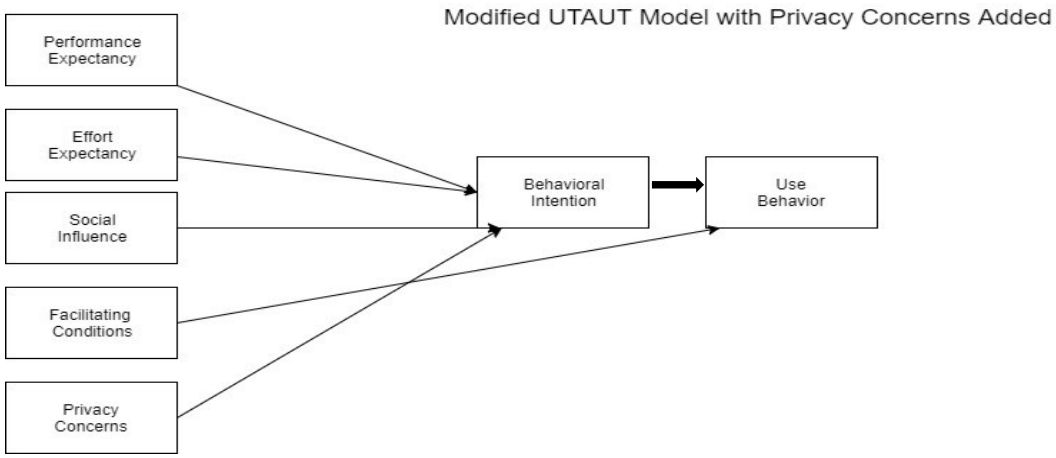

Figure 1. Modified UTAUT model with privacy concerns added.

Statement of the Problem

In order for high school teachers to effectively implement technology into their school districts, there is a need to understand what factors encourage technology adoption. One of the central elements of President Obama's education reform includes investments in public schools where he proposed to "use technology to reinvent education" (Darling-Hammond, 2009, p. 214). To integrate technology, many districts have implemented 1:1 technology programs to give every student access to technology at all times (Poole, 2009). Many 1:1 laptop programs teach teachers more about the devices, rather than teaching instructional strategies on using the devices (Johnson, 2014). In addition, teachers adopt teaching in a 1:1 laptop environment differently (Oliver & Corn, 2008). In a study conducted by Lei and Zhao (2008), 40% of teachers stated that

it was harder for students to concentrate in class after receiving laptops because they were distracted by the technology. Therefore, the problems to be addressed in this study was high school teachers' acceptance and use of technology. Due to lack of research from the teachers' perspective of technology acceptance, this study addressed the current status of adopting and implementing laptops in schools. Additionally, there is a lack of research on whether privacy affects the acceptance of technology. Therefore, the study was designed to understand the relationships between the acceptance of technology and privacy concerns too.

Purpose of the Study

The purpose of this study was to examine high school teachers' acceptance and use of technology and determine the relationships between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Privacy Concerns. The results of this study can help better understand how teachers perceived their use of technology in schools.

Significance of Study

Previous research revealed that technology use in education should be used more frequently and effectively in teaching and learning to gauge the impact (Lowther, Inan, Strahl, & Ross, 2012). The findings of this study can add to the existing literature on technology acceptance and use. Twenty-first-century skills recommended incorporating technology into curricula, which is an NCLB strategy (U.S. Department of Education, 2003, Silvernail, 2007); therefore, findings from this study can also help support 21st

Century skills and NCLB initiative. With the present concern of privacy, the study can provide insight into whether privacy affects the acceptance of technology.

Research Questions

The following research questions were developed to guide this study:

1. What are high school teachers' perception of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns on behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?
2. Do Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?
3. Is there a statistically significant difference between age, gender and college major in high school teachers' behavioral intention to use technology as measured by the UTAUT and Technology Privacy Survey?
4. Is there a relationship between Perceived Organizational Support and Social Influence to accept and use technology?

Limitations of the Study

There were several limitations to this study. First, the study was limited to the integrity of the teachers who answered the survey questions. The survey uses self-reported data, which causes the researcher to rely on the honesty of the participants; however, participants can sometimes lack the introspective ability to accurately respond

to a survey question (Hoskin, 2012). Another limitation was that there is the possibility of a power imbalance of feeling pressured to respond to the survey in a certain manner when a teacher is prompted by an administrator to take a survey. In this study, the deputy superintendent helped ask the teachers to conduct the surveys, so this may have affected how honest they were in answering the survey questions.

The findings of the study were also limited by the reliability and validity of the questionnaire. Therefore, generalization was limited only to groups of teachers in this study. The results were limited to the time that the study was conducted, and the perceptions of the participants as well.

Delimitations of the Study

The study was limited to all high school teachers serving in the school district in North Mississippi during the 2018-19 academic year. The study was also limited to teachers who were a part of a 1:1 laptop program.

Definitions

Behavioral Intention - The degree to which an individual believes that he or she will engage in a given behavior (Institution of Medicine, 2002).

Digital Divide – a term that refers to the gap between demographics and regions that have access to modern information and communications technology, and those that either have restricted or no access. This technology can include telephone, television, personal computers and the Internet (Braverman, B., 2016).

Effort Expectancy - is defined as the degree of ease associated with using the new technology (Venkatesh et al., 2003).

Facilitating Conditions - is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003).

Perceived Organizational Support – is defined as the employee's perception of the organization's ability to provide the support and aid needed in order to carry out one's job effectively and to deal with stressful situations (Eisenberger, Cotterell, & Marvel, 1987; Eisenberger, Huntington, Hutchison, & Sowa, 1986).

Performance Expectancy - relates to the degree to which using technology is perceived as being better than using its precursor (Venkatesh et al., 2003).

Privacy – being free from being observed or disturbed by other people as well as away from public attention (Oxford Dictionary, 2016).

Social Influence - is defined as the degree to which an individual perceives how important others around them believe they should use the new technology (Venkatesh et al., 2003).

UTAUT - The Unified Theory of Acceptance and Use of Technology (UTAUT) is a technology acceptance model. The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that there are four key constructs: 1) Performance Expectancy, 2) Effort Expectancy, 3) Social Influence, and 4) Facilitating Conditions (Venkatesh et al., 2003).

CHAPTER II

REVIEW OF LITERATURE

This chapter provides an overview of existing literature on technology acceptance and privacy issues. This literature review is divided into various subsections. The subsections are: Teachers' Acceptance of Technology, 1:1 Laptop Initiative, Issues or Concerns of 1:1 Laptop Initiative, Students' Technology Use and Achievement in 1:1 Technology Programs, Technology Acceptance and Adoption Theories, Previous UTAUT Research, Project Tomorrow's Research on Technology Adoption, Privacy Concerns, and Perceived Organizational Support (POS).

Teachers' Acceptance of Technology

Acceptance and adoption of technology are often used interchangeably. The adoption of technology is considered when technology is present (Cerovski, 2016). Acceptance of technology is defined as the point when technology is integrated and becomes a basic component of developing pedagogy (Cerovski, 2016). Moreover, according to Straub (2009), adoption does not equal acceptance. Adoption of technology is the point in time when an organization selects technology to be used (Carr, 1999). Whereas, acceptance of technology is when the technology becomes fully integrated.

Teachers' attitudes towards technology can be a large indicator of how well they accept and use technology (Holden & Rada, 2009). Teachers who demonstrated positive

attitudes, positive perceptions, and high self-confidence might be more likely to utilize technology for instruction Holden & Rada (2009). Furthermore, Holden & Rada (2009) also noted that high technology acceptance rates amongst teachers might help alleviate technology barriers and increase their belief in educational technology.

In addition, studies showed teachers' demography (e.g., subject matter, gender, and teaching experience) are strongly associated with teachers' attitudes toward classroom technology usage too (Jimoyiannis & Komis, 2007). In some studies, gender has been identified as a variable related to technology integration with studies suggesting male teachers integrate technology more frequently (Tondeur, Valcke, & Van Braak, 2008; Wozney, Venkatesh, & Abrami, 2006). Jimoyiannis and Komis (2007) found that male teachers are positive about technology in education while female teachers are neutral or negative. Male teachers have shown to use more technology in the classroom than female teachers (Jamieson-Proctor, Burnett, Finger, & Watson, 2006; Kay, 2006). Tondeur et al. (2008) found that male teachers integrate technology more than female teachers when the computer is used as a tool for researching and processing information. It was suggested that the difference between male and female might be related to men being more eager to adopt less familiar computer applications (Bourgonjon, Valcke, Soetaert, de Wever, & Schellens, 2011). It was discovered that innovativeness had gender differences, and males were willing to adopt what they perceived as less typical and familiar (Bourgonjon et al., 2011).

While some studies suggested male teachers integrate technology more frequently (Tondeur et al., 2008; Wozney et al., 2007), other studies reported that gender is unrelated to technology integration (Perrotta, 2013; Shapka & Ferrari, 2003; Tweed,

2013). More recent research differs and does not support the claim that males use and integrate technology more than females. Teo, Chai, Hung, and Lee (2008) concluded that gender was not a significant predictor of technology use in the classroom.

Regarding teaching experience, the longer the teachers had been teaching, the less likely they were to successfully integrate technology (Ritzhaupt, Dawson, & Cavanaugh, 2012). This finding is consistent with prior research that has used age or years of teaching experience (Inan & Lowther, 2010). Research was conducted that was based on data gathered from 732 teachers from 17 school districts and 107 different schools in the state of Florida. The results revealed that a teacher's level of education and experience teaching with technology positively and significantly influence their use of technology.

Teacher use of technology strongly explains classroom technology integration and student use of technology (Ritzhaupt, Dawson & Cavanaugh, 2012). Recent research studies have also suggested that subject area could be a factor affecting the use of technology for teaching and learning in schools (Hew & Brush, 2007; Howard, Chan, & Caputi, 2014; Howard & Maton, 2011, 2013). In a study conducted by Jimoyiannis and Komis (2007), they discovered economics, technology, and science teachers were more positive compared to mathematics Greek language and history, social studies and theology teachers when it came to technology in education. The study also found that business education and elementary teachers used computers more frequently compared to mathematics and art teachers. One mathematics teacher stated his concerns and perceptions regarding the use of computers:

> I do not believe that computers can improve learning. I am totally convinced that calculators have restricted students' achievement in

> numeracy. In the following years, we will see the same thing happening, e.g. a whole generation of students with low achievement in mathematics. Computers will prevent their development in mathematical thinking. (Jimoyiannis & Komis, 2007, p. 169)

Howard et al. (2014) highlighted that "ultimately, subject areas do matter in technology integration" (p. 8). Hughes, Kerr, and Ooms (2005) determined that the more teachers see the connections between technology and the subjects they teach, the more likely they are to develop a technology-supported pedagogy.

Contrary to the previous study mentioned, Frye and Dornisch (2008) hypothesized that there would be a positive relationship between a teacher's class evaluation and the use of technology. They found their hypothesis was supported in math and science courses. This led them to conclude that the use of technology in these courses raised students' level of confidence in their teachers, thereby increasing motivation and performance (Frye & Dornisch, 2008). In general, teachers have divided views on technology, since all teachers are different; teachers have different personalities, teaching methods, areas of expertise, and different ways of integrating technology (Faw, 2016).

1:1 Laptop Initiative

Technology programs, such as 1:1 initiative, have the potential to transform education (Brown, 2003; Papert, 1980, 1993; Stager, 1995), while others saw it as a fad to drain limited educational budgets and a distraction in the classroom (Cuban, 2001; Oppenheimer, 2003). However, 1:1 laptop initiatives and increased technology integration in schools are not just trends, since "the cost of digital devices has decreased dramatically, while computing power has increased, along with the availability of high

quality interactive educational tools and apps" (U. S. Department of Education[USDOE], 2016, p. 5). As technologies continue to decrease in price, the implementation of 1:1 initiatives has become more widespread (Zheng, Warschauer, Lin, & Chang, 2016). Moreover, the 1:1 classroom environment support positive outcomes for both students and teachers (Higgins & BuShell, 2018). Students are much more independent and responsible in the 1:1 environment; they are more organized and connected to the work they produce (Higgins & BuShell, 2018). The 1:1 movement in the United States has encouraged greater engagement using 21st Century learning skills through multimedia programs, improved writing, deepen learning, and easier integration of technology into instruction (Schrum & Levin, 2016; Warschauer, 2005). The 1:1 laptop programs give students opportunities to enhance 21st Century skills inside and outside of the classroom (Varier et al., 2017)

There are reports of positive attitude towards learning with a personal laptop computer (Lowther et al., 2012) and many students prefer to learn with a laptop (Zheng et al., 2016). Islam and Grönlund (2016) and Harper and Milman (2016) reviewed the literature relevant to integration of computers in schools, and both reviews found an increase in students' motivation as a dominant theme in many 1:1 programs. A meta-analysis of research on 1:1 programs also found that many reported higher motivation and engagement of students (Zheng et al., 2016).

The 1:1 laptop program can also add value to different tasks. The purpose of 1:1 laptop programs are to enhance learning and contribute to the development of 21st Century skills such as creativity, critical thinking, and communication skills (Islam & Grönlund, 2016). Fleischer (2011) added that "one person must have access to the same

computer at all times, with the same stings, programs, and folder structure" (p. 2) for it to be considered a part of a 1:1 laptop program. The nature of instructional intervention in 1:1 laptop programs are under development (Sauers & McLeod, 2012), and 1:1 laptop programs are at a stage when it is time to figure out how to best integrate technologies into the learning process (Islam & Grönlund, 2016).

Studies involving the use of laptops have produced evidence that suggests the use of laptops engages students' cognitive efforts and may lead to reduced cognitive load (Cristia, Ibarrarán, Cueto, Santiago, & Severín, 2012; Mabry & Snow, 2006; Warschauer, 2009). Hansen et al. (2012) conducted a field experiment at some schools in Ethiopia and found that children with laptops achieved significantly higher scores on abstract reasoning in comparison to the children who did not have laptops. According to the study, the positive effect was relatively strong compared to the finding of similar studies in developed countries.

Classroom communications come in two forms; teacher-student communication and student-student communication. Previous studies indicated that 1:1 laptop programs increase both teacher-student and student-student communication and more communication is generally better (Islam & Grönlund, 2016). It has been observed that student-student interaction is five times more frequent than teacher-student helping interactions during the laptop sessions (Ardito, 2011).

Issues or Concerns of 1:1 Laptop Initiative

Although 1:1 laptop programs can improve and enhance the educational experience, 1:1 computing can also come with issues. Studies suggest that teachers have initial concerns about the use of laptops for instruction, due to limited technology skills,

lack of sufficient technical support, uncertainty about ways in which the technology would affect them, or fear of losing control of students in the classrooms (Carlson, 2007; Gunner, 2007; Khambari, Moses, & Luan, 2009; Maninger & Holden, 2009; McGrail, 2006, 2007; Windschitl & Sahl, 2002; Zuber & Anderson, 2013). Due to these concerns, some teachers reported that they had difficulties creating a learning environment "where learning drives the use of technology, instead of the other way around" (Maninger & Holden, 2009, p. 7). Whenever technical support and professional development were not sufficiently offered, teachers' negative perceptions of laptop programs persisted (Zheng, et al., 2016). Lei (2010) conducted a 4-year longitudinal study where teachers reported that their needs for timely and adequate technology support were not substantial. An increase in technology use led to increased demand and requests for technical support; this leads to an increased workload for the technology staff and made addressing teacher's technology needs a more difficult and lengthy process. After conducting a longitudinal study for 196 students, their families and associated teachers in a school in Western Australia; Bate, MacNish, and Males (2012) found that 1:1 laptop programs could be a double-edged sword by providing an enhanced opportunity for student-centered leaning on one edge and created obstacles to the learning process and environment on the others. The 1:1 laptop programs can cause students to spend too much time on wasteful activities (Bate et al., 2012).

Students' Technology Use and Achievement in 1:1 Technology Programs

Studies examining student achievement when integrating technology have shown positive results. Rosen and Beck-Hill (2012) conducted a study and reported that 476 fourth and fifth-grade students who received instruction in 1:1 technology program

classrooms outperformed the control group students in reading and math on standardized tests. Gulek and Demitras (2005) discovered similar results in their examination of 259 middle school students, where they showed that students in 1:1 technology classrooms demonstrated significantly higher academic achievement in test scores, end of the year grades, and grade point averages as compared to students in control groups (Gulek & Demitras, 2005). Bebell and Kay (2010) found that students' technology use was related to increased achievement, stating that students with various technology use in 1:1 classrooms were found to score higher on math and science assessments than students who have less access to technology.

The use of technology in schools also had benefits other than higher assessments and test scores. Researchers have claimed that student engagement has increased "dramatically in response to the enhanced educational access and opportunities afforded by 1:1 computing" (Bebell & Kay, 2010, p. 3). Bebell and Kay (2010) found that students' interest in learning was increased when students learned in a 1:1 environment. Moreover, the quality of students' work also increased (Bebell & Kay, 2010). Access to technology 24 hours a day, seven days a week, promoted 21st Century skills in 1:1 laptop programs because the students had more access to laptops (Donovan, Green, & Hansen, 2012). Corn (2013) also stated that the use of a 1:1 device at school helped to develop 21st Century skills. An increase in student engagement was seen as one of the most important ways technology could be useful in the classroom; this finding is consistent with studies conducted by Bartow (2014). Researchers have also supported relationships between technology use in schools and improvements in students' attitudes toward learning, self-efficacy, behavior, and technology proficiency (Hsieh, Cho, Liu, &

Schallert, 2008; Shapley, Sheehan, Maloney, & Caranikas, 2011; Storz & Hoffman, 2013).

Technology Acceptance and Adoption Theories

Adoption theories examine whether individuals decide to accept, participate or reject a particular technology, and adoption theory can be seen as a micro perspective on the change that focuses on the pieces instead of the whole when looking at technology adoption. Straub (2009) examined adoption theories on individual's computing adoption processes, and adoption theories he examined include Roger's innovation diffusion theory (Rogers, 1962), the CBAM (Hall & Hord 1987), the TAM (Davis, 1989), and the UTAUT (Venkatesh et al., 2003). Straub (2009) indicated that technology adoption can be a complex, inherently social, developmental process. Decisions about the integration of technology are frequently made at a higher level such as at the school or district level; however, it is the individuals' willingness to adopt, which illustrates a successful implementation (Straub, 2009). Why does one individual choose to accept a technology while another resists, and what is the influence of social context on the decision to accept are questions that adoption and acceptance theories answer?

In general, the TAM has been the most dominant model for evaluating technology acceptance (Jackson, 2010). The TAM was first used as a model for studying information technology acceptance and information technology use (Bagozzi, Davis, & Warchas, 1992). The TAM was developed from existing models. The TAM and extensions to TAM have been developed with the goal of creating a model that captures all barriers and determinants for technology acceptance and use (Cerovski, 2016). Figure 2 describes the first adoption theory which is Rogers' Theory of Diffusion of Innovation. Figure 2 also

illustrates the Theory of Reasoned Action, Theory of Planned Behavior, Technology Acceptance Model, and it shows the creation of other theories created as technology acceptance theories evolved.

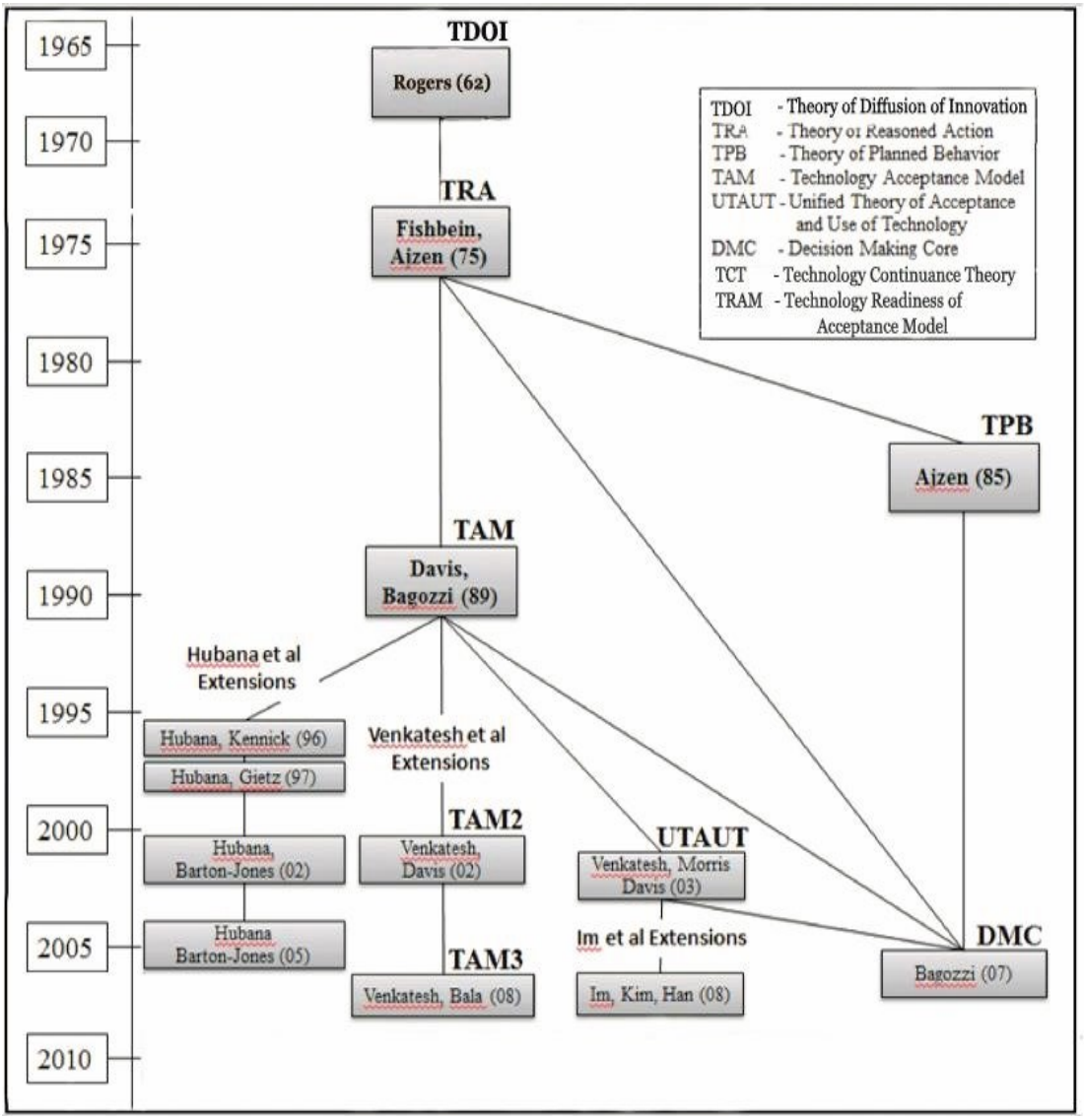

Figure 2. Relationship among theoretical foundation models (From *The process of accepting technology innovation for rural teachers*, by Jeremy Cerovski, 2016, p. 23).

Theory of Diffusion of Innovation

Everett Rodgers published the Theory of Diffusion of Innovation (TDOI) in 1962 (Cerovski, 2016). The TDOI developed categories for adopters. The categories include: *innovators*, who are willing to take risks; *early adopters*, who have higher social status and are more socially forward; *early majority*, who adopt after time and have above average social status; *late majority*, who approach with skepticism and have below-average social status; and *laggards*, who have no opinion of leadership and tend to be focused on traditions (Rogers, 1962). Rogers believed that the decision-making process occurred in stages. The stages included in the decision-making process is: Knowledge, first exposure to an innovation, however, lacks information; Persuasion, interest developed in the innovation and information is sought; Decision, the advantage, and disadvantages of the innovation are weighed; Implementation, the innovation is employed, and Confirmation, the decision to continue using the innovation is finalized (Cerovski, 2016). However, according to Cerovski (2016), TDOI has its flaws. Rogers (1962) noted that there was difficulty obtaining reliable data on the decision stage, due to the individualistic nature it has. There is also an inability of diffusion theories to account for all variables (Plsek & Greenhalgh, 2001). The TDOI also lacks cohesion, which makes it difficult to apply the TDOI to new problems (Cerovski, 2016).

Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) is one of the most influential and fundamental theories of human behavior (Cerovski, 2016). TRA was created in 1975 by Fishbein and Ajzen. TRA suggests that an individual's behavioral intention is dependent

upon attitude and subjective norms about the behavior (Fishbein & Ajzen, 1975). The underlying assumption of TRA is the behavior of individual control (Fishbein & Ajzen, 1975). The TRA was criticized for not measuring actual behavior (Straub, Limayen & Krahanna-Evaristo, 1995). Other criticisms of the TRA arise from these three issues: the relationship between attitudes and normative beliefs, whether TRA components are sufficient predictors of intentions and behaviors, and the restricted range of meaning encompassed by the theory (Dillard & Pfau, 2002).

Concerns-Based Adoption Model (CBAM)

According to Straub (2009), the CBAM has been widely used in educational fields to help teachers adopt technology effectively. The CBAM has been a model used to understand a change in terms of technology. CBAM has been used to understand many changes such as teacher change in curriculum change (Christou, Eliophotou-Menon, & Phillippou, 2004), adoption of a consulting teacher model (Pedron & Evans, 1990) as well as specific technology change and adoption (Davis & Roblyer, 2005; Dobbs, 2004). Since it is assumed that the majority of the population is resistant to change, the CBAM is extremely good in helping an organization with the implementation of innovation by addressing concerns of teachers. CBAM challenges administrators to look at who will be most affected by changes, instead of just focusing on their own beliefs on how innovation will benefit them. Instead of taking a top-to-bottom approach, CBAM approaches adoption through the eyes of the adoptees by using a developmental perspective on how an individual's concerns influence their integration of an innovation.

According to Straub (2009), one of the CBAM major strengths is applying cognitive concerns through the context of an educational setting. When addressing

teacher's concerns from a developmental perspective, administrators can get an idea of how teachers will adapt to change and provide a framework to anticipate future needs. In education, practices change slowly. The core tools of classroom teaching have only changed a little in the past 100 years (Cuban, 1983).

The goal of the CBAM was "to ease the problems diagnosing group and individual needs during the [innovation] adoption process" (Hall & Loucks, 1978, p. 36) so that change would be more straightforward. The CBAM has been used from the K-12 environment (Christensen, Griffen, & Knezek, 2001) to other education-based professions (Bailey & Palsha, 1992).

The CBAM was developed based on six assumptions. The assumptions are:

1. Change is a process, not an event.
2. Change is accomplished by individuals.
3. Change is a highly personal experience.
4. Change involves developmental growth.
5. Change is best understood in operational terms.
6. The focus of facilitation should be on individuals, innovations, and context (Hord, Rutherford, Huling-Austin, & Hall, 1987).

The assumptions that are listed form the basis of the three components of the CBAM. The three components of CBAM are stages of concern (SoC), levels of use (LoU), and innovation configuration (IC). The three components serve as tools to give facilitators insight innovation configuration (IC). The three components serve as tools to give facilitators insight on how to best facilitate the adoption. CBAM describes how understanding concerns of a population can facilitate innovation adoption. SOC describes

concerns teachers have throughout the adoption process. Teachers concerns go from personal issues to concerns about students and implementation. Teachers usually show concerns at all stages of the adoption process at any given point. One crucial fact is that all teachers will not reach the highest SoC, and the stages are not hierarchical. A teacher can move out of one stage and have concerns consistent with a previous stage.

Whereas, the SoC describes a teacher's attitudes LOU describes the teacher's behavioral implementation of an innovation. LOU categorizes how teachers implement technology. It breaks it down to the lowest behavioral implementation category of nonuse to renewal, to the highest level which shows a teacher is transforming. In practice, the SoC is used frequently in the research literature to discuss teachers' change. Teacher's SoC can be assessed through quantitative measures or qualitative interviews. The CBAM has been used for many years to facilitate change.

According to Straub (2009), the CBAM model does come with some limitations and concerns. One concern is that the CBAM approaches change as a mandate from an administrator or another leader that is handed down to the teachers, without considering the students. The consequence stage of SoC is the only stage that pays attention to the student. Further research needs to be done to examine the students' role in the CBAM. CBAM may be helpful to a facilitator implementing an innovation, but it disregards teachers' positive perceptions of an innovation. CBAM ignores teachers' possible preference for innovation and portrays teachers as resistant to change.

According to Straub (2009), numerous theories have arisen trying to predict technology use by looking at personal factors specifically. Venkatesh and colleagues (2003) introduced research that provided a review and history of different theories used

to predict computer use. A lot of the theories are only good at letting organizations know who will adopt technology more quickly (Venkatesh et al., 2003). A lot of theories are criticized for lacking the cohesiveness that accounts for the different factors that influence technology use (Venkatesh et al., 2003). TAM and the UTAUT are two theories that are relatively new compared to other adoption theories. TAM and UTAUT have close theoretical ties, and UTAUT is a successor of TAM (Straub, 2009).

Technology Acceptance Model (TAM)

Fred Davis is credited with developing the TAM (Fador, 2014). The Technology Acceptance Model is a theory that was developed to make predictions on how people will adopt the technology (Fador, 2014). The starting point of TAM for Davis was the Theory of Reasoned Action (TRA) of Fishbein and Ajzen (1975). TAM was developed from the Theory of Reasoned Action (TRA) (Davis, 1989). The basis of the theory is formed on two things. Those two things are perceived usefulness and perceived ease of use. Davis' (1989) work started the conversation about the importance of individual perceptions of technology. According to Davis (1989), perceived usefulness and perceived ease of use are two determinants that influence systems to use. Perceived usefulness describes how people tend to use or not use an application based on how they perceive it to help them perform. Perceived ease of use comes into play when potential users think that an application will be useful to them. Alternatively, they also believe that the system will be too hard to use and the effort to learn and use the system is not worth the benefits gained by using the application. Davis (1989) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). The other determinant, perceived ease of use, is

defined as the "degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Davis (1989) believed that perceived ease of use is similar to self-efficacy.

Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT is a successor of TAM (Straub, 2009). The UTAUT is constructed on the belief that four primary constructs play a significant role as direct determinants of user acceptance and usage behavior. The four direct determinants are Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. Moreover, gender, age, voluntariness, and experience are vital moderators that affect the four constructs (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions) that determine acceptance and usage behavior. Figure 3 illustrates the UTAUT model and its determinants.

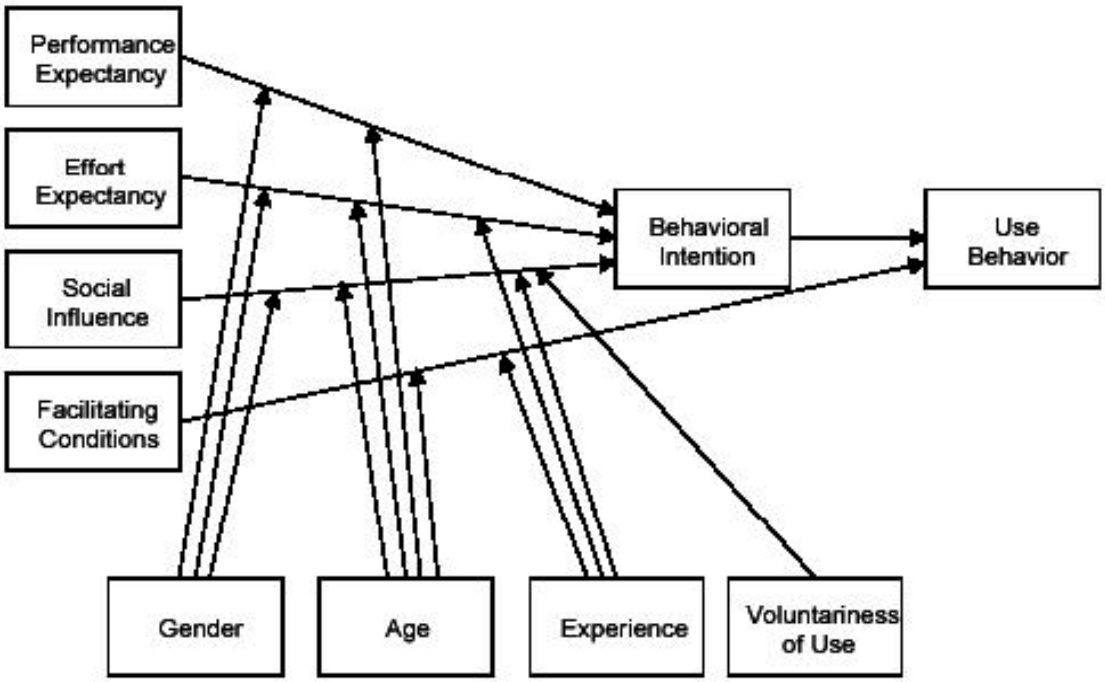

Figure 3. The UTAUT Model. Source: "User acceptance of information technology view," by Venkatesh et al., 2003, *MIS Quarterly, 27*(3), p. 447.

Performance Expectancy

Performance Expectancy is the degree to which an individual believes that using the system will help him or her attain gains in job performance. Users want to be able to use new technology to help make their jobs better and meaningful. The five constructs that apply to Performance Expectancy are perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations. Gender plays a moderating role when it comes to Performance Expectancy. Performance Expectancy is the strongest predictor of intention to use technology in voluntary and mandatory settings. The relationship between Performance Expectancy and intention will be moderated by age when looking at things from a theoretical point of view (Venkatesh et al., 2003). Men tend to be highly task-oriented (Minton & Schneider, 1980), and performance expectancies whose primary

focus is task accomplishment are likely to be relevant to men (Venkatesh, Morris, Davis, & Davis, 2003).

Age is also theorized as playing a moderating role when it comes to Performance Expectancy. Moreover, Morris and Venkatesh (2000) found that gender and age difference can exist in technology adoption contexts. When looking at gender and age effects, studies of gender differences can be misleading if the reference to age is not included (Venkatesh et al., 2003).

Effort Expectancy

Effort Expectancy is the degree of ease associated with the use of the system. Three ideas from existing adoption models discuss the concept of Effort Expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). Effort Expectancy is significant in both voluntary and mandatory usage during the first period and begins becoming non-significant over periods of extended usage (Venkatesh et al., 2003). Venkatesh and Morris (2000) through research found that Effort Expectancy is more salient for women than for men. Increase in age has been associated with difficulty in processing complex stimuli and showing attention to information on the job (Plude & Hoyer, 1985) which may be needed when using software systems (Venkatesh et al., 2003). Research shows that constructs related to Effort Expectancy will be stronger factors of individuals' intentions for women (Venkatesh & Morris 2000; Ventatesh et al., 2000) and older workers (Morris & Venkatesh, 2000). Effort Expectancy will be noticed the most in women, particularly older women with little experience of the system (Venkatesh et al., 2003).

Social Influence

Social Influence is the degree to which an individual perceives that other important people believe they should use the new system (Venkatesh et al., 2003). The three constructs related to Social Influence are subjective norm, social factors, and image (Venkatesh et al., 2003). Social Influence constructs are not significant in situations where use is voluntary; however, social constructs are significant when use is mandated (Venkatesh et al., 2003).

Facilitating Conditions

Facilitating Conditions is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p. 453). If Effort Expectancy is not included as a predictor of intention, then Facilitating Conditions will have high predictions in relation to the intention of use (Ahmad, 2014).

Venkatesh et al. (2003) contributed UTAUT of being able to explain as much as 70% of user acceptance of technology by providing a better explanation of technology acceptance. The UTAUT states if both Performance Expectancy and Effort Expectancy appear, then Facilitating Conditions will be non-significant in predicting intention to use of the new technology (Ahmad, 2014). However, there has been previous research that found that Facilitating Conditions significantly affect behavioral intention (Thomas, Singh, & Gaffar, 2013).

Moderators

The UTAUT noted that there are moderators that affect behavioral intention (Venkatesh et al., 2003). (Venkatesh et al. (2003) also noted that gender, age, technology experience, and voluntariness have a noticeable impact on behavioral intention.

Previous UTAUT Research

The UTAUT has been used in several domains; however, its use has been limited in the education sector (Ifenthaler & Schweinbenz, 2013). Teo, Lee, and Chai (2008) used the UTAUT in a study to explore the computer attitude of pre-service teachers, and they found perceived usefulness, perceived ease of use, social norm, and Facilitating Conditions were significant determinants on pre-service teachers' computer attitudes.

El-Gayar, Moran, and Hawkes (2011) used the UTAUT to apply it in a study examining university students' acceptance of tablet computers. The researchers discovered that students' attitudes are the most direct influence of technology acceptance, followed by Facilitating Conditions, Performance Expectancy, and social norm. Ball and Levy (2008) utilized the UTAUT model to investigate why information systems instructors' accepted web-based instructional tools and why non-information systems instructors did not accept the web-based tool as quickly as the information systems instructors. The study used computer self-efficacy, computer anxiety, and experience with the use of technology as constructs. It was found that computer anxiety and experience with the use of technology were not a significant predictor of intention to use technology. However, computer self-efficacy was the greatest influence on the intention to use technology (Ball & Levy, 2008).

Kimball (2015) applied the UTAUT for a study conducted on the motivations of students in the continuing use of mobile computing in lecture-based classrooms. A survey

based on UTAUT was utilized to identify what factors lead to college students' acceptance of mobile devices. The findings revealed that Performance Expectancy, Effort Expectancy, and Social Influence were positively correlated with behavioral intention, with Performance Expectancy being the most significant.

Birch (2009), using a mixed-methods approach that consisted of quantitative findings and qualitative data, found that the UTAUT model explained 27% of the variance in preservice teachers' intention to use information and communication technology (ICT). Effort Expectancy was the only significant predictor of behavioral intention to use technology. One survey question, "I would find using technology for teaching in the K-12 classroom useful," was answered with 76.9% of participants answering "agree" or "strongly agree," showing that Performance Expectancy is closely related to the intention to use technology.

Anderson, Schwager, and Kerns (2006) also utilized the UTAUT model to increase understanding of technology acceptance after implementing Tablet PCs in the College of Business at a large American University. Like other findings, the researchers found that out of the four UTAUT constructs (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions), Performance Expectancy and voluntariness were the most primary drivers of technology acceptance when applied to a college of business. Faculty wants to know the benefits of their technology use to be inclined to use technology. Furthermore, the researchers found that administrators can promote Performance Expectancy by selling faculty on the benefits of technology use. Moreover, faculty were more likely to use the technology the more voluntary it was to

use it. The study also indicated that female faculty have unique needs, and there needs to be some specialized training for female faculty.

Project Tomorrow's Research on Technology Adoption

There are barriers when it comes to accepting technology. Project Tomorrow conducted a survey that was administered to more than 368,500 K-12 students, parents, educators, and community members in the fall of 2009. The survey titled "Speak Up" is conducted yearly to find out the perceptions of technology use and adoption. The survey allowed education stakeholders the opportunity to address questions and voice their opinions about emerging technologies for learning (Project Tomorrow, 2010). Findings showed that only 51% of teachers believed using technology motivated students to learn; only one-third of teachers stated that using technology encouraged students to be self-directed and facilitated student-centered learning; only 10-14% of teachers reported using; 76 % of teachers and principals perceived mobile devices as distractions, even though district administrators felt the devices should be integrated into the classroom (Project Tomorrow, 2010).

In 2011, Project Tomorrow administered its yearly survey to 375,769 K-12 students, parents, teachers, and administrators. In this survey, it appeared that the technology became more complex and took more time to implement, besides additional barriers impacted the teachers' intention to use the technology. (Project Tomorrow, 2011). Additional enablers like flexible working conditions, job opportunities, student influence, and compensation were needed to positively influence the adoption process (Project Tomorrow, 2011).

In 2014, Project Tomorrow administered the survey to more than 521,000 students, parents, educators, and community members. Digital content use and blended learning environments were the focus of the 2014 survey. Over 90% of administrators stated that the effective use of technology within instruction was crucial in achieving the core mission statements (Project Tomorrow, 2014). The 2014 survey also noted an increase in the use of digital solutions with positive results and the use of digital content in the classroom increased. In 2014, mobile learning through tablets or other devices increased from 40% to 58%. Principals noted that the lack of teacher training on digital content in instruction prevented more innovative classroom implementations and 51% of teachers wanted training on differentiating instruction using digital content (Project Tomorrow, 2014). Teachers seem to require and desire more training to get a better understanding of using technology in the classroom (Robinson, 2006).

Privacy Concerns

It is suggested that privacy is a basic human requirement; moreover, the U.S. Supreme Court ruled privacy as being a more fundamental right that any of those stated in the Bill of Rights (Schoeman, 1992). When it comes to the concept of privacy, there is a general understanding of the individual and their relationship with society (Wacks, 1989). Privacy has also been defined as the right to be left alone when desired (Kling, 1996. The growth of information technology and the increased value of information in decision making threatens our privacy (Mason, 1986). Mason (1986) foresaw the problem of privacy in the information age and predicted that information was becoming increasingly valuable to policymakers, even if that meant invading one's privacy.

Many employers are providing laptops to employees because the workday has changed from a standard 8-5 with the increase of technology; therefore, many employees are expected to be available 24 hours a day. Furnishing laptops to employees help them save money that would possibly be spent by them purchasing their laptop. The employer issued laptop might come with monetary cost savings, but it does come with the cost of privacy. When the laptops have to be serviced for repairs and upgrades, it gives the IT staff the opportunity to look at what is stored on the laptops, including personal information (Maltby, 2013). If the IT staff find something offensive such as inappropriate web surfing, inappropriate pictures or inappropriate video, they often tell the employer. Employees do not think that their employers are concerned with what they do on their time, but the reality is that employers care when their employees use laptops that they issued (Maltby, 2013).

Existing research findings are inconsistent when it comes to understanding privacy concerns. Smith, Milberg, and Burke (1996) stated that privacy concerns include collection, unauthorized access, errors, and secondary use. Malhotra, Kim, and Agarwal (2004) stated that Internet users' privacy concerns include collection, control, and awareness. Li (2011) stated that privacy concerns include general concern and specific concern. The general concerns are related to an individual's fundamental beliefs of information privacy across contexts (Li, 2011). Privacy concerns are related to an individual's attitude and belief about a particular information collection context such as a particular website or company (Li, 2011). There is a balance in society between the need for security and the fear of losing privacy (Dinev, Hart, & Mullen, 2008). Individuals have a positive belief that the government's gathering of personal information online and

online monitoring is for their protection and it gives people a sense of protection. However, one-quarter of the public does not believe the government will use its powers properly when it comes to government intrusion, and this causes privacy concerns (Dinev et al., 2008). Government surveillance can also be a slippery slope if the surveillance results in harassment, abusive utilization, unreliable data, or excessive intrusion (Dinev et al., 2008). Even though the surveillance might reduce the risk for the country, citizens can view this as a privacy concern because surveillance increases the risk for that individual (Dinev et al., 2008). Research has shown that privacy concerns affect user acceptance of technology (Lowry, Cao, & Everard, 2011). According to Pew Research Center (2013), if users have a high privacy concerns, they may not be willing to adopt and use Location-Based Service (LBS) technology. Dhar and Varshney (2011) reported that due to the collection and utilization of location information, LBS may arouse users' privacy concerns, which negatively affects their usage intention. Pew Research Center (2013) also found that 35 percent of users have turned off the location-tracking feature on their phone due to privacy concerns on location information. LBS is an example of technology that users will not use due to privacy concerns and concerns about whether service provider properly collects, store, and use their location information (Zhou, 2017).

Employee satisfaction is important, and employers being aware and respectful of employee's desire for a reasonable level of privacy in and out of the workplace is primarily linked to organizational goals (Corporate Leadership Council, 2003). Employers are using different technologies to monitor employees, manage an organization's assets, and to keep up with inventory. These technologies can infringe an employee's privacy.

Technology that Invades Privacy

Advances in technology cause privacy concerns by its users. Examples of technology that invades privacy include automatic screen warning, keystroke monitoring, desktop monitoring software, and Global Positioning System (GPS). Automatic screen warnings are used to alert employees before they conduct an organization's information security or policy violation. The warning can be used to inform employees when they are spending too much time on non-work-related activities or notify them that they are getting ready to access content that violates the organization's authorized use policy (Buchbinder, 2015).

Keystroke monitoring software is software that records computer keystrokes. Keystroke monitoring is invasive and diminishes an expectation of privacy. Desktop monitoring software is used in some organizations to track employee activities that occur on a computer. These desktop-monitoring programs can track specific activities such as passwords entered, windows opened, screens and sites accessed. Time and attendance software also track patterns of employees. Employees view desktop monitoring software as an intrusive way to collect information (Buchbinder, 2015).

GPS is a more invasive form of monitoring and gives employers the ability to track employees or property of the organization (Ciocchetti, 2011). GPS can give employers the capability to track employees' whereabouts and activity whether they are at work or not (Maltby, 2013). As GPS brings privacy concerns, so does location-based services (LBS). LBS allows applications and programs to track the location of employees.

Employee Privacy Protection

There are a lot of monitoring practices and techniques that employers use to benefit the organization when ensuring the safety of assets; however, they interfere with employee privacy (American Management Association, 2014). When monitoring activity, employers need to be careful not to assume that all employees are attempting to harm the organization when collecting private information from employees (Privacy Commissioner of Canada, 2015). In October 2012, the Supreme Court of Canada, in the case of R. vs. Cole, ruled in favor of Mr. Cole, a teacher who used a school-issued laptop computer to download inappropriate pornography. The court decided that the teacher had a logical expectation of privacy because the school policy outlined that, in some cases, emails would not remain private, but they did not particularly address other uses of school resources such as computers. The court stated that even when a policy does not allow personal use of an employer's equipment, some degree of privacy may still apply (Burgess & Hoffman, 2012).

For many employees, computer use at the workplace is monitored in the form of emails sent, sites visited, and keystroke logged (Clawson & Clawson, 2017). Lewis Maltby, president of the National Workrights Institute, stated that employees do not have a reasonable expectation of privacy, even when it is promised by the employer (as cited in Maltby, 2013). Federal law does specify that conversations cannot be listened to or recorded without consent unless they are business calls. Furthermore, video surveillance must be used with a reasonable expectation of privacy (Clawson & Clawson, 2017). One employer used GPS to track employee's phones when they were away from work and threatened to terminate the employees who turned their phones off to prevent their employer from tracking them (Clawson & Clawson, 2017). However, when the American

Civil Liberties Union and the National Workrights Institute threatened to sue the employer, the employer had decided to back off of the employees (Clawson & Clawson, 2017).

Most laptops come with webcams that can be remotely activated. The webcams on the laptops would have access to view employee's personal space such as their homes, bedrooms, vehicles, and pretty much anywhere else that the employee goes. Employees will not know that the webcam is activated unless the employer tells them. It is unlikely that employers would abuse technology like this, but without auditing and checking up on the IT staff; any individual IT employee could activate the webcams without supervisors knowing it. In Lower Merion, Pennsylvania, an IT tech was activating webcams on laptops that the local high school had issued to students. Without the knowledge of the high school students who used the school-issued laptops, the district had captured more than 56,000 images using the webcams (Darden, 2015). The use of the webcam came to light when an assistant principal disciplined a student for something that the student did at home in their bedroom. School officials later explained that the TheftTrack software was only supposed to be used to find lost or stolen laptops, but not intended for surveillance. Consequently, a judge issued an injunction barring the district from using webcam monitoring without student and parental consent (Darden, 2015). A criminal investigation was also launched, but there was no wrongdoing found. Many of these incidents caused the school to revise its technology policy on school-issued laptops.

Perceived Organizational Support (POS)

Perceived Organizational Support (POS) is defined as the employee's perception of the organization's ability to provide the support and aid needed in order to carry out

one's job effectively and to deal with stressful situations (Eisenberger et al., 1987; Eisenberger et al., 1986). Employees' perceptions of support from the organization, and the fairness of policies and procedures carried out within the organization would influence the relationships as explained in the UTAUT model, ultimately predicting employee acceptance of technology implementation (Keeton, 2008). A scale to measure POS was introduced by Eisenberger et al. (1986). The scale measures employees' perceptions of the organization's appreciation of their hard work and whether employees would be treated favorably or unfavorably in certain situations.

Almutairi (2007) investigated the relationship between technology usage and POS, and his findings suggested that POS is related to technology use and those employees who perceive high POS are more likely to use technology within the workplace than those who perceived less POS. Moreover, Michael and Lawson (2011) also conducted a study that demonstrated POS acts as a buffer for employees dealing with technological change. However, when there are low levels of Social Influence, POS is not likely to influence technology acceptance (Keeton, 2008).

CHAPTER III

METHODOLOGY

The purpose of this study was to examine high school teachers' acceptance and use of technology and determine the relationships between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Privacy Concerns. The results of this study can help better understand how teachers perceived their use of technology in schools. This chapter explains the research methodology. The chapter includes the research questions, research design, participants and sample, data collection, instrumentation, and data analysis.

Research Question

The research questions that guided this study were:

1. What are high school teachers' perception of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns on behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?
2. Do Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?

3. Is there a statistically significant difference between age, gender and college major in high school teachers' behavioral intention to use technology as measured by the UTAUT and Technology Privacy Survey?
4. Is there a relationship between Perceived Organizational Support and Social Influence to accept and use technology?

Research Design

Quantitative research is defined as inquiry "that is grounded in the assumption that features of the social environment constitute an objective reality that is relatively constant across time and settings; the dominant methodology for studying these features is to collect numerical data on the observable behavior of samples and subject them to statistical analysis" (Gall, Gall & Borg, 2005, p. 555). The study consisted of a quantitative research study using an online survey research technique to collect numerical data that was analyzed through statistical analysis; therefore, a quantitative approach was good for this study.

Descriptive, causal-comparative, and correlational were the research designs used in this study. Descriptive research is used to gather data to test a hypothesis or to answer questions related to the opinions or perceptions of the individual on a given subject (Gay, Mills, & Airasian, 2009). In order to determine the teachers' perception, the study used the descriptive research design. Causal-comparative research was also used in this study to determine the cause of consequences of differences between existing groups (Gay et al., 2009). Due to the inability to manipulate the independent variables (e.g., Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Privacy Concerns, Perceived Organizational Support, and Social Influence), this study

used causal-comparative research design. Gall, Gall, & Borg (2005) state the correlational design as being "a type of quantitative investigation that seeks to discover the direction and degree of the relationship among variables through the use of correlational statistics" (Gall et al., 2005, p. 546). To examine the relationship between Social Influence and Perceived Organizational Support, a correlational research design was used too in this study.

Population and Sample

The population of the study consisted of high school teachers who taught in a North Mississippi School District that have implemented a 1:1 initiative laptop program during the fall semester of 2018. According to the Mississippi Department of Education directory, a total of 121 high school teachers served in the school district and thus made up the population of the study.

The North Mississippi School District has implemented the 1:1 Digital Learning Initiative, also known as ELI. The initiative was implemented in 2015. Under this initiative, every student and teacher is assigned a new digital device that is used to enhance student learning while preparing them to be digitally literate. The purpose of this initiative is to equip students for excellence by providing them the best in technology, the best learning environment, and the best opportunity to compete in the 21st Century global society.

Instrumentation

This study adapted the instrument from Venkatesh et al.'s (2003) UTAUT survey. The original UTAUT survey was modified by re-wording the questions to better fit the

1:1 technology initiative. Appendix A illustrates the original questions and the modified questions used for this study. In addition to re-wording statements to fit the specific 1:1 technology initiative, the revised survey, UTAUT and Technology Privacy Scale, (Appendix B) was used to measure teachers' acceptance and use of technology in the study, such as Performance Expectancy (PE), Effort Expectancy (EF), Social Influence (SI), Facilitating Conditions (FC), and Perceived Organizational Support (POS) with additional Privacy Concerns (PC). The bullet points below explain what variable is being measured by which survey question:

- PE measures how well teachers believe the technology will positively affect their job performance. There were 4 items in the survey that measured Performance Expectancy (Question 2, 10, 12, and 15).
- EE measures how easy teachers believe the technology will be to use. There were 4 items in the survey that measured Effort Expectancy (Question 1, 5, 7, and 11).
- SI measures how important teachers believe it is for other teachers, and people who are important to them use technology before they decide to use it. There were 4 items in the survey that measured Social Influence (Question 4, 8, 12, and 16).
- FC measures how well teachers decide to use technology is decided on their belief that technical resources and technical infrastructures are available to them. There were 4 items in the survey that measured Facilitating Conditions (Question 13, 14, 17, and 19).

- PC measures how privacy affect teacher's behavior intention to accept technology. Since the Privacy Concerns were not on the original UTAUT survey, the researcher created the privacy-related items questions and added them to the survey. The privacy questions were validated using the Validation Rubric for Expert Panel. There were 4 items in the survey that measured Privacy Concerns (Question 20, 21, 22, and 23).
- POS measures employees' perception of the organization's ability to provide the support and aid needed in order to carry out one's job effectively and to deal with stressful situations. There were 8 items in the survey that measured Perceived Organizational Support (Question 24, 25, 26, 27, 28, 29, 30, and 31). This section used an existing and validated instrument, which is Eisenberger et al.'s (1986) shortened version of the Perceived Organizational Support survey instrument.

The survey used a Likert scale, with options ranging from 1-7, 1 indicating that an individual strongly disagrees that the variable affects the acceptance of technology, and 7 indicating that the individual strongly agrees that the variable affects the acceptance of technology. All 7 options included: 1 for strongly disagree, 2 for disagree, 3 for somewhat disagree, 4 for neutral, 5 for somewhat agree, 6 for agree, 7 for strongly agree. The survey also included items that were used to gather participants' demographic information such as gender, age, and college major.

Validity and Reliability

Validation and Reliability of the UTAUT

UTAUT model has been used in multiple studies to test technology acceptance. Venkatesh et al. (2003) performed Cronbach alpha coefficient testing to test internal reliability and consistency. It was determined that the UTAUT primary variable exceeded .92 making the UTAUT appropriate for technology studies since the value was above .70 (Vogt, 2007). Validation of the UTAUT model was conducted through a multiple-item survey instrument created by Venkatesh et al. (2003) centered on variables from previous technology acceptance and behavioral intention studies. Ahmad (2014) discovered that the content validity of the UTAUT questions focuses on the appropriate constructs and concepts as presented throughout the eight prior models that form the UTAUT model. The t-values of the outer model of the study verified convergent validity. The Cronbach alpha for the UTAUT survey for this study is .889. This is considered a good alpha value, according to George and Mallery (2003), that indicates this instrument is good for internal consistency.

Technology Privacy Survey

The researcher developed the Technology Privacy Survey to measure Privacy Concerns effect on technology acceptance. Survey Validation Rubric for Expert Panel (VREP) developed by Simon and White (n.d.) was used to measure validity. A panel of experts consisted of nine IT professionals and seven researchers for the validation of privacy concerns survey questions. The IT professionals reviewed the survey questions and provided their professional opinion for privacy concerns. Professionals with research and psychometrics experience reviewed the structure of the survey items on privacy. The

panel reviewed each of the dimensions on a 4-point scale Likert scale. The choices based on the VREP rubric included: 1) not acceptable (major modifications needed), 2) below expectations (some modifications needed), 3) meets expectations (no modifications needed but could be improved with minor changes), and 4) exceeds expectations (no modifications needed). If any items included in the pilot survey had a mean score below 3.0, that particular question was considered for revision using the feedback that was given by panelists. All suggestions and comments were considered in the revising of the survey instrument. The Technology Privacy scale instrument was validated by using VREP.

Validation and Reliability of the Technology Privacy Survey

In this study, Confirmatory Factor Analysis was conducted on the technology privacy survey data using SPSS AMOS version 25 to establish construct validity of the privacy items. Standardized regression weights ranged from .52 to point .83. All privacy items were statically significant ($p > .001$). The Comparative Fit Index (CFI) = .992. Table 1 displays a CFI analysis. The CFI values can range from 0 to 1. Values closer to 1 indicate a good fit for the data. Confirmatory Factor Analysis confirms that the Technology Privacy Survey has validity.

Table 1

Comparative Fit Index

x2	df	GFI	CFI	SRMR	RMSEA
3.127	2	0.986	0.992	0.12	0.075

Reliability was tested by performing a Cronbach alpha coefficient to test the reliability of the scale used. The Cronbach's Alpha for the privacy survey is .902, which is considered excellent, according to George and Mallery (2003). Based on this scale, the privacy instrument has an excellent value for internal consistency and is reliable. As a result, the survey questions that were used to measure privacy include:

1) The potential for someone to monitor laptop activities is a concern when using a school-issued laptop.
2) Privacy is a key factor in how much I use a school-issued laptop.
3) Fear of my computer files (photos, pictures, documents, emails, etc…) being secretly accessed is a concern when using a school-issued laptop.
4) The use of location tracking software influences how I use a school-issued laptop.

Data Collection

The survey instrument was used to collect data for high school teachers' acceptance and use of technology. The survey was administered through Survey Monkey. The survey also collected demographic information such as gender, age, race, years of teaching, subject taught, previous technology training, current skill level, and college major.

Prior to data collection, the Institutional Review Board (IRB) at Mississippi State University was contacted to request approval. After IRB approval (Appendix C), the researcher sent an email with a survey link to the deputy superintendent. The email included details of the study and informed the teachers their identity would not be revealed. An informed consent was also included in the online survey, and participants could choose from either "agree" to take part in the survey or "disagree" option to not

participate in the survey. To maintain confidentiality, the survey did not contain any identifiers that were linked with participants. To increase participation in the survey, the researcher included a drawing for participants to win one of three prepaid $50 gift cards. Participants were given the option of entering their email addresses so that they can be entered for a chance to win a gift card.

Participants were given an overall of 20 days to complete the survey. After the survey was available for seven days, the researcher asked the deputy superintendent to send out an email reminder. After the survey closed, the researcher exported the data from Survey Monkey and imported it into Statistical Package for the Social Sciences (SPSS) for data analysis. The survey was scored by getting the mean for each variable, which was based on the response from the survey.

Data Analysis

The data were analyzed using SPSS. The data were exported from Survey Monkey into Microsoft Excel, then imported into SPSS. The following methods were used to analyze the data:

Research question 1 was to examine high school teachers' perception of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns on behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey. Descriptive statistic was used to answer research question 1. The means of the variables were analyzed to determine the teachers' acceptance and use of technology. The survey measured the variables by using a Likert scale. Survey takers had the following options: 1 for strongly disagree, 2 for disagree, 3

for somewhat disagree, 4 for neutral, 5 for somewhat agree, 6 for agree, 7 for strongly agree.

Research question 2 was to examine if Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey. Multiple regression was used to analyze and determine if Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology.

Research question 3 was to compare behavior intention to accept technology between gender, age, and college major. ANOVA was used to analyze and determine if there is a significant difference among gender, age, and college of majors of teachers when it comes behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey.

Research question 4 was to use Pearson's r to measure the bivariate correlation between Perceived Organizational Support and Social Influence. The research question explores the relationship Perceived Organizational Support and Social Influence have on teacher's behavioral intention to accept and use technology.

CHAPTER IV

RESEARCH FINDINGS

This chapter discusses the findings of the study. The purpose of this study was to examine high school teachers' acceptance and use of technology and determine the relationships between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Privacy Concerns. The results of this study can help better understand how teachers perceived their use of technology in schools. An online survey was administered to high school teachers in a North Mississippi school district. This chapter reports the results of data analyzed to answer the four research questions designed to fulfill the purposes of this study.

Research Questions

The following research questions were developed to guide this study:

1. What are high school teachers' perception of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns on behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?
2. Do Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?

3. Is there a statistically significant difference between age, gender and college major in high school teachers' behavioral intention to use technology as measured by the UTAUT and Technology Privacy Survey?
4. Is there a relationship between Perceived Organizational Support and Social Influence to accept and use technology?

Demographic Information

The population of the study consisted of high school teachers who taught in a North Mississippi School District that has implemented a 1:1 initiative laptop program during the fall semester of 2018. A total of 121 high school teachers made up the population for the study. From this population, 112 teachers replied resulting in a response rate of 92%.

As Table 2 displays the demographics of the study's participants, females were the majority in this study, making up 93.7%, and males only 6.3%. The 35-44 age group was the largest represented at 36.9%, and the age group represented the least was the 55-64 age group at 15.3%. When it came to college majors, the largest percentage of teachers had a major that was not listed in the choices, thus 32.1% selected "other" for the survey item that asked for their college major. English majors made up 27.7%, while Economics represented the lowest at .9%.

Table 2

Demographics of Sample

Variable	Percentage	Number
Sex		
Male	6.3	7
Female	93.7	104
Missing	0	1
Total	100	112
Age		
25-34	25.2	28
35-44	36.9	41
45-54	22.5	25
55-64	15.3	17
Missing	0	1
Total	100	112
College Major		
Business	10.7	12
Economics	0.9	1
Biology	4.5	5
English	27.7	31
History	9.8	11
Technology-related	7.1	8
Health-related	7.1	8
Other	32.1	36
Total	100	112

Research Question #1

What are high school teachers' perception of PE, EE, SI, FC, and PC on behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey? To answer this research question, the mean score was analyzed to determine teachers' technology acceptance level. The mean scores are based on the results of the survey items, which used a Likert scale, with 1 indicating "strongly

disagree" and 7 indicating "strongly agree." Table 3 displays an interpretation of the Likert scale for the mean scores.

Table 3

Mean Interpretation Table

Mean Range	Interpretation
6.6 – 7.0	Strongly agree
5.6 – 6.5	Agree
4.6 – 5.5	Somewhat agree
3.6 – 4.5	Neutral
2.6 – 3.5	Somewhat disagree
1.6 – 2.5	Disagree
1.0 –1.5	Strongly disagree

As shown in Table 4, the results of mean scores indicate that Performance Expectancy and Social Influence had the highest mean score at 5.6, meaning "Agree," based on Table 3. Teachers agree that Performance Expectancy and Social Influence affect their acceptance and use of technology. Privacy Concerns had the lowest mean score 3.8, "Neutral" based on Table 3, meaning that teachers had a neutral perception of privacy being a factor on whether they accept and use technology. The average mean score for Likert items measuring Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns was 5 (somewhat agree), indicating that all 5 variables together somewhat affect high school teachers' intention to accept and use of technology.

Table 4

Mean of Variables

Variables	Mean	Std. deviation
Performance expectancy	5.6	1.3
Effort expectancy	5.4	1.7
Social influence	5.6	1.3
Facilitating conditions	5	1
Privacy concerns	3.8	1.6
Average	5	1.4

Research Question #2

Do Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey? To answer this research question, multiple regression was used to test the effects of the predictor variables on the dependent variable.

As shown in Table 5, the results of the multiple regression indicate the model is a significant predictor of behavioral intention to accept and use technology, ($F(5,106) = 38.92$, $p < .001$. The model consisted of independent variables: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns, whereas the dependent variable was behavioral intention. The model indicated that the predictor variables accounted for 64.7% variation in behavior intention to accept and use technology.

As shown in Table 5, while the other variables did not significantly predict behavioral intention to accept technology, Effort Expectancy was the only statistically

significant variable at a value of $p < .001$, meaning Effort Expectancy does predict behavioral intention to accept technology. The result indicates if high school teachers perceive that the system is not complicated, they are more likely to accept the technology.

Table 5

Multiple Regression Assessment for PE, EE, SI, FC, PC

	B	**SE *B***	**β**	***t***	***P***
(Constant)	0.306	0.594		0.516	0.607
Performance expectancy	0.017	0.163	0.012	0.103	0.918
Effort expectancy	0.606	0.116	0.555	5.217	*0
Social influence	0.392	0.203	0.282	1.934	0.056
Facilitating conditions	-0.042	0.136	-0.023	-0.31	0.757
Privacy concerns	0.007	0.074	0.006	0.09	0.928

Note. *p < .05

Research Question #3

Is there a statistically significant difference between age, gender and college major in high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey? To answer this research question, an ANOVA was used for analysis. There were initially four groups for age: 25-34, 35-44, 45-54, and 55-64, but for analysis, these four groups were separated into two age groups: 25-44 and 45-64. College majors consisted of the following choices: Business, Economics, Biology, English, History, Technology related and Health-related. But, for the analysis, the college majors were separated into STEM and Non-STEM groups. The STEM group included Technology-related, Health-related, and Biology majors, and non-STEM groups included Business, Economics, English, and History

majors. Table 6 displays the breakdown means of the variables that were used in the analysis.

Table 6

Means of ANOVA Groups

Sex	Age	College Major	Mean	Std. Deviation	N
Male	25-44	STEM	2.33	0	1
		Non-STEM	5.33	2.09	5
		Total	4.83	2.24	6
	45-64	Non-STEM	7	0	1
		Total	7	0	1
	Total	STEM	2.33	0	1
		Non-STEM	5.61	1.99	6
		Total	5.14	2.2	7
Female	25-44	STEM	5.93	1.56	10
		Non-STEM	5.51	1.92	53
		Total	5.58	1.87	63
	45-64	STEM	6.1	1.62	10
		Non-STEM	5.66	1.82	30
		Total	5.77	1.76	40
	Total	STEM	6.01	1.55	20
		Non-STEM	5.57	1.88	83
		Total	5.65	1.82	103
Combined	25-44	STEM	5.6	1.84	11
		Non-STEM	5.5	1.92	58
		Total	5.51	1.89	69
	45-64	STEM	6.1	1.61	10
		Non-STEM	5.7	1.81	31
		Total	5.8	1.75	41
	Total	STEM	5.84	1.71	21
		Non-STEM	5.57	1.87	89
Total			5.62	1.84	110

As shown in Table 7, tests of between-subjects' effects did not show any statistical significance interactions between the effects of age, gender, and college majors on teacher's behavior intention to accept and use technology (F, (0, 193) = 0, p > .05. Age, gender, and college majors were not statistically significant at the .05 significance level. The main effect for gender type yielded an F ratio of F (1,103) =.74, p >.05, indicating there were no significant difference between male (M= 5.14, SD =2.2) and female (M = 5.65, SD = 1.82). The main effect for age yielded an F ratio of F (1,103) =.75, p >.05, indicating there were no significant difference between the 25-44 age group (M = 5.51, SD = 1.89) and 45-64 age group (M = 5.8, SD = 1.75). The main effect for college major yielded an F ratio of F(1,103) = 1.19, p > .05, indicating there were no significant difference between the STEM college majors (M = 5.84, SD = 1.71) and Non-STEM college majors (M = 5.57, SD = 1.87).

Table 7

Tests of Between-Subjects Effects Dependent Variable: Behavioral Intention

Source	**df**	**Mean Square**	**F**	**Sig.**
Corrected model	6	2.84	0.83	0.55
Intercept	1	358.28	104.68	0
Gender	1	2.54	0.74	0.39
Age	1	2.58	0.75	0.39
College major	1	4.09	1.19	0.28
Gender * Age	1	1.83	0.54	0.47
Gender * College major	1	8.86	2.59	0.11
Age * College major	1	0.001	0	0.99
Gender * Age * College major	0			
Total	109			

Research Question #4

Is there a relationship between Perceived Organizational Support and Social Influence to accept and use technology? To answer the fourth research question, Pearson Correlation was used to determine if there is a correlation between Perceived Organizational Support and Social Influence.

As shown in Table 8, the results indicate that Perceived Organizational Support is moderately related to Social Influence, r = .313, p = < .001. There was a correlation between Perceived Organizational Support (POS) and Social Influence amongst high school teachers. The finding indicates if teachers have support from the organization, they are more likely to accept technology.

Table 8

Correlation between Social Influence and Perceived Organizational Support

	POS	Social Influence
Social Influence	0.313	
POS		0.313

Note: Correlation is significant at the 0.01 level (2-tailed)
POS=perceived organizational support

CHAPTER V

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Summary of Results

The purpose of this study was to examine high school teachers' acceptance and use of technology and determine the relationships between Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Privacy Concerns. The population included 121 teachers serving in a North Mississippi school district in North Mississippi. The online survey had a 92% return rate with 112 high school teachers participating in the study. Descriptive statistics, multiple regression, analysis of variance (ANOVA), and correlation were used to analyze the teachers' responses. The factors examined included the four UTAUT variables, which are Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and additional Privacy Concerns to determine if they would influence teachers' acceptance and use of technology. The results revealed that together Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns have a significant effect on teachers' behavior intention to accept technology. When looking at the variables individually, Effort Expectancy is the only variable that significantly affects teachers' behavior to accept and use technology. Also, there was a positive correlation between Perceived Organizational Support and Social Influence.

The first research question was "What are high school teachers' acceptance level of technology on Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns as measured by the UTAUT and Technology Privacy Survey?" Performance Expectancy and Social Influence had the highest mean score at 5.6 (Agree), and Privacy Concerns had the lowest mean score, 3.8 (Neutral), meaning that privacy is not perceived to be a high influence on the teachers' behavior intention to accept and use technology.

The second research question was "Do UTAUT variables (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions), and Privacy Concerns predict high school teachers' behavioral intention to accept and use technology as measured by the UTAUT and Technology Privacy Survey?" The results of the multiple regression indicated that the model consisting of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and Privacy Concerns is a significant predictor of technology acceptance. Overall, the multiple regression explained 64.7% of the variation of behavior intention to accept technology. Effort Expectancy was the only statistically significant variable to predict teachers' behavioral intention to accept technology.

The third research question was "Is there a significant difference between age, gender and college major in high school teachers' behavioral intention to accept technology as measured by the UTAUT and Technology Privacy Survey? The results indicated that there was no significant difference in teacher's behavior intention to accept technology for the demographic variables of age, gender, and college majors.

The fourth research question was "Is there a relationship between Perceived Organizational Support and Social Influence variable to accept and use technology? Perceived Organizational Support was examined to see if it had a relationship with Social Influence. The results indicated that there was a moderate correlation between Perceived Organizational Support and Social Influence.

Discussion

In order to better understand if teachers effectively accept and use technology, and to understand what are some variables that predict behavioral intention to accept and use technology, this study was designed to examine high school teachers' acceptance and use of technology by adding privacy concerns. The results showed that Effort Expectancy is a good predictor of technology acceptance in this study. Effort Expectancy is defined as the perception of how easy it is for an individual to use technology, and sometimes referred to as the perceived ease of use too (Davis, 1989; Thompson et al., 1991). In this study, Effort Expectancy is the strongest predictor to behavior intention to accept and use technology. This finding is consistent with Birch's (2009) study that showed Effort Expectancy was a significant predictor in preservice teachers' intention to use technology. Moreover, in Oye, Iahad, and Rahim's study (2012), Effort Expectancy was found to be a predictor of behavioral intention also. The findings of this study are in agreement with previous research that found Effort Expectancy is a predictor of behavioral intention to accept and use technology.

Performance Expectancy is considered how great technology will help someone perform their job better. Some researchers have indicated that Performance Expectancy may be highly dependent on the relationship between the technology implemented and

the perceived connection to the individual's job duties and tasks (Thomas et al., 2006; Venkatesh et al., 2003). However, this study did not find Performance Expectancy was a significant predictor of behavioral intention to accept and use technology. It is possible that the teachers did not perceive technology implemented with 1:1 initiative as directly related to enhancing their job performance.

Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). In the original UTAUT model, the Facilitating Conditions variable was found as a significant predictor that is directly related to the actual acceptance and use of technology. However, this study did not support that, possibly because the school district already had an adequate network infrastructure and tech support who can assist teachers with technical issues even before they implemented the 1:1 initiative; therefore, participants did not perceive that Facilitating Conditions would be related to their behavior intention to use technology. According to Venkatesh et al. (2003), as users' technology experience increases, their confidence increases as well. Therefore, teachers' need for additional Facilitating Conditions, such as training and support, would possibly decrease also.

In addition to the UTAUT model, this study proposed Privacy Concerns as an additional variable of behavioral attention to accept technology. However, the finding indicated that Privacy Concerns variable alone did not significantly predict behavior intention to accept and use technology. Many people could have a conception that privacy is not important, while people in the corporate world claim that privacy is dead

(Magi, 2011). The majority of teachers who participated in the study, privacy seems not their highest concern for use of technology.

Venkatesh et al. (2003) indicated that gender, age, experience and voluntariness of use can moderate the effect of four constructs (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions) on the intention to use technology. This study sought to determine if gender, age, and college major had a significant effect on behavior intention to accept and use technology, but the results indicated that there was no significant difference in teachers' behavior intention to use and accept technology for the demographic variables of age, gender, and college majors. In Venkatesh et al.'s study (2003), they found that behavior intention was moderated by age and gender, and the outcome was greater for men than for women. Similarly, Jimoyiannis and Komis (2007) found that male teachers are more positive about technology in education while female teachers are neutral or negative. Due to more female participants (93.7%) in the study, gender did not show any significant difference on teachers' behavior intention to use and accept technology. Furthermore, the small sample size in this study may be another factor that may contribute to the result of not being a significant difference in teachers' behavior intention to use and accept technology for the demographic variables of age, gender, and college majors.

The study found that Perceived Organizational Support (POS) is moderately related to Social Influence. When Almutairi (2007) investigated the relationship between technology usage and POS, he suggested that POS is related to technology use; employees who perceive high POS are more likely to use technology. Social Influence is

the extent to which individual use of technology is influenced by how important others (Venkatesh et al., 2003).

Implication of the Results

To examine technology adoption in schools, this study was to determine high school teachers' acceptance and use of technology. This study also examined teachers' use of technology for Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns, and further explored the relationships between Perceived Organizational Support and Social Influence. The following is the implication of the results:

1. Effort Expectancy predicts high school teachers' technology acceptance.

   Effort Expectancy focuses on perceived ease of use when implementing technology. Therefore, for teachers to adopt and use technology successfully, the technology should not be complicated to use. When implementing technology, it is important for teachers to perceive the implementation and acceptance as effortless. Therefore, school administrators need to ensure training and support are available to make technology accessible and easy to use for teachers. Taking time to get familiar with the technology before it is introduced is another good step to promote ease of use (Birch, 2009).

2. Privacy is not a main concern of teachers when it comes to behavior intention to accept and use technology. Teachers are not concerned with privacy when using their school-issued laptop. Moreover, the Privacy Concerns variable alone did not significantly predict behavior intention to accept and use technology.

Conclusion

The following conclusions can be drawn from the findings of the study:

1. Overall, teachers somewhat agree that the variables such as Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns affect high school teachers' intention to accept and use of technology.
2. Effort Expectancy is a significant predictor in teachers' intention to use technology.
3. There was no significant difference in teachers' behavior intention to accept technology for the demographic variables of age, gender, and college majors for the participated high school teachers.
4. Perceived Organizational Support moderately correlates with Social Influence.

Recommendations for Future Research

Based on the findings of this study, several areas are suggested for future research.

1. More school districts will be recommended for future research studies.

   In this study, data collection was limited to one single school district in North Mississippi. A larger sample size will allow researchers to further analyze and better validate the findings. More school districts will also provide more data for comparison and better understand teachers' behavior intention to accept and use technology.

2. Qualitative studies will be recommended on the topic for future studies.

   This research was a quantitative study, mainly collecting data from the online survey. Additional qualitative studies will be recommended to study and probe teachers' perspectives and experiences with adopting technology.

3. More research should be done to include how age, gender, and college majors moderate the relationships between UTAUT and Privacy Concerns variables.

This study did not find any significant difference in teachers' behavior intention to accept technology for the demographic variables of age, gender, and college majors for the participated teachers. However, future studies should still look at how different demographic information can moderate teachers' perceptions of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Privacy Concerns.

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THE UTAUT SURVEY

UTAUT Constructs - in Venkatesh et al.'s (2003) Survey and Reworded Items for This Study

Item on Venkatesh et al.'s UTAUT survey	Reworded Item (for this study)	Construct being measured
I would find the system useful in my job	#15: I would find using technology for teaching in classroom useful.	Performance Expectancy
Using the system enables me to accomplish tasks more quickly	#2: Using technology for teaching in the classroom would enable me to accomplish tasks more quickly	
Using the system increases my productivity	#9: Using technology for teaching in classroom would increase my productivity	
If I use the system, I will increase my chances of getting a raise	#10: If I use technology for teaching in the classroom, I will increase my employment opportunities	
My interaction with the system would be clear and understandable	#1: My interaction with technology for teaching in classroom would be clear and understandable	Effort Expectancy
It would be easy for me to become skillful at using the system	#7: It would be easy for me to become skillful at using technology for teaching in the classroom	
I would find the system easy to use	#5: I would find using technology for teaching in the classroom easy to do	
Learning to operate the system is easy for me	#11: Learning to use technology for teaching in the classroom would be easy for me	

Item on Venkatesh et al.'s UTAUT survey	Reworded Item (for this study)	Construct being measured
People who influence my behavior think that I should use the system	#16: People who influence my behavior would think that I should use technology for teaching in the classroom	Social Influence
People who are important to me think that I should use the system	#12: People who are important to me would think that I should use technology for teaching in the classroom	
The senior management of this business has been helpful in the use of the system	#8: Senior school officials would be helpful in the use of technology for teaching in the classroom	
In general, the organization has supported the use of the system	#4: In general, senior school administrators would support the use of technology for teaching in the classroom	
I have the resources necessary to use the system	#19: I have the resources necessary to use technology for teaching in the classroom	Facilitating Conditions
I have the knowledge necessary to use the system	#17: I have the knowledge necessary to use technology for teaching in the classroom	
The system is not compatible with the other systems I use	#13: Using technology for teaching in classroom would not compatible with other teaching responsibilities that I have	
A specific person (or group) is available for assistance with system difficulties	#14: A specific person (or group) would be available for assistance with difficulties when using technology for teaching in the classroom	

Research Question	Construct being measured
#20: The potential for someone to monitor laptop activities is a concern when using a school-issued laptop.	Privacy Concerns
#21: Privacy is a key factor in how much I use a school-issued laptop.	
#22: Fear of my computer files (photos, pictures, documents, emails, etc…) being secretly accessed is a concern when using a school-issued laptop.	
#23: The use of location tracking software influences how I use a school-issued laptop.	
#24: The organization values my contribution to its well-being.	Perceived Organization Support
#25: The organization fails to appreciate any extra effort from me.	
#26: The organization would ignore any complaint from me.	
#27: The organization really cares about my well-being.	
#28: Even if I did the best job possible, the organization would fail to notice.	
#29: The organization cares about my general satisfaction at work.	
#30: The organization shows very little concern for me.	
#31: The organization takes pride in my accomplishments at work.	

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SURVEY INSTRUMENT:

UTAUT AND TECHNOLOGY PRIVACY SCALE

Welcome to My Survey

Thank you for your interest in this study! Your feedback is important, as the survey goal is to help improve how teachers accept and use technology. Your response to this survey will help us learn more about how teachers can become better with using technology in the classroom.This survey is anonymous, and will only take approximately 10 minutes to complete. Partaking in this survey is voluntary, and you may exit the survey at any time.

This research project has been reviewed and approved by the Human Research Protection Program, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about the rights as a research subject should be directed to the Office of Research Compliance, P.O. Box 6223, Mississippi State, MS 39762, (662)325.3294. Also, you may contact Ronald Gatewood at rlg43@msstate.edu for additional questions regarding this study.

If you would like to print a copy of this form for your records, please do so before continuing to the next page.

By continuing to the next page, you are giving informed consent to participate in the study.

Your participation is greatly appreciated! Thank you

* 1. ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that

- You have read the above information
- You voluntarily agree to participate

☐ Agree

☐ Disagree

2. Please choose the option that best describes your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
1. My interaction with technology for teaching in classroom would be clear and understandable.	○	○	○	○	○	○	○
2. Using technology for teaching in the classroom would enable me to accomplish tasks more quickly.	○	○	○	○	○	○	○
3. I am determined that I will use technology for teaching in the classroom in the next 3 months.	○	○	○	○	○	○	○
4. In general, senior school administrators would support the use of technology in the classroom.	○	○	○	○	○	○	○
5. I would find using technology for teaching in the classroom easy to do.	○	○	○	○	○	○	○
6. I plan to use technology for teaching in the classroom in the next 3 months.	○	○	○	○	○	○	○

3. Please choose the option that best describes your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
7. It would be easy for me to become skillful at using technology for teaching in the classroom.	○	○	○	○	○	○	○
8. Senior school officials would be helpful in the integration of technology for teaching in the classroom.	○	○	○	○	○	○	○
9. Using technology for teaching in the classroom would increase my productivity.	○	○	○	○	○	○	○
10. If I use technology for teaching in the classroom, I will increase my employment opportunities.	○	○	○	○	○	○	○
11. Learning to use technology for teaching in the classroom would be easy for me.	○	○	○	○	○	○	○
12. People who are important to me would think that I should use technology for teaching in the classroom.	○	○	○	○	○	○	○

4. Please choose the option that best describes your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
13. Using technology for teaching in the classroom would not be compatible with other teaching responsibilities that I have.	○	○	○	○	○	○	○
14. A specific person (or group) would be available for assistance with difficulties when using technology for teaching in the classroom.	○	○	○	○	○	○	○
15. I would find using technology for teaching in the classroom useful.	○	○	○	○	○	○	○
16. People who influence my behavior would think that I should use technology for teaching in the classroom.	○	○	○	○	○	○	○
17. I have the knowledge necessary to use technology for teaching in the classroom.	○	○	○	○	○	○	○
18. I intend to use technology for teaching in the classroom during instruction in the next 3 months.	○	○	○	○	○	○	○

5. Please choose the option that best describes your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
19. I have the resources necessary to use technology for teaching in the classroom.	○	○	○	○	○	○	○
20. The potential for someone to monitor laptop activities is a concern when using a school issued laptop.	○	○	○	○	○	○	○
21. Privacy is a key factor on how much I use a school issued laptop.	○	○	○	○	○	○	○
22. Fear of my computers files (photos, pictures, documents, emails, etc…) being secretly accessed is a concern when using a school issued laptop.	○	○	○	○	○	○	○
23. The use of location tracking software influences how I use a school issued laptop.	○	○	○	○	○	○	○

Relationship Between Perceived Organizational Support and Social Influence

6. Please choose the option that best describes your agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
24. The organization values my contribution to its well-being.	○	○	○	○	○	○	○
25. The organization fails to appreciate any extra effort from me.	○	○	○	○	○	○	○
26. The organization would ignore any complaint from me.	○	○	○	○	○	○	○
27. The organization really cares about my well-being.	○	○	○	○	○	○	○
28. Even if I did the best job possible, the organization would fail to notice.	○	○	○	○	○	○	○
29. The organization cares about my general satisfaction at work.	○	○	○	○	○	○	○
30. The organization shows very little concern for me.	○	○	○	○	○	○	○
31. The organization takes pride in my accomplishments at work.	○	○	○	○	○	○	○

7. What is your sex?

- ◯ Male
- ◯ Female

8. What is your age?

- ◯ 18 to 24
- ◯ 25 to 34
- ◯ 35 to 44
- ◯ 45 to 54
- ◯ 55 to 64
- ◯ 65 to 74
- ◯ 75 or older

9. Which race/ethnicity best describes you? (Please choose only one.)

- ◯ American Indian or Alaskan Native
- ◯ Asian / Pacific Islander
- ◯ Black or African American
- ◯ Hispanic
- ◯ White / Caucasian
- ◯ Multiple ethnicity / Other (please specify)

10. About how many years have you been teaching?

- ◯ Less than 1 year
- ◯ At least 1 year but less than 3 years
- ◯ At least 3 years but less than 5 years
- ◯ At least 5 years but less than 10 years
- ◯ 10 years or more

11. What subject do you teach?

12. Did you have any technology training before the school adopted 1:1 technology program?

- Yes
- No

13. What is your current skill level in regards to technology?

- Beginner
- Intermediate
- Advanced
- Expert

14. What was your college major?

- Business
- Economics
- Biology
- English
- History
- Technology Related Major
- Health Related

Thank You!

Thank you for taking this survey. If there are any questions, you can contact me at rlg43@msstate.edu.

15. Enter your email address if you wish to be included in the drawing for a chance to win a $25 gift card. Winner will be notified via email.

I

IRB

Reply all Delete Junk Block ···

Approval Notice for Study # IRB-18-072, Rural Teacher's Technology Adoption and Privacy Concerns for Teaching in the Classroom

P prm199@msstate.edu
Tue 4/24/2018 4:19 PM
Yu, Chien; Adams, Jim; Leach, Nicole; Scott-Bracey, Pamela; Gatewood, Ronald

Protocol ID: IRB-18-072
Principal Investigator: Chien Yu
Protocol Title: Rural Teacher's Technology Adoption and Privacy Concerns for Teaching in the Classroom
Review Type: EXEMPT
Approval Date: April 24, 2018
Expiration Date:April 23, 2023

The above referenced study has been approved. To access your approval documents, log into myProtocol and click on the protocol number to open the approved study. Your official approval letter can be found under the Event History section. For non-exempt approved studies, all stamped documents (e.g., consent, recruitment) can be found in the Attachment section and are labeled accordingly.

If you have any questions that the HRPP can assist you in answering, please do not hesitate to contact us at irb@research.msstate.edu or 662.325.3994.