

EVALUATING THE EFFECTIVENESS OF A PERSONALIZED, PEDAGOGY-BASED  
TECHNOLOGY PROFESSIONAL DEVELOPMENT MODEL IN TEACHER  
PREPARATION PROGRAMS

by

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## ABSTRACT

Technology plays an integral part in today's classrooms, so there is no question that it should play an equally important role in teacher preparation programs. While technology classes are in place in most institutions, research has shown that some College of Education faculty members, especially those in content areas outside technology, are still resistant to the pedagogical use of technological tools in their curriculum (Britten & Craig, 2006; Trehearn, 2010; Tondeur et al., 2010). Barriers cited range from lack of access to appropriate tools and inadequate professional development to low self-efficacy and negative attitudes toward the effectiveness of technology integration (Reid, 2014). This causes a problem because not only are students missing out on valuable learning experiences that only technology can provide, but effective modeling of pedagogical-based technology has been shown to encourage pre-service teachers' use of technology once in the field (Baylor & Ritchie, 2002; Strudler & Wetzel, 1999, Tondeur, 2011).

A large university in the southeastern United States has developed a pedagogy-based, personalized instructional technology professional development model that aims to address this problem by providing faculty members with timely, personalized professional development, resources, and support. The purpose of this qualitative study was to evaluate the effectiveness of this pedagogical-based, personalized, professional development model as it pertains to these particular barriers in hopes of promoting effective technology use in the teacher education program.

Frequent participants of this model were interviewed to provide the researcher some insight into their experiences with the lab, best practices, and the professional development's impact on their technology usage. Participants were asked to provide artifacts to demonstrate their increased technology integration and the artifacts did indicate changes in teaching and use of technology. Based on the findings, this model did have an impact on technology usage in the teacher education classroom – not only with the teachers, but with the students as well. Artifacts and participant discussion of students' improvement in class work supported this claim. The study findings revealed five major themes: a) unexpected learning occurs; b) on-demand, personalized professional development is a necessity; c) need for extended opportunities for learning; d) changes in teaching; and e) benefits to students.

## DEDICATION

This dissertation is dedicated to my friends and family, who have supported me through every step of this journey. To my parents, Ted and Vanessa Slaten, thank you for loving me; instilling in me the importance of education; and giving me the opportunities and encouragement to always reach for my dreams. I could not have done this without your love, support, and guidance. To my little brother, Joshua Slaten, thank you for always being my cheerleader, my voice of reason, and my biggest supporter. You were there through some of the toughest times of this journey, and I am thankful to have had you next door (or a phone call away) if I needed anything from a laugh to some words of encouragement. You are the best little brother a girl could ask for; I am grateful. To my husband, Alex Biehn, thank you for your never-ending love, support, and encouragement. When I started this journey, we were dating, and I know you had no idea how much this would impact your life as well, but thank you for sticking around; being my cheerleader (even when you were living 8 hours away); taking care of things around the house so that I could focus on my work; and, of course loving me and supporting my endeavors. I am forever grateful and I love you more than I can ever say! To my grandparents, Jack and Lucy Winton, thank you for always being there for me and pushing me to do my best in whatever dream I was pursuing. You are some of my biggest supporters, and, in everything I do, I hope I make you proud! To the rest of my family, friends, and colleagues, I cannot begin to list the people who have played a part in the process, but I am thankful for every single one of you. Your thoughts, prayers, words of encouragement, love, and support have meant the world to me. I love you all!

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## CHAPTER I: INTRODUCTION

In today's classrooms, technology plays a significant role in teaching and learning. Research studies have pointed to the numerous benefits of technology use in the classroom (Crook, Harrison, Farrington-Flint, Tomás & Underwood, 2010; Gibson & Weir, 2010). Technology has gone from being a useful resource to a critical (and often mandated) tool for today's classrooms (Stobough & Tassell, 2011); and, as a result, administrators are expecting new teachers to come into the classroom with the knowledge and resources needed to effectively integrate technology into the classroom curriculum (Vu & Fadde, 2014).

Because of its increasingly critical role in education and today's classrooms, many universities are now requiring pre-service teachers to incorporate technology both in their academic work and classroom placements. However, teacher education programs are lacking in providing students with enough training and experiences to learn how to effectively integrate technology into their teaching (Tondeur et al., 2011). While many universities do offer educational technology classes for students, technology training and opportunities to incorporate technology into pedagogical practice often do not exist. Reasons range from accessibility issues to inadequate technology tools, but in many cases, it is simply because the instructors are not comfortable enough with technology themselves to teach students how to use it properly (King et al., 2013). Given that the modeling of effective technology use has been shown to be an influential factor in the use of technology in the classroom (Hegwer-Divita, 2000), this is a problem that must be fixed.

Many universities aim to address this problem by offering professional development programs for their faculty (Trehearn, 2010). Unfortunately, even with adequate professional development programs, faculty either do not take advantage of the opportunities because they do not see the relevance or they attend the training only to leave with knowledge about how to work the tool itself rather than how to effectively integrate it into their curriculum (Brinkerhoff, 2006; Jenson & Lewis, 2001; Mouza, 2002; Trehearn, 2010) This leaves faculty frustrated and resistant to training opportunities and technology use in general (Georgina & Hosford, 2009).

A large university in the southeastern United States hopes to remedy this problem by developing a pedagogy-based, personalized professional development model in which faculty, staff, and students can receive timely and personalized professional development on any technology tool or resource that may be relevant to their curriculum. The purpose of this qualitative study was to evaluate the effectiveness of this particular professional development model and its impact on the effective usage of technology in teacher preparation programs. The hope is that the results would not only serve as a guide for the future of this particular model, but other professional development models as well so that students in the teacher preparation program are better prepared to effectively use technology in their classrooms.

### **Statement of the Problem**

In many universities, pre-service teachers are required to take technology courses; integrate technology into their submitted lesson plans and activities; and are expected to implement technology knowledge during classroom experiences (Tondeur et al., 2011). These expectations come from the numerous studies done showing the importance of technology integration in pre-service education programs and in K-12 classrooms (Crook et al., 2010; Gibson & Weir, 2010; Tondeur et al., 2012). The problem, however, is that while technology is a

requirement for students, the same does not go for faculty of said programs (Trehearn, 2010). Studies have shown that modeling of effective technology practices in pre-service education has an enormous impact on pre-service teachers' attitudes, self-efficacy, and future implementation. If there is little or no modeling of technology in the college classroom, pre-service teachers are less likely to utilize and integrate technology into their classrooms (Handler, 1993; Howland & Wedman, 2004; Munday, Windam, & Stamper, 1991; Zehr, 1997).

There is also a digital divide between the availability of professional development opportunities offered to faculty and their perceived usefulness (Georgina & Husford, 2009). Regardless of the quality of the program itself, if faculty members are not taking their newfound knowledge into their classrooms to aid in teaching and learning, then the professional development model does not serve its purpose. The professional development model that is the focus of this study was designed to address some of these barriers; this study hoped to evaluate the impact of these barriers on the success or failure of a professional development program.

### **Statement of Purpose**

The purpose of this study was to examine the effectiveness of a personalized, pedagogy-based professional development model for faculty in teacher education programs. While there are numerous studies conducted on professional development models and best practices for encouraging technology integration in the classroom, very little literature exists on personalized, professional development and its impact on faculty in teacher education programs.

### **Significance of the Study**

This study examined the effects of a personalized technology professional development model on the use of technology as a teaching and learning tool in the teacher preparation program. Results of this study may help highlight strengths and weaknesses in this professional

development model as well as the participants' technology knowledge and skills and, hopefully, provides insight on how both impact technology use in teacher education programs and contributes to the knowledge base regarding professional development.

### **Research Question**

The overarching research question for this study was as follows: how does a personalized, pedagogy-based, technology professional development model impact the use of technology by faculty and students in teacher preparation classes?

### **Theoretical Framework**

The theoretical framework of this study is a compilation of various learning and technology-based theories. Elements of these theories, along with their associated assumptions, drove the methods behind the planning and execution of this study.

### **Constructivist Theory**

One of the primary theoretical assumptions that drove this study was that *learners have varied needs; therefore, instruction should be individualized to meet those needs*. This assumption is based on the constructivist paradigm (Hein, 1991; Li, 2001), which asserts that learners come into learning at different levels based on their prior knowledge and experience. Since this study focused on the idea of a personalized, professional development model, this idea of individualized instruction was a large part of the study and its design. This study was also based on the constructivist principles of a) learning is contextual; b) one needs prior knowledge to learn; and c) learning is an active process in which the learner uses sensory input and constructs meaning out of it.

According to Hein (1991), other principles of constructivism are as follows:

1. People learn to learn as they learn; learning consists of both constructing meaning and constructing systems of meaning;
2. The crucial action of constructing meaning is mental;
3. Learning involves language;
4. Learning is a social activity;
5. It takes time to learn; and
6. Motivation is a key component in learning.

While these were not fully relevant to this study, it was important to consider these principles when planning a learning experience.

### **Adult Learning Theory**

A second theoretical assumption for this study is that *adults prefer to learn material that they consider useful*. This assumption, based on the adult learning theory (King, 2002), plays a significant role in designing professional development programs because according to this theory, professional development plans and programs will only be successful if the participants consider the training useful. This is a crucial assumption to consider when planning a personalized, professional development approach for adult learners.

Other assumptions associated with adult learning theory include the idea that an adult learner

(1) has an independent self-concept and can direct his or her own learning, (2) has accumulated a reservoir of life experiences that is a rich resource for learning, (3) has learning needs closely related to changing social roles, (4) is problem-centered and interested in immediate application of knowledge, and (5) is motivated to learn by internal rather than external factors. (Merriam, 2001, p. 22)

Although this study was primarily focused on one aspect of adult learning, each one of these pillars plays an important part, if even a small one, in the planning and execution of adult learning.

### **Transformative Learning Theory**

A third assumption for this study was that *learning often requires a shift in thoughts, feelings, and actions*. This assumption is based on the transformative learning theory that asserts that some skills require a change in pre-existing thoughts and actions (Meizrow, 1997). Many educators often have preconceived notions regarding technology and its role in the classroom and often, this attitude, whether it is positive or negative, can impact the ability to learn something new (Trehearn, 2010). Also, most faculty members are not considered “digital natives” (Prensky, 2001; Salajan, Schönwetter, & Cleghorn, 2010) because they have not grown up with technology and adding it into their daily lives requires an adjustment – especially if they have been teaching without it for the majority of their career (King, 2002).

### **Nature of the Study**

This qualitative study took place in a College of Education at a large university in the southeastern United States. In 2014, the university reported a total enrollment of approximately 36,000 students, 3,000 of whom were in the College of Education. The demographic breakdown of the College of Education faculty for the 2013-2014 academic year, according to a 2015 report, is approximately 84% white, 11% Black or African-American, 2% Asian, 1% Hispanic/Latino, and less than 1% American Indian or Alaska Native. Of the 247 faculty members in the college, most are female (approximately 60%). The site was chosen based on the willingness of the faculty to participate in the study and their desire to evaluate and improve on existing technology

services to encourage the effective use of technology in the classroom as well as find ways to effectively utilize the technologies and resources that are already available.

### **Assumptions**

This study assumed that the technology required was available and in proper working order. During the implementation process, it was assumed that the participants would implement the technology tools in their classrooms. It was also assumed that participants would take advantage of the professional development opportunities and complete the activities during the workshops to receive the most benefit from this study.

### **Limitations**

Given the small sample size (being conducted with a small group of faculty in one college), it was recognized that the results of this study may not be generalizable to all classrooms/situations. Also, the professional development opportunities took place prior to the study, so there is no pre-test to measure the proposed increased level of technology integration. Impact will solely be measured using participant responses to the interview and evaluation of artifacts. A pre-test or assessment of some sort might have produced more powerful, telling results. Time is also another limitation of this study, as the study will only be conducted over the course of two months. A longer study, following faculty and staff over the course of several years, could yield different results.

### **Definition of Terms**

*Students:* For the purpose of this study, the term students refers to any person enrolled in College of Education classes at the given institution. This generalized term does not define whether or not they are full or part time, traditional or nontraditional, graduate or undergraduate, but these specific groups will be noted if applicable.

*Faculty/Staff/Instructors:* These terms are used interchangeably throughout the study. The “faculty/staff/instructors” group for this study is made up of full tenure-track faculty, non-tenure track faculty, clinical instructors, adjunct professors, and graduate teaching assistants. The official titles will not be disclosed unless they have relevance to the data.

*Technology:* Although technology can be defined as any tool one may use in teaching and learning, for the purpose of this study, when the term “technology” is used, it is referring to digital technologies, such as iPads, desktop and laptop computers, interactive whiteboards, and mobile devices.

*Professional Development:* According to the National Staff Development Council website (2015), professional development (or professional learning) is defined as a “comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (NSDC, 2015, para. 1). Because the focus of this study was in the higher education classroom, the “principal” and “teacher” aspects of the above definition will apply to faculty and staff in this setting.

## **Summary**

This dissertation consists of five chapters. The goal of the first chapter was to serve as an introduction to the topic and the study itself. It began with an introduction to the topic followed by a statement of the problem addressed. The theoretical framework on which the study was based, the purpose statement, and the significance of the study were also discussed. The research question was presented along with the assumptions and limitations of the study. Finally, a list of terms and operational definitions used throughout the dissertation were provided.

Chapter II presents a review of the literature on topics related to the study and its methodologies. This literature review begins with a generalized discussion of technology’s role

in education and then moves to a more specific discussion on its role in higher education and teacher preparation programs. A discussion on faculty technology use and professional development follows as well as literature that defends the theoretical framework for this study. This chapter also expounds on some of the terms and ideas defined in Chapter I to further explain their role in the study.

Chapter III provides an in-depth discussion of the methodology used in this study. This chapter includes a description of the setting, participants, and instrumentation. The positionality of the researcher is presented. This chapter also includes data collection and analysis methods and the reasoning behind their selection.

Chapter IV provides readers with a summary of the results of the study. Included in this chapter are excerpts from survey data and interviews with select participants. Chapter V discusses the findings and conclusions of the study and how they relate to the research questions. Implications of the study and its findings as well as recommendations for future research will be addressed.

CHAPTER II:  
REVIEW OF THE LITERATURE

**Introduction**

The following literature review serves as a discussion of the research base surrounding the various components and design of this study. It begins with a generalized overview of the role of technology in education followed by a discussion on the role of technology in the teacher education classroom with an emphasis on technology usage by faculty as a pedagogy based tool to enhance teaching and learning. The literature on professional development models, both successful and unsuccessful, are also outlined followed by a discussion on the creation of this particular professional development model and how it addresses the barriers above. While there is no shortage of literature on these components individually, the literature base that specifically addresses the use of a personalized pedagogy-based technology professional development model to enhance effective technology use in the pre-service classroom is lacking, but the available literature that supports this will be discussed. This gap in the literature supports the need for research on this topic.

**Technology in Education**

Today's students are what many consider digital natives because they were born after 1980 and have been surrounded by technology since they were born (Prensky, 2001). Some researchers have argued that because of this, these students learn in an entirely different way than those in the prior generation and require education that is technical and highly interactive (Bennett, Maton, & Kervin, 2008). Some researchers have argued that this is because

technology has actually changed the way we think and process information (Barzilai & Zohar, 2006; Black, 2010; Bransford, Brown, & Cocking, 1999; Clements & Nastasi, 1993; Healy, 1998). Regardless of the reason, traditional teaching tools no longer meet the needs of these digital natives (Prensky, 2001); therefore, digital technologies have become crucial learning tools in today's classroom.

The necessity of technology in the classroom has been recognized on the local, state, and national levels. In 1998, the International Society for Technology in Education (ISTE) was charged with developing the first set of National Educational Technology Standards (NETS) for students. Since then, these standards have been revised and ISTE has expanded the standards to include standards for teachers, administrators, coaches, and computer science educators, which are now “widely recognized and adopted worldwide” (ISTE, 2013). In 2009, the U.S. Department of Education set aside \$919 million for State Educational Technology Grants and put an emphasis on technology with the “Race to the Top” legislation. In 2010, the U.S. Department of Education presented the National Technology Plan to Congress, which called for “applying the advanced technologies used in our daily personal and professional lives to our entire education system to improve student learning, accelerate and scale up the adoption of effective practices, and use data and information for continuous improvement” (U.S. Department of Education, 2010, p. 3)

According to the National Center for Education Statistics, 99% of classrooms in 2009 had at least one computer in the classroom and 95% of those computers had access to the internet. This made the student to computer ratio 1.7:1 (NCES, 2010). This was an increase from 2008 when the ratio of students to computers with internet access was 3.1:1 (NCES, 2009). When researchers asked participants how often these aforementioned computers were used for

instructional purposes, 40% said that they were often used, 29% said that they were sometimes used, but 19% said they were rarely used, and 10% reported that these computers are never used for instructional purposes. Although the lack of technology equipment is often named as a barrier to using technology in the classroom, what are considered the barriers to technology if these tools are available to teachers?

Much research has been conducted to examine barriers to technology use. While lack of tools and support are often cited as obstacles, teachers often say that they do not integrate technology because they do not feel that their technology skills are adequate, and the availability of quality and pedagogy based professional development and training opportunities are limited (Vu & Fadde, 2014). While this can be addressed at the system or school level, many school leaders are turning to teacher education programs to ensure that all new teachers come into the classroom with adequate technology skills (Herring et al., 2013).

### **Technology in Teacher Education Programs**

Because of the push for technology integration and accountability at the K-12 classroom level and the existence of the barriers previously mentioned, teacher education programs have been tasked with including technology as part of the curriculum for pre-service teachers (Tondeur, 2011). This integration began with technology courses where pre-service teachers were required to take, in most cases, one technology class as part of their curriculum (Polly, Mims, Shepherd, & Inan, 2010; Tondeur et al., 2011).

Unfortunately, this limited exposure still does not adequately prepare teachers for technology use once in the field, so many programs adopted technology standards and began requiring their pre-service teachers to integrate technology in their lessons and activities both in and out of the field (Tondeur, 2011). Even with this mandated technology use, pre-service

teachers are still leaving their education programs and entering the field with little practical, pedagogy-based technology knowledge (Stobaugh & Tassell, 2011).

Stobaugh and Tassell (2011) conducted a study to examine the extent of technology learning conducted in pre-service education. They found that while many universities reported that their students were leaving with adequate technology knowledge, pre-service teachers self-reported that they did not feel adequately prepared to use technology in the classroom. The researchers found that the problem was that students were being taught “about” technology, and sometimes “from” technology, but rarely “with” technology (Stobaugh & Tassell, 2011). They also found that universities were not assessing students on their ability to integrate technology in the classroom, but rather their ability to use technology in general, which leads to skewed numbers when it comes to evaluating the effectiveness of technology integration (Stobaugh & Tassell, 2011). Lei also found that while these “digital natives” (Prensky, 2001) were able to effectively use technology for personal purposes (i.e., social networking, emailing, browsing the web, etc.), their knowledge and expertise on effective technology use for educational purposes was limited.

Lei (2009) conducted a study that examined preservice teachers’ skills, attitudes, and preparedness concerning technology integration in the classroom. The results showed that all of the pre-service teachers surveyed had positive attitudes about the potential benefits of using technology as a teaching and learning tool; however, they had reservations about their expertise in actually using it in the classroom. When asked about their proficiency regarding the use of classroom technologies such as interactive whiteboards, content-specific software, and assistive technology, the majority of pre-service teachers reported that they fell more into the “beginner” category than in the “expert” category and in many cases, they reported that they had little-to-no

experience with subject-specific technologies and knew even less about assistive technologies (Lei, 2009).

King et al. (2013) conducted a study that evaluated pre-service teachers' multimedia literacies while in the field. They found that while the pre-service teachers had a basic understanding of technology integration, the students had a difficult time with actually putting their knowledge into practice. Some of the issues cited included the opportunity to multi-task (and therefore, get off-task), equipment malfunctions, getting wrapped up in the "romance" of technology (and losing site of the lesson objective), and incorrect use of technology tools. While the situations surrounding these issues varied, the researchers concluded that most, if not all, of these issues, could have been avoided if pre-service teachers had spent more time developing digital literacy rather than just learning about the importance of technology in the classroom.

With studies supporting the need for technology education reform in pre-service education (King et al., 2013; Tondeur et al., 2011) the question remains: how do we encourage effective technology integration in the classroom? Much research has been conducted to evaluate and encourage the efficient use of technology by teacher education faculty.

### **Technology Use by Faculty**

Modeling of effective technology integration by faculty has been shown to not only encourage the use of technology by pre-service teachers (Hegwer-Di Vita, 2000), but also the effective integration into the classroom curriculum (Tondeur et al., 2011). Even with the research demonstrating the need, many faculty members still do not integrate technology into their teacher education programs (Georgina & Hosford, 2009). According to the 2014 SIIA Vision K-20 survey results, faculty reported a current level of technology integration at 37%. However, they reported an ideal integration level of 74% (SIIA, 2014). While not always the

case, this shows that while faculty may be interested in integrating technology, they seem to run into barriers when trying to do so in an effective and meaningful way (Daher, 2014; Lyons & Carlson, 1995).

**Barriers.** Studies have been conducted on faculty use of technology in the classroom and the barriers associated with it. These studies have indicated that the barriers tend to differ from setting to setting, and participant to participant, making it difficult to define a generalized set of barriers to address. In a 1998 study, Jacobsen cited barriers including “inadequate infrastructure, perceived lack of administrative support and recognition; personal/internal reasons; lack of time; or lack of evidence about improvements over conventional methods” (Jacobsen, 1998, para. 2). Given that these barriers were highlighted in the 1998 study conducted almost 20 years ago, one would think that with the ease of use of newer technology tools; and the increased emphasis on the importance of technology integration, these barriers would no longer exist. However, research has shown that faculty members today continue to run into similar barriers when attempting to integrate technology into their classrooms. Teo (2011) discussed several barriers as they appeared in other studies. These barriers included lack of time and technology (Becker, 2001); lack of support and confidence (Jones, 2004); and in the cases of e-learning, lack of institutional direction and delivery time (Birch & Burnett, 2009).

Hew and Brush’s (2006) study on integrating technology into K-12 classrooms identified barriers such as resources, attitudes and beliefs, knowledge and skills, assessment, and the institution. In Buchanan, Sainter, and Saunders’ (2013) study, barriers cited included lack of time, resources, support, and lack of knowledge of content/topic-specific uses. In 2014, Daher found similar results with an emphasis on lack of technology training, experience, technical support, and tutorials.

## **Professional Development**

Professional development has long been an integral part of education (Trehearn, 2010). Since its birth in the early days of formalized education, teachers have participated in professional development opportunities to continue their learning beyond the college classroom and obtain skills and resources to keep up with the ever-changing world of education. While the topics, format, and setting have changed over the years to meet the current needs of the classroom, research has shown that these opportunities do not actually accomplish their purpose; which is to improve the effectiveness in raising student achievement (Trehearn, 2010). With the recent emphasis on meeting vigorous local, state, and national standards, teacher accountability and teacher learning are now more important than ever. Because of this, professional development has long been a topic of research as administrators struggle to find the perfect model to meet the needs of its participants and serve its purpose of creating more effective teachers.

### **Qualities of an Effective Professional Development Model**

The National Staff Development Council website (2015) defined professional development (or professional learning) as a “comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (para. 2). There is still, however, some debate over what effective professional development should look like.

Guskey (2003) reviewed and evaluated characteristics of effective professional development as they are defined in the literature. He and his team analyzed 13 lists of qualities of effective professional development from varied years and from sources that were heavily regarded in professional development reform and grouped them into broad topics to see if there

was any consensus amongst the lists. He and his team found that the characteristic was not dependent on the year, meaning “no characteristic appears to have become increasingly popular or to have fallen out of fashion within this relatively narrow timeframe” (Guskey, 2003, p. 8). Guskey also concluded that while some characteristics appeared more than others, not a single characteristic appears on all lists, and that many of the “popular” characteristics are included in the National Staff Development Council Standards for Staff Development (NSDC, 2015), but some of the characteristics in the aforementioned standards do not appear in any of the other lists.

While there is no definitive list of characteristics of the perfect professional development model, this study focused on two characteristics that appear often in the literature and on which the study professional development model was based. These characteristics are that professional development should be ongoing and personalized to meet the needs of the participants. Since the study directly dealt with technology, characteristics that applied to both technology-based professional development and content-specific professional development were intertwined in the discussion.

**Professional development should be ongoing.** Garet et al. (2001) asserted “Professional development is likely to be of higher quality if it is both sustained over time and involves a substantial number of hours” (p. 933). This directly aligns with the NSDC’s definition, which implies that professional development should be ongoing (NSDC, 2015), but unfortunately the most common professional development model, the one-day workshop, does not meet these criteria. According to a 2009 report by the National Staff Development Council, 9 out of 10 teachers reported that the majority of their professional development comes from these workshop-type sessions (NSDC, 2009).

While the workshop format is not always a bad approach to professional development, many criticize its lack of sustained learning for participants (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010; Chappuis, Chappuis, & Stiggins 2009; Guskey & Yoon, 2009; Rust, 2009; Trehearn, 2010; Wilson & Berne, 1999). Traditionally, participants attend these one-day, often single session workshops, sit and listen to an expert discuss the information, and then leave with no follow-up activities or support. Trehearn (2010) and Chappuis et al. (2009) asserted that this type of professional development is not conducive to learning because, not only is it designed to be a one-time opportunity, but participants are not provided any opportunity for reflection, therefore, making it more difficult for them to implement the new tool or skill once they return to their classroom setting.

This format is especially problematic in technology-based professional development opportunities because teachers have little to no time within the workshop or session to explore the tool, and then, once they return to the classroom, run into difficulties and have nowhere to go for help or support (Howland & Wedman, 2004; Showers & Joyce, 1996). This causes teachers to not only avoid using that specific tool but also technology in general (Brinkerhoff, 2006; Mouza, 2002). Brinkerhoff (2006) conducted a study evaluating a long-term professional development academy on technology skills. This model deemed to be fairly successful, but Brinkerhoff was quick to attribute its success to the fact that it was long-term (Brinkerhoff, 2006). Johnson, Kahle, and Fargo (2007) conducted a study on a long-term professional model and its impact on science achievement with middle school students. They, too, attributed its success to the sustained nature of the model (Johnson et al., 2007).

Christensen (2002) stated that ongoing professional development for technology is crucial in reducing teachers' negative attitudes, anxiety, and fear when it comes to using

technology in the classroom. Negative attitudes regarding technology and its usage in education can cause a problem in effective implementation because research has shown that a teacher's perceived usefulness of a tool has more impact on the usage than the usefulness of the tool itself (Buchanan et al., 2013; Hu, Clark & Ma, 2003; Ottenbreit-Leftwich et al., 2010; Teo, 2011; Teo, 2015; Teo, 2009). Research has also suggested that higher self-efficacy also plays a role in whether or not faculty utilize technology in their classroom (Buchanan, Sainter, & Saunders, 2013).

While researchers may not be able to agree on the perfect professional development model, most researchers agree that professional development should be sustained in order to be effective. Research also shows that follow-up and support after the professional development also plays a part in the effectiveness of the model.

**Professional development should be personalized.** Another complaint about professional development opportunities is that often times, they are not designed to meet the individual needs of teachers. Lucillo (2009) stated that "Teachers know best what they need in the classroom and the more they are involved in implementing professional development, the more effective it will be" (p. 64). The problem, however, is that many of these opportunities are school-wide and serve more as a "one size fits all" approach to educating teachers. Taylor et al. (2011) stated that professional development does not "acknowledge that teachers are not a homogeneous population but represent diverse perspectives, experience, expertise, receptiveness to new ideas, and potential for leadership roles" (p. 85). This is especially prevalent in technology trainings because administrators often require teachers and/or faculty to attend professional development opportunities that only focus on one tool or one set of tools that may or

may not be relevant to their situation (Diaz-Maggioli, 2004; Gu, Xiaodong, Qin & Lindberg, 2012; Howland & Wedman, 2004).

The solution to this problem is two-fold. Howland and Wedman (2004) asserted that educators should have some sort of control over the content and experiences that occur during these opportunities. This implies that teachers should either be able to a) choose what they want to learn or b) choose how they want to learn it. Some researchers have suggested that teachers be a part of the planning process when it comes to professional development opportunities (Georgina & Hosford, 2009; Howland & Wedman, 2004; Taylor, Yates, Meyer, & Kinsella, 2011; Trehearn, 2010). Just like their students, teachers have varied needs and learning styles and these should be addressed in these professional learning opportunities.

### **Applying the Theoretical Framework to the Research Base**

Professional development is a form of learning for teachers, so it is imperative to consider learning theories when planning a professional development model. This section discusses the theories used in the theoretical framework for this study.

#### **Constructivism**

The constructivist theory, often referred to as “the theory of knowing,” has long been an accepted paradigm for teaching and learning (Hein, 1991). Although finding a current definition of the constructivist theory is quite difficult, the idea behind the constructivist theory, that individuals construct their knowledge based on previous experiences and knowledge, is fairly widely accepted and often serves as the driving force behind many current learning theories and ideas (Null, 2004). Although the theory is widely accepted with few critics (Null, 2004), educators often struggle with putting it into action because of its emphasis on personalized

learning to account for the various experiences and backgrounds of all learners (Li, 2001; Matzen & Edmunds, 2007; Null, 2004).

According to Hein (1991), other principles of constructivism are as follows:

1. Learning is contextual;
2. One needs prior knowledge to learn;
3. Learning is an active process in which the learner uses sensory input and constructs meaning out of it;
4. People learn to learn as they learn: learning consists of both constructing meaning and constructing systems of meaning;
5. The crucial action of constructing meaning is mental;
6. Learning involves language;
7. Learning is a social activity;
8. It takes time to learn; and
9. Motivation is a key component in learning.

In recent years, researchers and educators have begun looking to technology as a way to address these individual needs of the learners. In fact, Campbell, Hsu, Duffy, and Wolf (2010) stated that personalized learning is dependent on technology in that “Personalization cannot take place at scale without technology” (p.10). Redding (2014), citing Crosbie and Kelly (1993), asserted that technology can assist in all areas of teaching and learning from the initial check for prior understanding to communicating learning benchmarks to stakeholders, making it the perfect catalyst for personalized learning and constructivism. Matzen and Edmunds (2007) cited several studies in which teachers used technology to transform their classroom from the traditional, teacher-centered approach to a more student-centered, constructivist approach

(Dexter, Anderson & Becker, 1999; Ertmer, Gopalakrishnan, & Ross, 2001; Means & Olson, 1995). Although these studies were conducted over a decade ago, the recent availability of specific technology tools and resources, that have built in personalization tools, makes the case for using technology as a personalized learning tool even more relevant today (Gilakjani, Leong, & Ismail, 2013).

Research has shown that, just as with traditional learning, professional development opportunities should also be designed to meet the needs of the learners rather than a one-size-fits-all approach (Georgina & Hosford, 2009; Howland & Wedman, 2004; Taylor, Yates, Meyer, & Kinsella, 2011; Trehearn, 2010). Wilson and Berne (1998) have asserted that faculty should be able to exert control over the content or type of learning experiences they receive. Lucillo (2009) stated that “teachers know best what they need in the classroom and the more they are involved in implementing professional development, the more effective it will be” (p. 64). O’Hara and Pritchard asserted that professional development activities should be “interactive, collaborative, and encourage participants to be knowledgeable constructors rather than mere recipients of information” (p. 46). This idea that learning, in this case learning about learning, aligns directly with the constructivist theory, which asserts that learners have varied needs and instruction should be individualized to meet those individual needs (Hein, 1991; Li, 2001) The professional development model proposed in this study was developed with the constructivist theory in mind; giving participants the opportunity to be active in the learning process and not only choose the content, but also apply their learning in a way that is relevant to them.

## Adult Learning Theory

There are some learning theories, like the constructivist theory, that apply to all learners, no matter the age; however, when working with adults, as in the case of this study, there are additional learning theories that are important to consider. One of the most prevalent of these adult learning theories is the aptly named, adult learning theory. This theory asserts that adults learn differently from children, and this should be considered when planning learning opportunities for adults. King (2002) stated that, unlike children, who often just enjoy learning, adults prefer to learn things that are meaningful to them.

One assumption of adult learning is that *adults prefer to learn material that they consider useful* (King, 2002) plays a significant role in designing professional development programs because according to this theory, professional development plans and programs will only be successful if the participants consider the training useful. Assumptions associated with adult learning theory include the idea that an adult learner

(1) has an independent self-concept and can direct his or her own learning, (2) has accumulated a reservoir of life experiences that is a rich resource for learning, (3) has learning needs closely related to changing social roles, (4) is problem-centered and interested in immediate application of knowledge, and (5) is motivated to learn by internal rather than external factors. (Merriam, 2011, p. 22)

This idea applies to all professional development opportunities, but it is especially relevant in technology trainings because if participants do not find it relevant, then they are less likely to implement the tool in their classrooms. Georgina and Hosford (2009) described it perfectly when they stated “It is not the effectiveness of technology, but the teacher’s perception of the effectiveness that determines whether or not the technology will be used” (p. 21). Because most professional development opportunities involve adults, it is important to consider the audience and align the experiences and content to meet their needs. In the case of the

professional development model in this study, participants were allowed to choose what topics they wanted to learn more about rather than being required to attend something that was not relevant to them.

### **Transformative Learning Theory**

Research also asserts that some skills require a change, or transformation, in the way one thinks, feels, or acts. This idea is based on the transformative learning theory, which is defined as “The process of effecting change in a frame of reference” (Meizrow, 1997, p. 5). Meizrow (1997) stated that this frame of reference is made up of two dimensions: 1) habits of mind (habitual ways of thinking, feeling, and acting); and 2) a point of view (values, attitudes, beliefs and feelings). This theory often goes hand-in-hand with the adult learning theory because adults are more predisposed to having a set frame of reference due to years of experiences.

One of the skills that often requires a change in one’s frame of reference is technology. Because technology has not always been a part of their lives or careers, some faculty members do not always have a positive view of technology especially when it comes to integrating it in the classroom (Jacobsen, Clifford, & Friesen, 2002). Georgina and Hosford (2009) cited Shrum (1999) in stating that it takes participants longer to learn about technology for personal or pedagogical use than to learn a teaching model in general. Howland and Wedman (2004) highlighted this issue and suggested that to obtain true transformative learning when it comes to technology, one must move through the stages of the Technology Learning Cycle or TLC (Wedman & Diggs, n.d.) The TLC honors the learning process and provides users with opportunities for exploration and reflection throughout the process, which have both been shown to aid in learning technology tools (Howland & Wedman, 2004). It also claims to equip learners with the ability to “develop a personal process for learning and using new technology” which

will aid them in the development and learning of new technology skills (Howland & Wedman, 2004, p. 242).

This idea that learning a skill such as implementing a new technology tool requires a transformation in the learners is obviously very important to consider in the development of a technology-based professional development model. If participants are not given enough time to fully understand and explore the content, then they are less likely to implement it in their classrooms. If they are not implementing their newfound knowledge into their classroom experiences, then the professional development model should be deemed ineffective.

### **Summary**

The research base that drove this study was comprised of research from the fields of educational technology, pre-service education, and professional development. Technology is an integral part of K-12 education, and as a result, now an integral part of pre-service education. The problem, however, is that pre-service teachers are going into the classroom ill-equipped to integrate technology primarily because they receive little to no pedagogically-sound training while in the teacher education (Stobaugh & Tassell, 2011). Research has stated that modeling effective technology uses in the college classroom encourages the use of technology by pre-service teachers. Unfortunately, in many cases, this modeling does not occur because faculty members are not comfortable enough with technology to model it for their students. This problem calls for a reform of traditional professional development models, and this study proposes a model that, hopefully, better meets the needs of faculty so that there is somewhat a “trickle down” effect to promote effective technology use in all levels of education.

CHAPTER III:  
METHODOLOGY

**Introduction**

This study employed a qualitative, case study approach to examine the effects of a personalized, professional development model on technology usage in the teacher preparation program. Data collected consisted of notes from interviews with selected participants and data from participant supplied artifacts. All data collected in this study were analyzed using qualitative methods and served as a check to combat bias as well as “providing a clearer and more in-depth understanding of what is going on in a particular setting” (Maxwell, 2010, p. 479). Collection from multiple data sources and employing a variety of qualitative research methods provides validity through both data and methodological triangulation (Guion, Diehl, & McDonald, 2011).

**Setting**

This study took place in the College of Education at a large university in the southeastern United States. In 2014, the university reported a total enrollment of approximately 36,000 students, 3,000 of whom were in the College of Education. As of 2013, the College of Education reported having 86 full-time tenured/tenure-track faculty; 23 non-tenure track faculty; and 77 staff members. The site was chosen based on the proximity to the researcher and the colleague’s desire to improve on existing professional development opportunities to encourage quality technology integration in the classroom.

## **Designing a Professional Development Model for Integrating Technology**

When planning the professional development model introduced in this study, the designers of the model took the aforementioned research into account. In Spring 2013, prior to the development of the professional development model discussed in this study, faculty and staff at the research site were surveyed by College administrators regarding their technology needs for teaching and learning using the *Technology Needs Survey*. The qualitative data resulting from this survey, along with research, drove the development and planning of this professional development model.

### **Technology Needs Survey**

The data from the *Technology Needs Survey* aligned with much of the existing research on effective professional development models in that participants highlighted the need for personalized professional development opportunities (Diaz-Maggioli, 2004; Gu, Xiaodong, Qin & Lindberg, 2012; Howland & Wedman, 2004, Taylor et al., 2011); opportunities for sustained professional development (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010; Chappuis, Chappuis, & Stiggins 2009; Guskey & Yoon, 2009; Rust, 2009; Trehearn, 2010; Wilson & Berne, 1999); and a support system to nurture the use of technology. When asked for suggestions to improve the accessibility of technology throughout the college, several people mentioned that there should be a special classroom lab for faculty and students to learn about technology from experts in the field, (the lab is now in operation and is called the Innovative Technology Teaching and Learning Lab - ITTLL) while another said that they would like more time and training to explore and learn technology tools (*Technology Needs Survey*, 2013). These statements not only defend the need for the classroom lab being used in this study, but also support the ideas that technology professional development should be ongoing and allow time for exploration and reflection and

that there should be some sort of support system in place if instructors have questions after the learning experience (Christensen, 2002).

The *Technology Needs Survey* respondents were also asked to identify three of their greatest technology needs. The responses varied, but many specifically asked for pedagogically-based, in-house, technology training relevant to their specific needs on a variety of technology tools and resources (*Technology Needs Survey*, 2013). These needs align perfectly with the idea that professional development should be pedagogically-sound and personalized to meet the needs of individual faculty and staff members (Diaz-Maggioli, 2004; Gu, Xiaodong, Qin, & Lindberg, 2012; Howland & Wedman, 2004; Taylor et al., 2011). These results, along with research on technology use in education and effective professional development were considered when developing the framework for this professional development model.

### **Professional Development Framework**

The framework for this professional development model consisted of three main principles of professional development: a) professional development should be personalized to meet the needs of the intended participants (Georgina & Hosford, 2009; Howland & Wedman, 2004; Taylor, Yates, Meyer, & Kinsella, 2011; Trehearn, 2010); b) content, tools, strategies, and resources should be contextually situated and pedagogically sound (Diaz-Maggioli, 2004; Gu, Xiaodong, Qin & Lindberg, 2012; Hein, 1991; Howland & Wedman, 2004, Li, 2001; Taylor et al., 2011); and c) learning opportunities should involve direct teaching, active learning, and time for exploration (Howland & Wedman, 2004) and three learning theories: 1) constructivist theory; 2) adult learning theory; and 3) transformative learning theory. Every aspect of the lab, from the planning of services to the delivery of content, was based and evaluated on these three

principles and learning theories. The following sections describe each element of the lab with a discussion of how these principles and theories played a role in its development and execution.

**Defining lab services.** The first step of the process was defining the services. Research on professional development, pedagogy, and technology; principles of effective professional development; learning theories (Diaz-Maggioli, 2004; Georgina & Hosford, 2009; Gu, Xiaodong, Qin, & Lindberg, 2012; Hein, 1991; Howland & Wedman, 2004; Li, 2001; Trehearn, 2010; Taylor et al., 2011); and the results of the aforementioned *Technology Needs Survey* informed the selection and/or creation of services for this model.

The ITTLL initially offered three services: pre-set workshops, tool trainings, and open lab hours. These services were adopted as the initial services of the ITTLL because they seemed the most relevant for the young model. They were, however, adopted with plans to expand these services and add new ones as the lab grew. These services were also specifically mentioned in the *Technology Needs Survey* and given that the conception of the lab was based on the results from this survey, the developers of the ITTLL felt that it was important to start, even on a small scale, with what the intended participants needed and specifically requested.

The first service, the pre-set workshop option, was, ironically, designed to be more like a workshop from a traditional professional development model. While the purpose of the proposed model was to break away from traditional professional development methods, it was also acknowledged that elements of those traditional professional development models can still be valuable learning opportunities if approached in the right way. The coordinator was careful to acknowledge those negative perceptions and critiques in order to create a meaningful learning opportunity.

The topics for the pre-set workshops were based either on topics specifically requested in the *Technology Needs Survey*, or topics that, according to the research and trends in educational technology and higher education in periodicals such as *IT Trends* and the *Journal of Research in Teacher Education* (JRTE), were timely and relevant to teacher educators and pre-service teachers. These workshops were scheduled as monthly workshops (i.e., the lab offered one pre-scheduled workshop a month) on these pre-determined topics. This schedule was then publicized via various venues including email, posters/flyers (digital or paper versions displayed throughout the College of Education), and “word of mouth” through presentations in classroom and meetings to allow participants to plan ahead in order to attend presentations on the topics in which they were interested. The coordinator aimed to break the negative connotation of this traditional professional development method by attempting to provide relevant, timely content and ideas for practical, and effective implementation rather than just adopting a “one size fits all” approach. Each workshop was also set up more like a lesson so that participants were active participants in the learning opportunity. This service was based on the principles that a) content, tools, strategies, and resources should be contextually situated and pedagogically sound (Hein, 1991; Li, 2001) and b) learning opportunities should involve direct teaching, active learning, and time for exploration. It was also based on the constructivist learning theory, which asserts that participants should be active learners in the learning process (Hein, 1991; Li, 2001)

A second service that the ITTLL offered was tool trainings. Another aim of the ITTLL was to provide participants access to actual tools, hardware and software, to integrate into their classrooms and the tool training offering supported this service. Prior to the acquisition of these tools, ITTLL creators met with teachers and technology coordinators from local school systems, representatives from various departments within the college, and “experts” from often

underrepresented groups (such as English Language Learners and students with physical and/or learning disabilities and impairments) to ensure that the tools being utilized and promoted by the ITTLL were tools that were all-inclusive, and relevant to the current situations in today's schools. These tools included SmartBoard Interactive White Board, Microsoft Surface tablets, Lumens Ladibug and Hovercam document cameras, Apple iPads, HP Chromebooks, and eBeam interactive white board systems.

In order to ensure that these tools would be used effectively and purposefully to enhance the teaching and learning process, the ITTLL offered trainings on each of these tools. Like the pre-set workshops, trainings were often pre-scheduled, but were offered numerous times so that participants had more opportunities to attend. The idea that participants would attend a technology workshop just to learn *how* to use a tool is another negative aspect of traditional technology professional development, but the coordinator ensured that each participant left not only with knowledge on how to use the tool, but also knowledge of how to integrate it into their classroom curriculum. This service was based on the principle that professional development should be situated and pedagogically sound (Diaz-Maggioli, 2004; Gu, Xiaodong, Qin, & Lindberg, 2012; Howland & Wedman, 2004; Taylor et al., 2011). The coordinator was also cognizant of the critique that professional development experiences are often “sit and get” and she ensured incorporation of plenty of opportunities for hands-on experience with the tools. This aspect aligns with the transformative learning theory, which emphasizes that learning should allow for time for exploration in order to fully transform one's thinking (Meizrow, 1997).

A third service that the ITTLL offered was open lab hours. This, like the other services, was created as a result of the *Technology Needs Survey*, in which responders specifically requested a place where they could go to get timely, on demand ideas and support. Due to

funding, the lab was not open full-time, so the coordinator set aside 3-6 hours a week in which she would remain in the lab and participants could “drop-in” without an appointment to receive on demand support and advice on anything from how to operate a tool to how to integrate technology in a particular lesson. This service aligned with the premise that professional development should be personalized to meet the needs of the learners (Li, 2001; Matzen & Edmunds, 2007; Null, 2004) and the adult learning theory, which asserts that adults, which all of the participants were, prefer to learn something that they find relevant (King, 2002; Merriam, 2001).

This particular service was initially the most popular because participants loved being able to receive training on something that they found relevant and was adapted to meet their very specific needs. In some cases, participants wanted to extend their learning, so many requested a scheduled appointment to discuss it further or they wanted the coordinator to come work with their students. Based on this idea, the coordinator added the personalized workshop/consultation service to the list of offerings for the ITTLL. This service allowed participants to customize every aspect of their learning experience – from the content and delivery to the date, time, and location. This idea was based on premise that professional development should be personalized and contextually situated (Brand, 1997; Drago-Severson & Pinto, 2006; Glasser, 1999; Lauer & Matthews, 2007; Leech & Fulton, 2008; Lowden, 2006; Lucillo, 2009; Lynd-Balta et al., 2006; McCarthy, 2006; O’Hara & Pritchard; 2008) and the constructivist and adult learning theories, which also emphasize personalized learning.

Many participants also used the consultation service to have the ITTLL coordinator, who was also the researcher for this study, come to their classes to provide professional development to them, as well as their students, many of whom were pre-service teachers or teachers already in

the field. The topics and tools chosen were adapted to meet their needs of the participants' individual curriculums or content (i.e., counselor education students were presented with technology tools to aid in different aspects of their careers, while secondary social studies teachers were presented with tools to help them teach the social studies content).

While some of these were a one-day workshop format, the ITTLL provided support for all participants after the training including resources discussed in the training, supplemental resources and support, and on-demand support through email. The ITTLL also offered “open lab hours” in which anyone was encouraged to “drop in” to receive technology support. If their needs could not be met during this time, a follow-up session was scheduled so that participants could have more time for exploration with the technology tool. This service aligned with the transformative learning theory, which asserts that learning some skills, such as how to effectively integrate technology, requires a transformation in learning and often more time to explore and internalize the content (Meizrow, 1997).

**Workshops.** Since research shows that the modeling of effective technology integration greatly impacts the use of technology in the classroom, it was important to the coordinator that each learning experience be one that was contextually situated and pedagogically sound (see Appendix D for a description of each workshop offered by the ITTLL and Appendix E for detailed outlines of the workshops in which participants in this study participated). This idea perfectly aligns with not only the professional development framework, but also the conceptual framework that drove the development of the lab as well served as the foundation for this study. To accomplish this, each workshop was designed much like a lesson should be presentation of the material, a guided practice portion in which the presenter and the participants explored the tool together, and then the participants were assigned a “mini-project” of sorts that could be

adapted to meet their individual needs, but also gave them the opportunity to explore the tool. For example, in a workshop on creating effective presentations using technology, the presenter shared the elements of an effective presentation, followed by a guided exploration of tools that could be used to create an effective presentation, and concluding with an opportunity for participants to begin creating a presentation using one of the tools mentioned.

This opportunity for exploration allowed participants to get to know the tool and ask any questions within that single session, but participants were also encouraged to ask questions via email or drop into the open lab hours for extra assistance. This allowed participants to take the time to explore the tool on their own and ask questions as a later time and also supported the idea that professional development should be ongoing and provide opportunities for reflection and exploration. This particular aspect of the ITTLL was based on professional development research, which asserts that professional development should be sustained (Christensen, 2002; NSDC, 2015), the idea that opportunities should include time for exploration (Hein, 1991) and the transformative learning theory which suggests that some learning requires additional time for exploration and reflection (Meizrow, 1997).

### **Researcher Positionality**

Marshall and Rossman (2011) described the important role that personal interest and curiosity plays in the development of a qualitative research study. My degree is both in instructional leadership and instructional technology, so I am passionate about a study that brings those elements together. I am also a former classroom teacher who did not receive a lot of technology training while in my undergraduate program, so I understand the struggle that many recent graduates face when required to use technology in the field without proper training and experiences.

Along with my doctoral studies, I also served as the coordinator for the ITTLL discussed in this study. I worked closely with the College of Education's dean's office to evaluate the technology resources that the college has to offer, identify strengths and weaknesses in the existing professional development opportunities, and use all of this information to not only help develop the lab, but also manage the day to day activities. I was also instrumental in planning each of the services offered and served not only as the coordinator, but also the facilitator of every workshop and service discussed in this study. Needless to say, the results of this study are not only important to me as an advocate of effective technology integration into the classroom, but also to inform and drive future decisions and plans for the ITTLL and other professional development models.

In saying all of this, I am extremely passionate about technology integration in the classroom, but I also realize that this bias could impact my study (Marshall & Rossman, 2011), especially since it is being conducted in my own "backyard" (Glesne, 2006). This was especially relevant to the data collection portion because I was the researcher and the facilitator of these workshops. As a researcher, I had to be acutely aware of my biases throughout every aspect of the study.

### **Participants**

The participants for the study consisted of faculty and teaching staff in the College of Education at a large university in the southeastern United States. All faculty and staff that met the criteria of participating in at least two opportunities with the ITTLL were invited to participate in the study; however, final participation was based on individual's willingness to participate. The participants that agreed to do the study consisted of four females and one male and all but one identified as Caucasian (with the remaining participant identifying as African-

American). The demographic breakdown of the College of Education faculty for the 2013-2014 academic year, according to a 2015 report, is approximately 84% white, 11% Black or African-American, 2% Asian, 1% Hispanic/Latino, and less than 1% American Indian or Alaska Native. Of the 247 faculty members in the college, most are female (approximately 60%). While the researcher attempted to capture as much diversity in participants as possible, the participants were selected based on their willingness to participate in the study, and the researcher did not discriminate based on any demographic aspect.

## **Instrumentation**

### **Interviews**

The researcher conducted semi-structured interviews with a select number of faculty members who, based on ITLL usage reports, participated in two or more professional development opportunities or services with the lab. All faculty members who met this criterion were invited to participate in the study, with five agreeing to participate.

The participants were able to schedule the interview at a time and place that was convenient for them. Allowing participants to choose a location that was comfortable for them encouraged them to speak freely and honestly about their experiences. While the interviews were recorded for transcription purposes, the recordings were stored in a secure online database and destroyed once transcription was complete. The interviews lasted approximately 30 minutes including an opportunity for debriefing at the conclusion.

The interview script was based on a pre-existing program evaluation created by Wilder Research Company (2013) to be used by Minneapolis Schools as an evaluation tool for their technology professional development program (PTD2). Although the purposes of both studies were similar, the questions were adapted to meet the needs of this particular study and the

corresponding research question and framework. The interviews were semi-structured so that the researcher had the opportunity to be a little more flexible in the organization of the questions to adapt to the flow of the conversation. This also allowed the researcher to take on a new direction if the participants' responses took a different turn, brought up interesting ideas that were not necessarily on the schedule, or needed elaboration (Kvale & Brinkmann, 2009).

All questions were open-ended to allow participants the opportunity to discuss their thoughts and yield richer data. The researcher asked questions about their experience with the professional development model and how it impacted their technology usage in their classroom. Topics for the questions included the following: 1) description of the service(s) utilized; 2) overall evaluation of the professional development model; 3) how this model compared to other professional development experiences; 4) impact on teaching and learning; and 5) impact on technology use.

Participants were also asked for feedback on the model as a whole, and how it could be improved in the future. During the interviews, the researcher took notes, especially in cases where the discussion deviated from the script.

**Experiences.** During the first section of interview questions, participants were asked about their experiences. These questions served not only as introductory baseline questions, but were also included to get a better idea of the participants' expectations and initial perceptions of the service. The questions in this section also asked about their level of participation during the learning experience. This allowed the researcher insight to their perceived learning during these sessions and also their evaluation of the effectiveness of the model. This first set of questions aligned with the constructivist theory, which suggests that for learning to occur, one must be an active participant in the learning process.

**Professional development evaluation.** The second set of questions asked participants to evaluate the service and the model, and how each addressed their needs. Participants were prompted to discuss positive and negative aspects of the service, strengths and weaknesses of the model as a whole, and suggestions for ways it could be improved. Given that all participants took advantage of the personalized consultation service, the questions were based on the constructivist theory that asserts that learning should be personalized to meet the needs of the learner, and the adult learning theory that suggests that adult learners prefer to learn things that they find relevant.

**Impact.** The final set of questions focused on the impact of the professional development model on teaching and learning. The responses to these questions would help define the results of the study as a whole, so most of the interview time was devoted to these questions. The first set of questions focused on ways that the learning opportunity or opportunities impacted technology use, while the second set focused on changes outside technology. These questions were based on the transformative learning theory, which asserts that learning is a process and in some cases, requires a shift in thoughts, actions, and habits.

### **Artifacts**

After the interviews, the participants were asked to provide artifacts that demonstrated the increased use of technology in their classroom after the professional development experience. There were no criteria for the selection of artifacts except that they should demonstrate and support the learning discussed during the interview process.

The artifacts submitted ranged from lesson plans to student assignments, but all supported the participants' comments regarding their experience with the ITLL services, and its impact on technology use in the classroom. Artifacts presented were faculty lesson plans,

student lesson plans, course materials (syllabi, student assignment instructions, etc.), and student assignments. Participants also had the opportunity to explain the artifact and how it supported their responses at the conclusion of the interview. All identifying information was removed from each document for privacy purposes, but were filed with the corresponding interview transcript in order to cross-check the supposed impact with the supporting artifact.

### **Research Question**

The overarching research question for this study was how does a personalized, pedagogy-based, technology professional development model impact the use of technology by faculty and students in teacher preparation classes?

### **Data Collection**

Prior to the data collection, appropriate permissions were obtained from the Institutional Review Board (IRB) to verify that the research methods are ethically sound. Once the study was approved by the IRB, participants received a consent form, via email, along with an invitation to participate. Participants were required to complete the consent form prior to participating in the study. Verbal permissions were also obtained from interview participants.

### **Interviews**

The first phase of data collection was participant interviews. Before any interviews were conducted, potential participants were invited to participate via email and were sent a consent form that outlined the conditions of the study. Once the participants signed the consent forms, interviews were scheduled and conducted. Prior to beginning the interview, the researcher read a script to the participants that described the study and how data would be collected and used. The participants had another opportunity to opt out of participating in the study at this time.

The interviews were conducted face-to-face and lasted 30-60 minutes depending on the participant. Participants were asked open-ended questions and interviews were recorded for transcription purposes, but the recordings were encrypted and stored on an online database to protect the data and participants. Once the transcription process was concluded and the participants had a chance to check the data, the recordings were destroyed. Participant information such as role and title in the college were included in the interview script, but no names or other identifying information were used in the study itself.

### **Artifacts**

The second phase of data collection consisted of artifacts from interview participants that further support their implementation of the knowledge gained during the professional development experience. These artifacts included participant lesson plans, student assignments, and anecdotal notes. These artifacts were evaluated piece by piece to ensure that they corresponded with the participants' comments regarding the experience. These artifacts were stored as digital copies in the same encrypted, online database as the interviews, but all were de-identified prior to submission.

### **Data Analysis**

The researcher used a variety of qualitative analysis methods to analyze the data collected during this study including coding of data, and analytic memoing. The researcher began by doing an initial coding of each piece of data using an open coding technique to “identify and formulate any and all ideas, themes, or issues they suggest” (Emerson, Fretz, & Shaw, 1995, p. 143). The researcher then moved on to focused coding in order to refine these codes and identify themes that were prevalent throughout the data. Coding continued until the researcher felt that the codes were saturated.

After each round of coding, the researcher created analytic memos to further expound on and explore the themes and ideas developed during the coding exercise. Initial memos were much like open coding and served as an open exploration of the themes apparent in coded field notes. Emerson, Fretz, and Shaw (1995) suggested moving from initial memos to what they call “integrative memos.” They asserted that these memos should be “an [exploration] of relationships between coded fieldnotes” and “provide a more sustained examination of a theme or issue by linking together a variety of discrete observations” (p. 162). Much like with coding, this process was ongoing until the researcher felt that all themes, thoughts, and ideas had been explored. Table 1 demonstrates codes at each stage of coding.

Table 1

*Coding Stages*

Initial Coding	Focused Coding	Themes Emerged from Coding
<p>The following codes emerged during the initial round of coding:</p> <ul style="list-style-type: none"> <li>• Personalized learning</li> <li>• Positive aspect of PD model</li> <li>• Situated learning</li> <li>• Impact on student learning</li> <li>• Student use of technology</li> <li>• Impact on teaching</li> <li>• Faculty use of technology</li> <li>• Support</li> <li>• Unexpected learning</li> <li>• Tools</li> <li>• Resources</li> <li>• Negative aspect of PD model</li> <li>• Need for follow-up</li> <li>• Need for extended learning opportunities</li> <li>• Confidence in using technology</li> </ul>	<p>Focused coding was then conducted in order to refine the codes and identify themes (in bold).</p> <ul style="list-style-type: none"> <li>• <b>Personalized learning</b></li> <li>• <del>Positive aspect of PD model</del> <i>Merged with personalized learning</i></li> <li>• <del>Situated learning</del> <i>Merged with personalized learning</i></li> <li>• <b>Impact on student learning</b></li> <li>• <del>Student use of technology</del></li> <li>• <b>Impact on teaching</b></li> <li>• <del>Faculty use of technology</del> <i>Merged with “impact on teaching”</i></li> <li>• <del>Support</del></li> <li>• <b>Unexpected learning</b></li> <li>• <del>Tools</del></li> <li>• <del>Resources</del></li> <li>• <del>Negative aspect of PD model</del></li> <li>• <del>Need for follow-up</del></li> <li>• <b>Need for extended learning opportunities</b></li> <li>• <del>Confidence in using technology</del> <i>Merged with “unexpected learning”</i></li> </ul>	<p>The following themes emerged from the coding process and are outlined in this dissertation:</p> <ul style="list-style-type: none"> <li>• Personalized learning</li> <li>• Impact on student learning</li> <li>• Impact on teaching</li> <li>• Unexpected learning</li> <li>• Need for extended learning opportunities</li> </ul>

## **Trustworthiness**

To maintain trustworthiness and validity, the researcher used a variety of methods including extended fieldwork and triangulation. These methods are described in this section.

**Extended fieldwork.** According to Glesne (2011), prolonged engagement allows the researcher to “develop trust, learn the culture, and check out hunches” (p. 49). Because I worked in this setting for the past few years, I feel that the extensive amount of time spent in the setting along with my current collegial relationships with some of the participants allowed me to become comfortable in the setting in hopes of better understanding the participants and situation.

**Triangulation.** For the purpose of this study, the researcher used two different data collection methods in hopes of providing trustworthiness within the study: semi-structured interviews and the analysis of participant-supplied artifacts. The interviews were conducted face-to-face, and were transcribed using an audio recording taken during each interview. The researcher also took notes during the interview. The participant-supplied artifacts included lesson plans (both student and teacher), student assignments, course materials, and anecdotal notes.

Both sets of data - the interview transcripts and supplied artifacts - were coded; first with an open coding technique, followed by focused coding to refine the codes that emerged during initial coded. Coding continued until the researcher felt that the codes were saturated. The researcher compared notes and themes that emerged from the artifacts and interviews to get a better idea of the impact of this professional development model. Table 1 demonstrates the codes at each stage of coding.

## CHAPTER IV:

### FINDINGS

#### **Introduction**

This chapter discusses the analysis of data obtained from the semi-structured interviews and participant supplied artifacts. The first section of the chapter provides the reader with insight into the context of the study while the second section describes the participants' responses to the survey questions and an overview of the artifacts presented. The third and final section highlights themes that emerged from the coding of the data and includes select excerpts from the interviews and artifacts that address the research question.

#### **Context**

The purpose of this study was to evaluate the effectiveness of a personalized, pedagogy-based professional development model on the technology usage, by students and faculty, in a teacher education program. Participants were recruited based on their frequent use of the ITLL's service – with the requirement of attending, scheduling, or participating in at least two professional development sessions with the lab. Seven participants met this requirement and five of these seven agreed to participate in the survey.

The participants varied in many ways. All but one participant was female and four of the five participants identified as Caucasian, with the remaining participant identifying as African-American. Their years of service at the university ranged from three to twenty years of experience. This study did not include a pre-test to evaluate participants' technology skills prior to attending the professional development opportunity; however, the participants all alluded to

their technology skill level when answering the interview questions. One participant claimed to be “tech-savvy,” while another considered herself to be an emergent learner in that she enjoyed learning about and using technology, but still had a long way to go; the rest of the participants claimed to be novices. All of the participants, however, said that they were willing to learn new technologies that might enhance their teaching and students’ learning.

These participants also came from different departments and content areas within the College of Education. Two of the participants taught secondary education classes, one in science and one in social studies. Another two participants taught classes in the elementary education program with content areas including from classroom management, elementary writing, elementary reading, and elementary social studies. The final participant taught graduate classes in a specialized field within the College of Education.

The ITTLL offered a variety of services including workshops, tool trainings, and drop-in weekly lab hours, but the most popular service was the personal consultation/workshop. This service allowed participants to schedule a workshop or training on the topic of their choosing and customize every aspect from the delivery methods to the learning objectives. All instructors who participated in this study utilized this particular service at least once.

### **Data Collection Procedures**

For the first phase of data collection, participants took part in a face-to-face semi-structured interview with the researcher. The interview questions were designed to allow participants to not only share about their experiences with the professional development model, but also the opportunity to highlight strengths and weaknesses of the model as well as its impact on their technology use. The questions were based on three themes: participation, professional

development, and impact. The interviews lasted approximately 30 minutes and were audio recorded and then transcribed for coding purposes.

During the first set of interview questions, participants were asked about their overall experience with the services of the ITTLL. As mentioned above, all five participants took advantage of the ITTLL's personal consultation service, at least once, which allows participants to choose the topic, time, and date of their professional development opportunity; some participants had multiple experiences with this service. Although some participants took advantage of other services, this particular service, and their associated experience, was the main topic of discussion during the interviews.

For the second phase of data collection, participants were asked to provide artifacts demonstrating the increased use of technology in his or her teacher education course, if applicable. Participants brought in various documents including student assignment instructions, student assignment submissions, student assignments, lesson plans, or anecdotal notes. All documents were presented to the researcher as "proof of learning" from the participants' professional development experiences.

The documents and interview transcripts were coded using an open coding method to extract common themes. The goal of this data collection process was to answer the overarching research question of how does a personalized, pedagogy-based, technology professional development model impact the use of technology by faculty in teacher preparation classes?

### **Themes**

After data collection, each piece of data was coded, using an open-coding method, to extract common themes. Once the open-coding process was complete, the researcher completed a round of focused coding to ensure that the codes were saturated. During this process, the

following themes emerged: a) unexpected learning occurs; b) on-demand, personalized development is a necessity; c) need for extended opportunities for learning; c) changes in teaching; and d) benefits to students. The sections that follow will provide excerpts from the data that support these overarching themes.

### **Theme 1: Unexpected Learning Occurs**

All of the participants scheduled the professional development opportunities as a learning opportunity for their students, so they did not expect to participate, but all of them admitted that they learned from the experience. Several of the participants said that they were more inclined to use technology knowing that there was someone they could go to for help if needed. One participant said that this also applied to her students in that she felt more comfortable assigning them technology-based assignments since they had an “expert” to turn to if they had questions or concerns.

During each session, the participants participated in hands-on activities and discussions alongside their students so it became a professional development experience for them. When asked about their favorite part of participating, they all mentioned the fact that they enjoyed having the opportunity to learn something new with their students. One participant said, “Those of us not in the technology field are not always up to date with the various tools available to us and our students. Having the opportunity to learn about these tools with our students helps us become better teachers as well.”

Several participants mentioned that by participating in, and in some cases helping with, the hands-on activities provided them with the opportunity to see the tool(s) in action and how they could handle problems that might come up. For example, during one of the workshops, the

internet was not working correctly, so the participant, along with the students, saw how the facilitator handled that situation. The participant during this session stated,

Even though the situation was not ideal, it was important for all of us, particularly the students, to see the reality of using technology in the classroom. It will not always go smoothly, but knowing how to troubleshoot or resort to Plan B in order to keep the lesson on track is what is important.

Another participant, referring to a workshop on how to use the SmartBoard in secondary classrooms, said

I really liked the way you presented with the tool rather than just telling us about it. It is wonderful to know all the great things the SmartBoard can do, but seeing it in action within a learning experience makes a world of difference. It showed me how seamless using technology can be and I now look at some of the technology tools, like the SmartBoard, in a completely different way.

A third participant said

It (the workshop) showed me that I still have a lot to learn. I know my content, and I teach students strategies and methods in my methods class, however, I don't know all the tools out there to take those common strategies into the digital world. For example – I can teach students about timelines and their role in social studies education, but having you come in and show different tools that they can use to create digital timelines is an important skill that they need and an area that I still need improvement in.

A fourth participant, who works with graduate students in a specialized field said

I gave you a list of tools to touch on during the presentation, thinking that I would already know everything you were going to say, but I was wrong. Tools like the Microsoft Office Suite, SurveyMonkey and Qualtrics are tools I use all the time, but you were able to show me how to use these common tools for different purposes.

## **Theme 2: On-Demand, Personalized Development is a Necessity**

All participants mentioned that they really liked the on-demand, personalized aspect of this professional development model because each experience was designed to meet their needs.

The participants in this study varied in department and/or content area; there were two participants from elementary education, two from secondary education, and a final participant that worked with graduate students in a specialized field within education. All participants took

advantage of the personal consultation workshop/service and given their varied situations, each experience was geared to meet their needs, the needs of their students, and situated within the context of their field. One participant said it best when she remarked,

Being able to contact you to set up a personalized workshop to meet our needs and the needs of our students was invaluable. As instructors, we are familiar with the content and their (the students') current situation in the schools, so being able to work with you to tailor the workshop to make it practical and useful for them was great and something you don't often get with PD opportunities.

Another participant who used the service several times for different classes over multiple semesters said that she liked that every aspect of the workshop from the content, to the delivery, to the assessment method could be customized. For example, she had a technology-based assignment that she does with her students every semester, but she had become unhappy with the tool that she had been requiring students to use. She contacted the ITTLL, explained the assignment and situation, and requested a workshop for her students that presented them with a variety of different tools to choose from to complete the assignment. She complimented this service because she said it was helpful having someone so well-versed in the tools available for this assignment, that this person was able to explain each tool to the students, along with the pros and cons of each, so that students could make an educated decision when choosing the right tool for their project. Another echoed the other participants, saying that it was helpful for him and his students to receive training on tools and resources that are practical for their situation. For example, he pointed out that not every school has access to top-of-the-line software, so being presented with practical tools that are free and age-appropriate is helpful to integration.

During the interviews, participants were asked to explain why they chose this particular service and how it varied from other professional development opportunities. The two elementary education participants stated that they chose the consultation service because most

technology-based professional development opportunities are either geared toward older students or are so generalized that they do not provide practical implementation ideas for those working with younger students. One participant who teaches classes in elementary English/language arts, stated

It is helpful to have workshops catered to our needs because these needs vary from department to department. Technology tools that may be applicable to faculty in secondary education won't work as well for my students who may work with non-readers and vice versa.

Another participant remarked

I teach elementary social studies, so I need to know about social studies related tools that I can share with my students - tools for other subject or content areas are not as relevant to me. It is nice being able to call an expert, let you know what I need help with, and you make it happen and make it relevant for me. Usually, one is just limited to more of a one-size-fits-all type workshop.

Two additional participants, instructors in secondary education, also appreciated the consultation service. They mentioned that although professional development opportunities for themselves and their students are prevalent, they are sometimes too generic and do not address specific content areas or skills or are not practical for their students and their given situation. One participant specifically mentioned that, as instructors who have observed students in the schools, they are aware of the contextual situations that pre-service teachers face when in the field (like lack of technology, intermittent internet access, system policies, etc.), and it was helpful to have a service that could consider those issues when providing professional development opportunities.

The final participant was a bit of an anomaly because she worked in a specialized field within education and worked with graduate students who would be a part of the education environment, but would not necessarily be situated in a classroom setting. She was very appreciative of the personalized professional development opportunity because she was able to

bring a list of tools that she wanted her students to learn about and have the workshop facilitator teach the students how to use these tools and how to integrate them in their unique setting. She said

My students are in education and work with students, but do not spend their time in a traditional classroom. They deal with different trials than traditional classroom teachers, and because many professional development opportunities are geared solely to classroom teachers, my students tend to get left out. Having the opportunity to provide them with technology training that meets their, sometimes very specific needs, means a lot.

### **Theme 3: Extended Learning Opportunities for Participants**

When asked if there was anything about ITTLL that should be changed, several participants said that they wished there were more opportunities to extend the learning. Participants did have the option of attending (or having their students attend) the optional “drop-in” weekly lab hours in addition to, or apart, from the other services. One participant, who has used several services with the ITTLL, added that while she liked using the personalized workshop service, she also enjoyed having access to these drop-in, open lab hours. She said that if she or her students needed help or more clarification on one of the topics discussed during the workshop, it was helpful having an opportunity to stop by and ask those questions rather than having to set up an appointment. Another participant, who suggested her students take advantage of the open lab hours after participating in the workshop, said that the students who did take advantage of this additional service, performed much better on their lesson plan assignment than those who did not.

Several participants said that they just wished there was more time in both the facilitator’s schedule and class schedules to extend the learning into more of a unit than just a one-time learning opportunity. One participant said that she would love to work with the ITTLL to create an integrated technology unit within her social studies method course. Another

participant scheduled a series of workshops for one of her classes after only having a one-time workshop for her students the semester before. She felt that the students who participated in the series of workshops had a better grasp of the material because they had a chance to ask follow up questions during the subsequent session. A third participant remarked,

Keep doing what you're doing, but you should add some opportunities for students and faculty to demonstrate what they learned. Have a student and/or faculty showcase in which they have to create something to showcase their newly acquired skills.

Several participants also mentioned they wished they had more time to utilize the service, and that they would love to see it is as a permanent, full-time service (the service currently had limited hours and was “by appointment” outside those hours). Many also commended the ITLL overall saying that most of the professional development resources on campus are more “troubleshooting” based meaning one usually only goes to them if there is a problem with hardware or software, and it was nice to have a place to go to learn something new. They would, however, like to see more services added such as the ability to check out tools, online training opportunities, and more opportunities for learning how to integrate technology with specialized populations (gifted and talented students, students with special needs, etc.), or specialized fields (counseling, physical education, administration, music education, art education, etc.).

#### **Theme 4: Changes in Teaching**

Although all participants in this study originally scheduled these workshops and learning opportunities for their students, they mentioned that the experiences also had an impact on their teaching. One participant, who scheduled a workshop for her secondary science education students on how to use an interactive whiteboard, reported that prior to the workshop, she just used the interactive white board to project her materials much like one would with a traditional

projector. After the workshop, she stated that she began using it more as an interactive tool to enhance her lessons and provided more opportunities for her students to practice with it as well.

Another participant, who scheduled a workshop for her students on digital storytelling tools, said that while she previously provided students with one tool to complete a digital storytelling project; students now had the opportunity to choose from a variety of tools and use higher order thinking skills to evaluate each tool on its ability to meet their individual needs and their needs for the project. The participant also had to learn how to use each of the optional tools in order to troubleshoot if needed and reported that the variety of tool options yielded much better results from the students. She is also comfortable enough with the new tools that she continues to integrate them in her lessons every semester.

Another had a similar response when he said,

I am now more compelled to try new things, especially when it comes to technology, knowing that there is a support system in place if I run into trouble. I used to get excited about integrating a new tool, but then, it wouldn't work correctly and I would abandon it to save my sanity. Having someone or somewhere to go to get help on anything from troubleshooting the tool or even ways that I can use it to enhance student learning, in an integrated way, is extremely valuable.

Yet, another participant stated

Just having the lab as a resource for students' changes my expectations for their lesson plan assignments. I tell them "Hey, there's this great resource available to you. Use it." I have higher expectations because they know this resource exists, and hopefully they choose to use it. They have no excuse for subpar lesson plans if they don't take advantage of it.

Artifacts provided by the participants supported their responses about changes in their teaching and the ways they used technology with their students. Examples are provided below.

**Artifact 1: Student lesson plans for secondary social studies.** During the corresponding session, students were presented with a variety of tools that could be used in their secondary social studies classroom and given practical, content-specific examples of how

common tools, such as QR codes and webquests, could be used in the classroom. The participant considered herself fairly well-versed on the tools discussed and used them often with her students, but said that even though students saw them in action, they struggled with integrating them in their own lessons.

The lesson plans provided by this participant were developed after the workshop and demonstrated the effective use of some of the tools covered during that session. The participant said that although the training did not necessarily impact her knowledge or usage of the tool, she knew that the students were trained on how to set it up and presented with practical applications on how to use it in the classroom. If any problems arose, she could direct them to the lab's "drop-in" open lab hour service, leaving students with no reason not to incorporate technology in their lesson. She also felt that knowledge of available resources was a valuable skill for educators, and by knowing where to send students to find an "expert" made her a better educator.

**Artifact 2: Student assignment instructions for an elementary education class.**

During this particular workshop, the participant had a lesson that she had been using for years, but was not happy with the product from the students and turned to the ITTLL for help. She worked with the lab to revamp the assignment with updated tools and resources and then had the ITTLL facilitator come to the class and present the optional tools to the students and provide them with pros and cons of each so that they could make an educated decision on which tool to choose. The artifact provided consisted of two copies of the student assignment instructions: one prior to the workshop, in which students were told which tool to use, and one after the workshop that allowed students to choose their own tool.

During the interview, this participant mentioned that because students had a variety of different tools to choose from, she had to learn the tools well enough to troubleshoot, if needed.

Also, because the assignments were being completed and submitted digitally, she had to know how to work each tool in order to grade the assignments. She said that this change made the assignment better because students also learned to evaluate tools to choose the best one rather than just having the tool handed to them.

**Artifact 3: Participant lesson plan for elementary English/language arts.** This participant scheduled a workshop for students on different web tools to use in elementary English/language arts lessons; however, the participant actually picked up a few tools and ideas as well. The artifact presented was a lesson plan that integrated two of the tools that were presented during that particular workshop with reflective anecdotal notes from the participant saying that the lesson went well and this particular tool seemed to greatly enhance the lesson.

**Artifact 4: Participant lesson plans for secondary science.** This participant requested a SmartBoard workshop for her secondary science students. When planning the workshop, she specifically requested that the workshop cover not only the basic usage of the SmartBoard, but also content-specific (in this case, science) applications as well. This workshop was originally planned for her students, but the participant found the presentation so useful that she began using the SmartBoard for more hands-on, interactive activities. The lesson plan she presented showed her using some of the tools and resources that were covered in the workshop.

**Artifact 5: Student assignment.** The final artifact came from a participant who worked with graduate students in a specialized education field and wanted a series of workshops that explored some technology tools and resources that would help them accomplish their day-to-day activities like collecting and managing data, interacting with parents, and communicating assessment results with colleagues and stakeholders. The participant wanted students to complete a project that began with collecting data, managing and interpreting the data, and then

designing a way to present the data to interested parties. She wanted the ITTLL's assistance in not only presenting a series of workshops on tools like SurveyMonkey, Qualtrics, Excel, and basic website builders, but also to help design the rubric for the assignment. Because she held students accountable for performing certain functions with the tools (like writing formulas within Microsoft Excel, and embedding certain things in their newly-created website), she had to learn how to do these tasks as well. For the artifact, she submitted a copy of the assignment instructions, as well as an example of one of the student assignment submissions to show that they did complete the project as assigned using the material covered in the workshop.

### **Theme 5: Benefits to Students**

During the interviews, participants also mentioned that the lab provided several benefits to the students. The workshops discussed in this study were scheduled as a learning opportunity for the students, so student learning was an anticipated outcome. Several participants, however, highlighted additional learning opportunities and benefits that the ITTLL provided for students.

During one of the workshops, the internet went out just as the presentation was about to start. Students had the opportunity to see the ITTLL presenter troubleshoot the problem, and then when it could not be solved immediately, resort to her backup plan to keep the presentation on track. During the interview process, the instructor that was present for that workshop mentioned this incident and discussed how helpful it was for students to see that very real moment, and how to handle it if something does go wrong. She stated

Even though the situation was not ideal, it was important for all of us, particularly the students, to see the reality of using technology in the classroom. It will not always go smoothly, but knowing how to troubleshoot or resort to Plan B in order to keep the lesson on track is what is important.

Another participant uses a technology-based assignment with her students every semester and wanted to change it. She contacted the ITTLL, explained the assignment and situation, and

requested a workshop for her students that presented them with a variety of different tools to choose from to complete the assignment. The students had the opportunity to try out a variety of tools, even if they did not end up using all of them for the assignment, and use higher order thinking skills to evaluate each one. The participant mentioned that this was an important skill for students to practice, as there are so many tools available to teachers and one always has to evaluate the tool or resource to make sure it is right for their students and/or situation. She said

My students are in education and work with students, but do not spend their time in a traditional classroom. They deal with different trials than traditional classroom teachers, and because many professional development opportunities are geared solely to classroom teachers, my students tend to get left out. Having the opportunity to provide them with technology training that meets their, sometimes very specific needs, means a lot.

Similarly, another participant, who scheduled a workshop that provided an overview of content/specific tools for an elementary writing course, liked that students were not only presented with a list of practical tools, but also ways to find relevant tools in the future.

Several of the participants mentioned that having the lab as a resource for students and providing them with supplemental learning opportunities like the weekly open lab hours was an additional benefit to students. One participant, who suggested her students take advantage of the open lab hours after participating in the workshop, said that the students who did take advantage of this additional service performed much better on their lesson plan assignment than those who did not because they had opportunities to explore the tools and then ask additional questions. Another participant, who constantly promoted the open lab hours to her students to help with one of their technology-based assignments, said that the students who did utilize this additional opportunity seemed to have a better grasp of the technology tool because their assignments and use of the tool was more comprehensive than some of their classmates.

Table 2 shows the correlation between the workshops in which the participants took part along with the artifacts submitted for each with the corresponding themes. Detailed outlines of the workshops can be found in Appendix E.

Table 2

*Correlation Between Workshops, Artifacts, and Themes*

Workshop	Artifact	Corresponding Themes
<i>Secondary Methods Seminars Part II: TPACK, BYOD, &amp; Flipped Learning</i> (Appendix E:1)	Student lesson plans that demonstrated use of some of the flipped learning tools demonstrated during the workshop	Benefits to students Personalized learning is a necessity
<i>Building a Portfolio (Web Design)</i> (Appendix E:2)	Revised student assignment instructions for an elementary methods class.	Impact on teaching Benefits to students Personalized learning is a necessity
<i>Using Technology to Teach Writing</i> (Appendix E:3)	Revised syllabus for elementary methods course	Benefits to students Impact on teaching Personalized learning is a necessity
<i>Using Smartboards in Secondary Science</i> (Appendix E:4)	Participant (faculty) lesson plan for secondary science which demonstrated new uses of the Smartboard	Unexpected learning occurs Impact on teaching Personalized learning is a necessity
<i>Data and Accountability</i> (Appendix E:5)	Student assignment that demonstrated knowledge of the workshop content.	Unexpected learning occurs Benefits to students Personalized learning is a necessity

**Summary**

In this chapter, data collection and analysis procedures were described. While coding the data obtained from the semi-structured interviews and artifacts, several themes emerged including a) unexpected learning occurs; b) on-demand, personalized development is a necessity;

c) need for extended opportunities for learning; c) changes in teaching; and d) benefits to students. These themes will be further discussed in Chapter V, along with conclusions, implications, and recommendations for future research.

## CHAPTER V:

### DISCUSSION

#### **Introduction**

The purpose of this study was to evaluate the impact of a personalized, pedagogy-based professional development model on technology usage by teacher educators. The findings of this study revealed five major themes: a) unexpected learning occurs; b) on-demand, personalized professional development is a necessity; c) need for extended opportunities for learning; d) changes in teaching; and e) benefits to students. The following discussion will provide a discussion of the findings by theme.

#### **Theme 1: Unexpected Learning Occurs**

The first theme that emerged from the data is the idea that unexpected learning sometimes occurs during formalized learning experiences. Unlike the other two, this concept was not one on which this model was conceptualized; however, it was one that emerged during data analysis. During the interviews, participants mentioned that, although they scheduled these workshops as learning experiences for their students, they ended up learning something as well. This learning varied from individual to individual, but in many cases, the participants learned something outside of the intended learning outcome. The researcher interpreted this as a form of informal or incidental learning – a type of learning that often occurs outside a formalized learning experience (Levenberg & Caspi, 2010; Little, 2006; Marsick & Watkins, 2011; Marsick & Watkins, 1990). Marsick and Watkins (2011) cited their 1990 article stating

Incidental learning is defined as a byproduct of some other activity, such as task accomplishment, interpersonal interaction, sensing the organizational culture, trial-and-error experimentation, or even formal learning. (p. 12)

Levenberg and Caspi (2010) asserted that informal or incidental learning is difficult to assess because “it may depend on the conception one holds of what learning is” (p. 324). They cited Martin and Ramsden (1987); Martan, Dall’Alba, and Beaty (1993); Marton and Saljo; (1976) and Saljo (1979) in describing six different conceptions on which one may define learning: “(1) increasing one’s knowledge, (2) memorizing and reproducing, (3) applying, (4) understanding, (5) seeing something in a different way, and (6) changing as a person.” (p. 324). Levenberg and Caspi (2010) stated that learning only occurs when the participant believes it meets one of these conceptions, which makes it difficult to assess and, in turn, makes it difficult to defend as a type of learning.

In this study, participants all self-reported their learning during the workshops or learning experience and all fell into at least one aspect of learning as mentioned by Levenberg and Caspi. The first participant mentioned that an internet issue during the workshop, and the resulting on-the-spot adaptation by facilitator showed her the importance of fully understanding the tool to the point that, if something goes wrong, it can be fixed on the spot. According to the conceptions outlined by Levenberg and Caspi, this would fall under the understanding and possibly application aspect of learning. Another participant, who participated in a SmartBoard workshop, stated that she began to see the tool and its usage completely differently. This would fall under the concept of seeing something in a different way. Two additional participants mentioned that they learned how to better apply the tool discussed, which would also fall into the application category. The final participant mentioned a “change in person” when she discussed how

participating made her realize that she did not know as much as she thought she did and was inspired to learn more about technology and resources to help her students.

Given that all participants had a perceived sense of learning and most of the learning experiences were not part of the intended learning outcomes but were a byproduct of the formal learning experience, this fits Marsick and Watkins definition of informal or incidental learning as highlighted above. Incidental learning, although not as structured or planned as formal learning, is still an important part of teacher's professional development. In fact, researchers have asserted that informal learning can and should occur as part of formalized professional development for teachers. Little (2006) quoted Knapp (2003) in stating that "professional development encompasses 'the full range of activities, formal and informal, that engage teachers or administrators in new learning about their professional practice' (Knapp, 2003, p. 112)" (p. 3).

This concept was not part of the original framework for this study or the development of the ITTLL; however, it aligns with one of the theories that serve as the foundation for this study, the constructivist theory. The constructivist theory asserts that knowledge is constructed based on personal experiences (Hein, 1991). Anderson, Lucas, and Ginns (2003) stated

The human constructivist view of learning recognizes that individuals' present conceptions are products of diverse personal experiences, observations of objects and events, culture, language, and teachers' explanations. Such conceptions are not necessarily consistent with academic knowledge structures. (p. 180)

During these experiences, participants constructed knowledge using their prior experiences and the experiences and knowledge obtained during the workshop. For example, the participant who participated in the SmartBoard workshop said that after the workshop she saw the tool in a completely different way and defended her statement by submitting a lesson plan in which she demonstrated her new knowledge of the SmartBoard and its capabilities. This learning experience fits in the constructivist paradigm because this particular instructor used her pre-

existing knowledge to help her construct new knowledge based on her experiences. Because this learning was not part of the original learning outcome, it also aligns with the concept of informal and incidental learning.

## **Theme 2: On-demand, Personalized Professional Development is a Necessity**

A second theme that emerged from the data is the idea that professional development should be on-demand and personalized. One complaint of traditional professional development is that it is often a “one-size fits all” type experience and not necessarily relevant to all participants (Georgina & Hosford, 2009; Howland & Wedman, 2004; Lucillo, 2009; Taylor, Yates, Meyer, & Kinsella, 2011; Trehearn, 2010). When developing the ITTLL, this idea was taken into account; and although some generic, pre-planned workshops were offered, the developers wanted to offer more personalized experiences so that each experience met the needs of the learners.

All participants in this study took advantage of the personalized workshop/consultation service with the ITTLL and all specifically mentioned this service during their interviews. This aligns with the professional development literature, which asserts that, like traditional learning, professional development should be personalized to be effective (Georgina & Hosford, 2009; Howland & Wedman, 2004; Taylor, Yates, Meyer, & Kinsella, 2011; Trehearn, 2010). Lucillo (2009) asserted that “teachers know best what they need in the classroom and the more they are involved in implementing professional development, the more effective it will be” (p. 64).

One of the participants stated,

Being able to contact you to set up a personalized workshop to meet our needs and the needs of our students was invaluable. As instructors, we are familiar with the content and their (the students’) current situation in the schools, so being able to work with you to tailor the workshop to make it practical and useful for them was great and something you don’t often get with PD opportunities.

Several other participants mentioned that they really enjoyed being able to adapt the curriculum of the learning opportunity to match the, sometimes specific, needs of their students. This concept of personalized learning aligns with the constructivist theory, which suggests that learners should be active participants in the learning process, and that learners have varied needs and instruction should be individualized to meet those needs (Hein, 1991; Li, 2001).

### **Theme 3: Extended Learning Opportunities for Participants**

A third theme that emerged from the data is the idea that the participants wanted extended time for the topics taught and access to the ITTLL. This fits into the idea of ongoing professional development. Another complaint of traditional professional development is that it is often situated in a one-day, single session type format with no opportunity for follow-up. While the traditional workshop format works for some topics, technology often requires more time to explore and reflect, making it less conducive to this format. This idea aligns with the transformative learning theory which states that some skills, in this case technology integration, requires a transformation in one's frame of reference (Meizrow, 1997)

During the interviews, participants were asked to describe any impact, aside from technology, that the ITTLL had on their teaching. Several participants, all of who claimed to be technology novices, said that knowing that the ITTLL was there encouraged them to utilize technology. One participant summed it up well when she said,

Before participating in this workshop, I was terrified to use technology. I didn't know where to even begin and was afraid to try something new and fail. Knowing that we have somewhere to go and an expert to talk to made me much more comfortable with trying new tools because I knew, if something happened or I needed any help, you were there.

Another participant, who claimed to be tech-savvy, had a similar response, but in the context of her students. She said that she now expected more out of her students because she knew that they had this resource at their disposal. A third participant said that she learned that

she still had a lot to learn, but was comforted in the fact that this resource was in place if she needed it.

Although the ITTLL did offer participants opportunities to continue learning through optional open lab hours, several participants said that the one thing that they would change would be to allow for more opportunities for extended learning. One participant had an interesting suggestion in that the ITTLL should host a showcase or a symposium of sorts for faculty, staff, and students to demonstrate their learning. Another participant said that she would love to work with the ITTLL to create an integrated unit that involves technology. A third participant, who actually scheduled a series of workshops for her students, said that the continued unit, of sorts, really seemed to help her students internalize the information and ask questions the following week, if needed.

This concept is also supported by professional development literature. Research states that sustained professional development may be the key to effective professional development. (Bruce, Esmonde, Ross, Dookie, & Beatty, 2010; Chappuis, Chappuis, & Stiggins 2009; Guskey & Yoon, 2009; Rust, 2009; Trehearn, 2010; Wilson & Berne, 1999). In fact, the National Staff Development Council includes this idea in their definition of professional development. They define professional development as a “comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (NSDC, 2015).

#### **Theme 4: Changes in Teaching**

A fourth theme that emerged from the data is the idea that learning experiences such as this inspire changes in teaching. During the interview, the participants, who were also the instructors during these learning experiences, said that the training opportunity, which was originally scheduled for their students, also had an impact on their teaching. One participant,

who scheduled a SmartBoard workshop for her secondary science students, said that she was inspired to utilize the interactive features of the SmartBoard in her lessons and encourage her students to do the same. Another instructor, who wanted the ITTLL to help her find new tools for her students' assignments, said that she was able to take those tools and implement them in her own lessons. Two additional participants said that they were more encouraged to utilize technology knowing that there was a support system in place if they needed it and another participant said that she changed the expectations for her students based on the same premise.

This concept supports the professional development literature, which states that teachers are more likely to utilize the content of the professional development opportunity if they play a part in its development (Lucillo, 2009). Even though the participants were not the intended audience for some of the learning experiences, by participating in the development and implementation of the material, they reported that they learned something from the experience – even if it was not the intended outcome. This also supports the principle of the professional development framework that states that learning should be personalized to meet the needs of the intended or, in this case, unintended audience.

This also aligns with several aspects of the constructivist paradigm, one of the theories on which this framework was designed. First, the constructivist theory suggests that learners should be an active, rather than a passive, part of the learning process. In this situation, all of the instructors were active participants alongside their students, which enhanced their learning experience. Secondly, the constructivist paradigm asserts that knowledge is constructed using participants' prior experiences combined with new experiences in learning. During these workshops, the participants were aware of their prior knowledge and experiences and were able to use the experiences occurring during this workshop to build new experiences and knowledge.

Finally, the constructivist theory also states that learning opportunities should be personalized to meet the needs of the participants. In this situation, the learned experiences were customized for each participant and situated within their preferred context. Research shows that this enhances not only the learning experiences but the application of the concept following (Hein, 1991; Li, 2001).

### **Theme 5: Benefits to Students**

A fifth theme that emerged from the data is the notion that students also benefit from this type of professional development. Since the students were the intended recipients of the learning experience, knowledge acquisition was expected; however, based on participants' responses and corresponding artifacts, the students not only acquired the new information, but did so to the point that they could turn around and apply it in their own lessons.

One participant mentioned that her students acquired troubleshooting skills when there was an internet outage during the presentation and the facilitator had to work through the problem in front of the students. Another participant stated that her students had to utilize higher order thinking skills to analyze, compare, and choose the appropriate technology tool from a list provided by the facilitator. A third participant said that her students learned appropriate search skills to find additional resources during one of the activities in the workshop. Some of the artifacts – at least the ones that involved student assignments – also reflected this transformation. In each of these situations, the students experienced a transformation, although not always a large one, in how they look at, think about and/or interact with technology. This idea aligns with the transformative learning theory, which asserts that some types of learning require a transformation in thoughts, feelings, and actions (Meizrow, 1997).

According to the Howland and Wedman (2004), to fully experience transformative learning with technology, one must move through the steps of the Technology Learning Cycle (TLC). The TLC was developed by Howland and Wedman and demonstrates the process in which one moves through when learning technology. While it has several steps, the process asserts the importance for time for exploration and reflection. In each learning experience, the process asserts the importance for time for exploration and reflection. In each learning experience, participants were allotted time for hands-on exploration of the tool. This allowed them time to explore the tool, troubleshoot, if necessary, and ask questions as needed. Students also had the opportunity to reflect on their learning and internalize the information in order to effectively apply it. Table 3 shows how each of these themes align with the conceptual and professional development framework used to develop the lab as well as serve as the foundation of this study.

Table 3

*Theme Alignment with Conceptual and Professional Development Framework*

Theme	Conceptual Framework Alignment	Professional Development Framework Alignment
Unexpected learning occurs	Constructivist Theory – <i>knowledge is constructed based on personal experiences</i>	Learning opportunities should involve direct teaching, active learning, and time for exploration and reflection.
Personalized professional development is a necessity	Constructivist theory – <i>learners have varied needs and instruction should be individualized to meet those needs</i> ; Adult Learning Theory – <i>adults prefer to learn things that are relevant to them</i>	Professional development should be personalized to meet the needs of the intended participants
Need for extended learning opportunities	Transformative Learning Theory – <i>some topics and skills require additional time for exploration and reflection to transform one’s thoughts, actions, and habits.</i>	Learning opportunities should involve direct teaching, active learning, and time for exploration and reflection.
Changes in teaching	Constructivist Theory – <i>learners have varied needs and instruction should be individualized to meet those needs</i> ; <i>learners should be active participants in the learning process</i>	Professional development should be personalized to meet the needs of the intended participants
Benefits to students	Transformative theory – <i>some topics and skills require additional time for exploration and reflection to transform one’s thoughts, actions, and habits.</i>	Learning opportunities should involve direct teaching, active learning, and time for exploration and reflection.

**Implications for Education**

Technology is an integral part of education, and therefore, an important part of teacher education programs (Crook et al., 2010; Gibson & Weir, 2010; Tondeur et al., 2012). Research shows that, in many cases, teacher education faculty are not comfortable enough with technology to model effective integration for their students (King et al., 2013; Russell, Bebell, O’Dwyer

&O'Connor, 2005). This means that students are going into their field experiences ill-equipped to use technology for teaching and learning.

While there are professional development models in place, they often do not meet the varied and sometimes specific needs of these faculty members, leaving faculty members on their own to learn new technology tools and strategies (Trehearn, 2010). To address this professional development gap, the researcher proposed a personalized, pedagogy-based professional development model that provides students, faculty, and staff with timely, on-demand, personalized, pedagogy-based technology training, resources, and support. The purpose of this study was to evaluate this model and its impact on technology use in teacher education.

The findings of this study suggest that a professional development model such as this does have an impact on technology usage in teacher education programs. The results of this study will be used to not only enhance this particular model, but hopefully, guide the development of similar models in other settings. Also, although this professional development model was developed for teachers in a higher education setting, these ideas and principles could be applied to a K-12 setting.

### **Recommendations for Future Research**

Instructional technology is a field that is constantly changing, and the associated professional development research should adapt to reflect these changes. Although technology professional development literature and models have come a long way, there are still gaps in the literature that must be addressed, especially in the higher education sector.

Although this particular study yielded positive results, there were still some limitations that should be addressed in future research. The first limitation was time. This study was relatively short, and it would be interesting to see the results from a longitudinal study with a

similar framework. Also, this study captured the model in its beginning stages. For the first semester, especially, participation was low, solely because people did not know about the ITTLL. Over time, more people heard about the lab, and participation increased. Because of this, a study after the ITTLL (or a similar model) is more established and could be fruitful. A second recommendation would be to recreate this study, but provide users with a pre-test or assessment at the beginning of the study and one after the workshop to fully measure the success (or failure) of this model. The measurement of success was based solely on participant responses and artifacts, so the results could be different with a pre- and post-test. A third recommendation would be to extend the participant criteria to include those that only participated in one professional development or even potential participants that did not participate at all to find out why either occurred.

Future research should also continue to explore barriers to successful professional development and continue to define best practices so that professional development accomplishes its purpose, especially when it comes to technology professional development. Effective evaluation tools are also severely lacking when it comes to professional development. Having a universal tool to evaluate the effectiveness of a professional development program could greatly enhance the planning and implementation of sound programs and models.

### **Conclusion**

This study evaluated the impact of a personalized, pedagogy-based professional development model on the usage of technology in a teacher education program. Frequent participants of this model were interviewed to provide the researcher some insight into their experiences with the lab, best practices, and the professional development's impact on their technology usage. Participants were asked to provide artifacts to demonstrate their increased

technology integration and the artifacts did indicate changes in teaching and use of technology. Based on the findings, this model did have an impact on technology usage in the teacher education classroom – not only with the teachers, but with the students as well. Artifacts and participant discussion of students' improvement in class work supported this claim.

All data were coded using open coding and focused coding methods, and through analysis the following themes emerged: a) unexpected learning occurs; b) on-demand, personalized professional development a necessity; c) extended learning opportunities for participants; d) changes in teaching; and e) benefits to students. The following discussion will provide a discussion of the findings by theme. These themes align with professional development research, research on instructional technology, and the framework on which this model was developed. The hope is that this study helps improve on the existing model as well as aide in the creation of future successful professional development models.

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## APPENDIX A

### Interview Protocol for Participating Faculty

#### Evaluation of Professional Development Opportunities through ITTLL – For Participants

Department:

Program:

Role/Title:

Date:

#### INTRODUCTION

Thank you for taking the time to do this interview with me today. Before we begin the interview, let me start by providing some background information about this project. As you may know, we began the Innovative Technology, Teaching, and Learning Lab in Fall 2013 to provide resources and learning opportunities for faculty, staff, and students in hopes of promoting effective technology integration in the classroom. Services included open lab hours, tool trainings, tool check-out, workshops, personal consultations, and class visits. To be clear, this does not include other experiences you may have had with professional development in technology with other areas on campus such as Technology Support Services, Faculty Resources Center, or Center for Instructional Technology to name a few. For the purposes of this interview, I would like you to focus specifically on your experience(s) with the ITTLL.

As you know, we have already conducted a survey to obtain some information on the usage of the lab; however, the final component of the evaluation is interviews with some of the participants. The purpose of the interview is to learn about your experience with the ITTLL and any impact it may have had on your integration of technology in the classroom. The results from these interviews, along with the survey, will help the College of Education and the Innovative Technology, Teaching, and Learning Lab make important programmatic decisions to improve the professional development of teachers and enhance technology use in the classroom.

Everything you share with me in this interview will be kept confidential, and your name will not appear in any reporting of the evaluation results. If we pull any quotes from this interview, your name will not be attached to them. This interview will take about 45 to 60 minutes of your time. I would like to record this interview to be sure that I am capturing your thoughts accurately – would that be okay? The recording will only be used to write up my notes.

## EXPERIENCE

Let's begin by talking about your experience with the Innovative Technology, Teaching, and Learning Lab. (*Hein, 1991*)

- 1.) To begin, could you describe your experience with the ITTLL? [PROBE for a detailed description]
  - a. When did you participate? (Approximate start and end dates)
  - b. What was the topic or focus of the service?
  - c. What did your participation consist of?
  - d. How would you rate your level of involvement and engagement?
  - e. [Anything else noted by the teacher can go here]
- 2.) Participation
  - a. What was your favorite part about participating?
  - b. Were there other aspects of the service that worked particularly well?
  - c. What was your least favorite part about participating?
  - d. Were there other aspects of the service that did not work out so well?

[If not mentioned above, PROBE for: facilitation, content, involvement of and interaction with peers, activities, resources]

- 3.) How did this format compare to other formats of professional development in which you have participated? (*Hein, 1991; Meizrow, 1997*)
  - a. What were the strengths or benefits of this format for professional development?
  - b. What were the weaknesses or drawbacks of this format for professional development?
- 4.) Overall, how well would you say the ITTLL experience met your professional development needs? Why? (PROBE: Time, place, learning style)
- 5.) Are there any ways the ITTLL services could be improved that you haven't already mentioned?

## IMPACT

The next set of questions has to do with ways that your experience in ITTLL may have impacted your teaching. Once again, let's begin by talking about your experience. (*King, 2002*)

- 6.) Has your experience with the ITTLL had an impact on the way that you integrate technology in your classes?
  - a. IF YES, how? [PROBE for specific examples]
  - b. What are some of the ways that you and your students have used technology in your classes this school year?
  - c. How, if at all, is this different from how you and your students would have used (or not used) technology before you utilized the ITTLL service?

- d. IF NO, why not? [PROBE: How did the professional development fall short?]
- 7.) Has your experience with the ITTLL impacted your teaching in any other ways besides how you use technology?
- a. IF YES, how? [PROBE: Content, pedagogy, classroom organization, etc.]
  - b. Are there any aspects of integrating technology that are still a challenge for you?
    - i. IF YES: Which aspects?
    - ii. [IF UNSURE] Were these aspects addressed in your service?
    - iii. What kinds of resources or support would help you improve in those areas?
  - c. What could the ITTLL do, if anything, to have a greater impact on teachers' integration of technology in the classroom?

#### FINAL THOUGHTS

- 8.) Do you have any additional thoughts or recommendations that you would like to share about the ITTLL or professional development in general? Thank you!

## APPENDIX B

### Consent Form

#### UNIVERSITY OF ALABAMA HUMAN RESEARCH PROTECTION PROGRAM

#### CONSENT FORM FOR NONMEDICAL INTERVIEW STUDY

#### UNIVERSITY OF ALABAMA

#### Individual's Consent to be in a Research Study

You are being asked to be in a research study. This study is called “Evaluating the Effectiveness of a Pedagogy-Based Technology Professional Development Model in Teacher Education Programs”. This study is being done by Maegan Slaten Biehn and Dr. Margaret Rice. Maegan is a doctoral student and an adjunct instructor in the College of Education at the University of Alabama. Dr. Margaret Rice is Maegan’s dissertation chair, and an Associate Professor in the College of Education at the University of Alabama.

#### **I. What is this study about?**

From Fall 2014 – Spring 2015, the University of Alabama College of Education implemented a new professional development model within the newly minted Innovative Technology, Teaching, and Learning Lab (ITTL Lab) for faculty, staff, and students. During its tenure, participants attended workshops, open lab sessions, and personal consultations – all of which were geared toward using technology in the classroom. Research has shown that traditional professional development opportunities often do not aide in encouraging technology usage in the teacher education classroom, and this new model aimed to change that. The direct purpose of this study is to evaluate the effectiveness of the ITTL Lab, and its impact on technology use by teacher educators in the teacher preparation program.

#### **II. Why is this study important—What good will the results do?**

The findings may help aid in future planning for technology-based professional development models such as the ITTL Lab.

#### **III. Why have I been asked to take part in this study?**

You participated in two or more workshops or activities with the Innovative Technology, Teaching, and Learning Lab in the College of Education at the University of Alabama.

#### **IV. How many other people will be in this study?**

The investigator hopes to interview 5-7 people from the College of Education over the next month.

**V. What will I be asked to do in this study?**

If you agree to be in this study, Mrs. Biehn will interview you in your office or a place of your own choosing about your experiences with the ITTL Lab. The interviewer would like to tape record the interview to be sure that all your words are captured accurately. However, if you do not want to be taped, simply tell the interviewer, who will then take handwritten notes.

**VI. How much time will I spend being in this study?**

The interview should last about 45-60 minutes, depending on how much information about your experiences you choose to share.

**Will being in this study cost me anything? The**

only cost to you from this study is your time. **Will I**

**be compensated for being in this study?**

You will not receive any compensation for your participation in this study.

**VII. What are the risks (problems or dangers) from being in this study?**

There are no risks associated with this study.

**VIII. What are the benefits of being in this study?**

There are no direct benefits to you except for the possibility of highlighting your strengths and weakness in using technology in your classroom. You may also feel good about knowing that you have helped researchers learn how to better help teacher educators improve their knowledge of how to integrate technology in the teacher education program.

**IX. How will my privacy be protected?**

You are free to decide where I will visit you so we can talk without being overheard. I will visit you in the privacy of your office or in another place that is convenient for you. Also, your name and email will be removed from all data resulting from this study.

**X. How will my confidentiality be protected?**

The only place where your name appears in connection with this study is on this informed consent. The consent forms will be scanned into a secure and encrypted digital database and then destroyed. When I record the interview, I will not use your name, so no one will know who you are on the tape. Once back in the office, Mrs. Biehn will listen to the tape and type out the interview. When the interviews have been typed, the audio files will be destroyed. This should occur within one month of the interview. You may also refuse to be audiotaped, in which case the interviewer will take handwritten notes.

I will write research articles on this study but participants will be identified only as "Participant 1, 2, 3...". No one will be able to recognize you.

**XI. What are the alternatives to being in this study?**

The only alternative is not to participate.

**XII. What are my rights as a participant?**

Being in this study is totally voluntary. It is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time. Not participating or stopping participation will have no effect on your relationships with the University of Alabama, the College of Educator, or the Teacher Education program.

The University of Alabama Institutional Review Board is a committee that looks out for the ethical treatment of people in research studies. They may review the study records if they wish. This is to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

**XIII. Who do I call if I have questions or problems?**

If you have questions about this study right now, please ask them. If you have questions later on, please email Maegan Biehn at [slate005@crimson.ua.edu](mailto:slate005@crimson.ua.edu) or Dr. Margaret Rice at [mrice@bamaed.ua.edu](mailto:mrice@bamaed.ua.edu) If you have questions or complaints about your rights as a research participant, call Ms. Tanta Myles, the Research Compliance Officer of the University at 205-348-8461 or toll-free at 1-877-820-3066.

You may also ask questions, make a suggestion, or file complaints and concerns through the IRB Outreach Website at [http://osp.ua.edu/site/PRCO\\_Welcome.html](http://osp.ua.edu/site/PRCO_Welcome.html) After you participate, you are encouraged to complete the survey for research participants that is online there, or you may ask Mrs. Biehn for a copy of it. You may also e-mail us at [participantoutreach@bama.ua.edu](mailto:participantoutreach@bama.ua.edu).

I have read this consent form. I have had a chance to ask questions.

Please check: \_\_\_\_\_ yes \_\_\_\_\_no

I agree for my interview to be audio recorded for transcription purposes.

Please check: \_\_\_\_\_ yes \_\_\_\_\_no

---

Signature of Research Participant

Date

---

Signature of Investigator

Date

## APPENDIX C

### IRB Approval



Office for Research  
Institutional Review Board for the  
Protection of Human Subjects

September 2, 2015

Maegan Slaten  
College of Education  
Box 870302

Re: IRB#: 15-OR-265 "Evaluating the Effectiveness of a Pedagogy-Based  
Technology Professional Development Model in Teacher Preparation Programs"

Dear Ms. Slaten:

The University of Alabama Institutional Review Board has granted approval for  
your proposed research.

Your application has been given expedited approval according to 45 CFR part  
46. Approval has been given under expedited review category 7 as outlined  
below:

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

Your application will expire on September 1, 2016. If your research will  
continue beyond this date, complete the relevant portions of the IRB Renewal  
Application. If you wish to modify the application, complete the Modification of  
an Approved Protocol Form. Changes in this study cannot be initiated without  
IRB approval, except when necessary to eliminate apparent immediate hazards to  
participants. When the study closes, complete the appropriate portions of the  
IRB Request for Study Closure Form.

Please use reproductions of the IRB approved stamped consent forms to obtain  
consent from your participants.

Should you need to submit any further correspondence regarding this proposal,  
please include the above application number.

Good luck with your research.

Sincerely,



Stuart Usdan, PhD  
Chair, Non-Medical Institutional Review Board



350 Rose Administration Building  
Box 870127  
Tuscaloosa, Alabama 35487-0127  
(205) 348-8461  
fax (205) 348-7189  
toll free (877) 820-3066

## APPENDIX D

### Workshop Descriptions

- I. *Using SmartBoards in Science Education* - In this session, secondary science students were presented with a variety of ways to utilize the Smartboard to enhance teaching and learning.
- II. *Giving Engaging Presentations Using Technology* – This session, designed for students in the Multiple Abilities Program (MAP), covered presentation tips, tricks, and tools.
- III. *TPACK’s Impact on BYOD Programs* – This workshop, presented to faculty and staff in the College of Education, discussed how TPACK plays an important role in BYOD programs, and tips and tricks for implementing a successful BYOD program.
- IV. *Smartboard 101* – An introduction to the SmartBoard for pre-service teachers
- V. *Data and Accountability* – Part I of a series of workshops for master’s level students. The first workshop discussed how technology can help them collect, manage and analyze data.
- VI. *Engaging Parents (Web Design)* – The second part of this series covered how to communicate the data obtained using the methods described in Part I to parents and stakeholders. This session also included a portion on basic web design.
- VII. *Using Technology in Elementary Social Studies* – This session presented a variety of tools that can be used to teach social studies at the elementary level.
- VIII. *Web Design Workshop: Building a Portfolio* - This workshop was for pre-service teachers at who were enrolled in a Classroom Management course. During this workshop, we discussed how to set up an online portfolio using one of various free online website builders
- IX. *Using Technology in the Elementary Classroom*: This workshop was designed for a Freshman Learning Community comprised of students who are interested in becoming elementary teachers.
- X. *Chromebooks in the Classroom* – A workshop for faculty and staff on the ways to use HP’s Google Chromebook in the classroom setting.
- XI. *iPadU* – A workshop for COE faculty and staff on how to use apps for teaching and learning in the college classroom.
- XII. *Open House* – A “petting zoo” of tools and resources offered by the lab. Participants were able to come to lab and learn about the tools and lab offerings.
- XIII. *Secondary Methods Seminars Part I: Introducing Technology Resources in COE* – An overview of resources and tools available to students in the College of Education
- XIV. *Secondary Methods Seminars Part II: TPACK, BYOD, & Flipped Learning* – This workshop was for secondary interns to explain some of the current trends in education, and how technology plays a role.

- XV. *Secondary Methods Seminars Part III: TPACK in Action* - A continuation of the prior workshop, participants were shown examples of the concepts in action, and given ways to put their knowledge into action.
- XVI. *Creating Charts and Displaying Data with Technology* – Secondary social studies students were presented with technology tools and resources to create dynamic charts to display data.
- XVII. *Using Technology to Teach Writing* – A workshop for students enrolled in an elementary writing course that demonstrated how to use technology in every step of the writing process
- XVIII. *Technology Resources for Secondary Educators* – A workshop with an overview of current technology tools and resources available for secondary educators. Topics included classroom management, assessment, teaching and learning, and ways to find and manage resources.
- XIX. *Digital Storytelling* – A presentation of digital storytelling tools and resources to students in the elementary education teacher education program
- XX. *Emerging Technologies* – A workshop for students interested in joining the teacher education program on emerging tools and resources.
- XXI. *Using Technology to Create Effective Poster Presentations* – A workshop presented in collaboration with the College of Education library to show graduate students how to use technology to create effective poster presentations for conferences.

## APPENDIX E

### Participant Workshop Lesson Plans

#### **Workshop 1: Secondary Methods Seminars Part II: TPACK, BYOD, & Flipped Learning**

**Objective:** This workshop, geared to secondary students who were in their methods block in the education program, aimed to introduce the ideas of TPACK, BYOD, and Flipped Learning  
**Procedures:**

- I. Introduction
  - a. Review agenda
  - b. How many devices do you currently have on your person? (Poll Everywhere)
- II. BYOD (Bring Your Own Device)
  - a. What is it?
  - b. What does a successful BYOD program look like? (Video)
    - i. Poll: What did they do well?
    - ii. Poll: What are some issues that may arise from a BYOD program?
  - c. How do we implement it?
    - i. Steps for Developing an Effective BYOD Program
      1. Decide whether or not a BYOD program is right for you
      2. Consider stakeholders
      3. Prepare to implement
      4. Implementation
      5. Remember to include TPACK!
  - d. What is TPACK and how does it impact the planning of an effective BYOD program?
- III. TPACK
  - a. What is it?
  - b. Examples of when TPACK would be used in BYOD planning process:
    - i. Choosing devices
    - ii. Developing a curriculum
    - iii. Software Selection
  - c. Using TPACK to solve issues with BYOD
  - d. Sample Tool Chart
- IV. Flipped Learning
  - a. What is it? (Kahoot Game)
  - b. What does flipped learning look like? (Video)
- V. How does it all fit together?
  - a. Important to utilize TPACK when planning for BYOD or Flipped Learning
- VI. Wrap up discussion

- a. How did I use both TPACK and BYOD in today's presentation?
- b. How could I have turned this into a flipped learning experience.
- c. How can the ITLL help you develop TPACK and plan for BYOD or Flipped Learning (discussion of services)

Formative Assessment: Polls, discussions, Kahoot game

Summative Assessment: Students were expected to integrate elements of these types of learning in lesson plan assignments. These assignments were graded by instructors.

### **Workshop 2: Building a Portfolio (Web Design)**

Objective: This workshop, geared to secondary students who were in their methods block in the education program, aimed to introduce the ideas of TPACK, BYOD, and Flipped Learning

Procedures:

- I. Decide which "builder" you want to use
  - a. Wix
  - b. Webs
  - c. Google Sites
  - d. Square Space
  - e. Weebly
  - f. PBWiki
  - g. Wikispaces
- II. Decide what you want the purpose of your site to be
  - a. Online portfolio
  - b. Classroom website
  - c. Research website
  - d. Virtual tour
  - e. Online activities for students
  - f. And more...
- III. Choose a Template
- IV. Put in your information
- V. Publish your site
- VI. Let's start building (Exploration)
  - a. Review of each web design tool
  - b. Discussion of web design project expectations
  - c. Exploration time

Formative Assessment: Discussions

Summative Assessment: Students were expected to use this knowledge to create a web portfolio. These assignments were graded by instructors.

### **Workshop 3: Using Technology to teach writing**

Objective: This workshop was for pre-service, who are currently enrolled in a teaching writing class to show the various technology tools that they can use when teaching writing.

Procedures:

- I. Introduction
- II. Step 1: Pre-writing
  - a. Brainstorm/Organizing
    - i. Cacao
    - ii. Bubbl.us
    - iii. Popplet
    - iv. Mind Meister
  - b. Prompts
    - i. Toasted cheese
    - ii. Pinball
    - iii. What if Genie
    - iv. Story Starter
    - v. Things to Think About
    - vi. Imagination Prompt Generator
    - vii. Plinky
    - viii. Scholastic Story Starter
    - ix. Other
  - c. Other
    - i. Comic Book Creators
      1. ZimmerTwins
      2. Pixton
      3. Make Beliefs Comix
    - ii. Digital Storytelling
      1. Little Bird Tales
      2. Disney Story Book Creators
      3. Picture Book Creator
      4. My Story Maker
      5. Storybird
      6. Zooburst
    - iii. Online publishing
      1. ISSU
      2. Docstoc
      3. Flipsnack
      4. Mixbook
      5. TikaTok
      6. EPubBud
      7. Lulu

Formative Assessment: Questions throughout the training and opportunity to explore  
Summative Assessment: Students were expected to use some of these tools in their lesson plans and assignments for this particular course. All were graded by the instructor.

#### **Workshop 4: Smartboard in Science Education**

Objective: This workshop was for pre-service, who are currently enrolled in a teaching writing class to show the various technology tools that they can use when teaching writing.

Procedures:

- I. Introduction
- II. Basic Smartboard Tools
  - a. Writing
  - b. Erasing
  - c. Drawing Shapes
  - d. Typing
  - e. Handwriting to Text
  - f. Changing colors and styles
- III. Interactivity
  - a. Built in games
  - b. Adding graphics
  - c. Smart Exchange
- IV. Science Education
  - a. Examples of built in resources
  - b. Examples of resources on the web
- V. Exploration

Formative Assessment: Questions throughout the training and opportunity to explore  
Summative Assessment: Students were expected to use some of these tools in their lesson plans and assignments for this particular course. All were graded by the instructor.

#### **Workshop 5: Data and Accountability**

Objective: This workshop was for master's level students to discuss tools that helped them gather and share data.

Procedures:

- I. Introduction/Rationale
- II. Agenda
  - a. Tools to Gather Data
  - b. Exploration/Mini Assignment
  - c. Tools to organize and share data (Excel, Powerpoint, alternatives)
  - d. Exploration/Mini Assignment
- III. Introduction
  - a. Why do you need data?
  - b. Types of Data
  - c. Data sources

- d. Introduction to tools: Qualtrics and SurveyMonkey
- IV. Tools
  - a. Qualtrics
  - b. SurveyMonkey
  - c. Alternatives
- V. Managing your data
  - a. Excel
  - b. Built in report tools
- VI. Sharing data
  - a. Powerpoint
  - b. Alternatives
- VII. Conclusion/Exploration

Formative Assessment: Questions throughout the training and opportunity to explore  
 Summative Assessment: Students were expected to use some of these tips during a capstone project for this particular course. All were graded by the instructor.

### **Workshop 6: Using Technology in Elementary Social Studies**

Objective: The purpose of this workshop was to encourage and provide resources for the use of technology in the field of elementary social studies.

Procedures:

- I. Introduction
- II. Locating Resources
  - a. Delicious
  - b. Free Tech for Teachers
  - c. Twitter
  - d. Blogs
  - e. Educator's Technology
- III. Organizing Resources
  - a. Stich.it
  - b. Pinterest
  - c. Delicious
  - d. PearlTrees
- IV. Presenting Resources
  - a. Symbaloo
  - b. LiveBinders
  - c. Prezi
  - d. SlideRocket
  - e. Empressr
- V. Creating Timelines
  - a. Tiki toki
  - b. Time Glider

- c. Our Story
- d. ReadWriteThink: Timeline
- e. Dipity
- f. Capzules
- g. Storify
- h. TimeToast
- i. Glogster
- VI. Graphic Organizers
  - a. PearlTrees
  - b. Cacao
  - c. Mind Meister
  - d. Creately
  - e. SlateBox
- VII. Virtual Field Trips
  - a. Meet me at the Corner
  - b. Areavibes: Field trips for Students
  - c. Cybrary Man – Virtual Tour Resources
  - d. Digital Storytelling/Comic Book Creators
    - i. Storybird
    - ii. Bitstrips
    - iii. Disney Comic Creators
    - iv. LittleBirdTales
    - v. Animoto
    - vi. SimpleBooklet
    - vii. ZimmerTwins
    - viii. ZooBurst
    - ix. ToonDoo
    - x. Pixton
  - e. Wrap up and exploration

Formative Assessment: Questions throughout the training and opportunity to explore  
 Summative Assessment: Students were expected to use some of these tools in their lesson plans and assignments for this particular course. All were graded by the instructor.