EXPLORING THE PHENOMENON OF SECONDARY TEACHERS INTEGRATING

THE LMS CANVAS IN A BLENDED-LEARNING COURSE

by

Travis Neal Towne

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

Online learning has become fully ingrained within the educational environment and extensive

LMS use in higher education settings is challenging secondary education institutions to keep

pace with the growing trend to offer LMS resources to their teachers and students; however,

schools that have chosen to implement an LMS face multiple challenges in motivating teachers

and students to accept and integrate the new technology into their course curriculum. The

purpose of this phenomenological study was to investigate teachers' experiences integrating the

LMS Canvas within a blended-learning course in a rural high school district located in the

Southeastern United States. The study integrated the theoretical frameworks of the unified

theory of acceptance and use of technology (UTAUT) and technological pedagogical content

knowledge (TPACK) and draws primarily from a postpositivism framework. The study sought

to understand teachers' motivational and attitude factors for integrating the LMS Canvas into

their blended-learning course and involved: distributing a questionnaire for descriptive purposes,

conducting individual and focus group interviews, and evaluating course materials. Qualitative

data analysis was conducted using NVivo, and coding was utilized to develop an interpretation

of the phenomenon. Based on data analysis, four themes developed: (1) motivation and attitude,

(2) training and technology support, (3) teaching effectiveness, and (4) student benefits, which

along with their related categories, supported the central research question and subsequent sub-

research questions. In the final analysis process, in which the essence of the phenomenon is

formulated, a central concept for why teachers use Canvas was reduced to adaptability.

Keywords: learning management system (LMS), technology acceptance, Canvas, unified

theory of acceptance and use of technology (UTAUT), technology pedagogical content

knowledge (TPACK)

Copyright Page

Dedication

I dedicate this dissertation to all of those who have helped me and encouraged me along this journey. To my teacher friends who patiently listened to my incessant talk about this topic and provided much needed insight and discussion. You allowed me the opportunity to bounce ideas off of you and get feedback, for which I am most grateful. To my extended family, including my church family, you have all been a blessing and support for me and have provided me with wonderful friendship and love even though I most definitely didn't deserve it at times. Thank you for your understanding and willingness to lift my family up in your prayers and provide your help when it was needed.

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Lastly, I want to thank all of the participants who were willing to discuss your views about Canvas. I would like to especially thank Charles White for all your help and guidance in this process. Without all of you, this study would not have been possible!

Table of Contents

List of Tables

List of Figures

List of Abbreviations

Assistive Technologies (AT)

Attitude Towards Use (ATU)

Behavioral Intention to Use (BIU)

Blended Learning (BL)

Career & College Promise (CCP)

Community of Inquiry (COI)

Computer Assisted Qualitative Data Analysis (CAQDAS)

Computer-Assisted Instruction (CAI)

Computer-Based Instruction (CBI)

Computer-Managed Instruction (CMI)

Computer-Supported Intentional Learning Environment (CSILE)

Concerns-Based Adoption Model (CBAM)

Cooperative Innovative High Schools (CIHS)

Course Management System (CMS)

Diffusion of Innovations (DOI)

Effort Expectancy (EE)

Facilitating Conditions (FC)

Information and Communication Technology (ICT)

Learning Management System (LMS)

Learning Tools Inoperability (LTI)

Local Educational Agency (LEA)

North Carolina Center for the Advancement of Teaching (NCCAT)

North Carolina Department of Public Instruction (NCDPI)

Office of Educational Technology (OET)

Perceived Ease of Use (PEU)

Perceived Usefulness (PU)

Performance Expectancy (PE)

Personal Learning Environment (PLE)

Self-Determination Theory (SDT)

Social Influence (SI)

Subjective Norm (SN)

Technology Acceptance Model (TAM)

Technological Pedagogical and Content Knowledge (TPACK)

Theory of Planned Behavior (TPB)

Theory of Reasoned Action (TRA)

Unified Theory of Acceptance and Use of Technology (UTAUT)

Universal Design for Learning (UDL)

U.S. Department of Education (USDOE)

Virtual Learning Environment (VLE)

CHAPTER ONE: INTRODUCTION

Overview

Learning Management Systems (LMS) have seen a tremendous increase of use within the past 10-15 years (Dahlstrom, Brooks, & Bichsel, 2014; National Center for Education Statistics, n.d.), namely due to the addition of online and blended-learning formats and the increase of technology resources available for schools to choose from (Fathema, Shannon, & Ross, 2015; Halverson, Graham, Spring, Drysdale & Henrie, 2014). With 99% of colleges and universities currently reporting they have an LMS in place and over 85% of faculty using an LMS consistently (Brown, Dahoney, & Millichap, 2015b; Dahlstrom et al., 2014), secondary school systems have been challenged by higher education schools to keep pace with the growing trend to offer LMS resources to their teachers and students. Due to the increase in federal, state, and local mandates for technology integration, there has been a tremendous amount of pressure on secondary educational institutions to meet technology requirements for students throughout the United States (Davies & West, 2014). In the past several years, the Office of Educational Technology (OET; n.d.), under the jurisdiction of the U.S. Department of Education (USDOE; n.d.), International Association for K-12 Online Learning (iNACOL; 2015), and International Society for Technology in Education (ISTE, 2017a) have allocated significant resources to studying the impact that using digital technologies in the classroom have on student learning.

Although data-driven research results have been varied when assessing the impact on student achievement and learning while using an LMS (Kimmons, 2015; Yuan & Xiaoyu, 2015), many schools have mandated that teachers utilize some type of an LMS in their classrooms. Along with the various technical aspects and costs involved with technology integration, school districts that have chosen to implement an LMS within their secondary schools face additional

challenges of motivating teachers and students to accept and integrate the new technology into

their course curriculum (Mouakket & Bettayeb, 2015; Pynoo, et al., 2011). Unfortunately, there

is a limited amount of both quantitative and qualitative data available at the secondary

educational level to evaluate the perceived impact LMS implementation has on students,

teachers, and school systems. Further research should be conducted on how an LMS could be

integrated effectively in a blended-learning system with input from all stakeholders. Chapter

One will focus on the historical, social, and theoretical background of LMS innovation and

usage. Additionally, I will identify how my personal environment influenced this research study

and address both the problem and purpose of the study. Next, I will recognize the significance

of the study and establish the research questions that will guide the framework of the study.

Finally, important definitions will be considered, and a summary will be presented.

Background

Although the LMS is a relatively recent addition to the education classroom, the

philosophy of using some variance of educational technology within a learning environment has

been around for over a century. Therefore, the historical, social, and theoretical context for LMS

use will be briefly discussed in the following sections.

Historical Context

The Association for Educational Communications and Technology (AECT; 2005)

defined instructional technology as "the theory and practice of design, development, utilization,

management, and evaluation of processes and resources for learning" (pp. 8-9). With the advent

of radio and television in the early 20th century, the "visual instruction" or "visual education"

(Reiser, 2001a, p. 55) movement was born and a generation of learners would be taught using

the latest technology available. One of the first instructional technologies that would fit the

AECT definition was the creation of the teaching machine. Encyclopedia Britannica (2017) defined a teaching machine as "any mechanical device used for presenting a program of instructional material" (para. 1) and is most often used in computer-managed instruction (CMI; Szabo & Flesher, 2002), computer-assisted instruction (CAI; Pagliaro, 1983; Aparicio, Bacao, & Oliveira, 2016) or computer-based instruction (CBI; Dick, 1965; Niemiec & Walberg, 1989; Sözcü, İpek, & Taşkin, 2013) formats.

Sidney Pressley is credited with developing the first teaching machine called the "automatic teacher" (Petrina, 2004, p. 305) in 1924. The stated intention of the machine was to "automatically give and score a test and… teach informational and drill material more efficiently, in certain respects, than the human machine" (p. 312). Although Pressley's machine was not widely accepted within the educational field, the technological innovation did propel additional conversations for how emerging technologies like teaching machines could be integrated into the educational system (Niemiec & Walberg, 1989; Skinner, 1958; Skinner, 1961; Stolurow & Davis, 1963).

The U.S. military was an inadvertent participant in the advancement of instructional technology, especially during and after World War II (Reiser, 2001a, Reiser, 2001b). The Department of Defense (DOD) funded research on instructional training methods in order to develop systematic programmed instructional materials for training purposes. The need to quickly train a military for advanced warfare and the civilians who would be assembling the technology used for warfare became a driving factor in the development of training resources. The impact on the education field was quickly noticed and experiments using the same techniques began to be conducted in the classroom. The noted psychologist and behaviorist, B.F. Skinner, promoted the use of teaching machines to engage learners in the learning process

(Skinner, 1958; Skinner, 1961; Reiser, 2001b) and his constructivist theories shaped a new generation of learning behaviors by encouraging the use of technology driven training devices.

Continual technological developments including the Advanced Research Projects Agency Network (ARPANET), a precursor to the Internet and the World Wide Web (Mbuva, 2015; Simonson, Smaldino, & Zvacek, 2015), allowed for continual development of innovative instructional technologies. The invention of the microchip and subsequent development of the microcomputer, colloquially known as the personal computer (PC), revolutionized the educational scene (Niemiec & Walberg, 1989; Szabo & Flesher, 2002; Westera, 2015) and created a new genre of teaching opportunities and learning styles. In 1960, the Programmed Logic for Automatic Teaching Operations (PLATO) was developed by the University of Illinois and was considered one of the first CAI systems to be used in an educational format (Smith & Sherwood, 1976). Many universities, "such as the University of Chicago, the University of Wisconsin, and the University of Iowa" (Simonson, Smaldino, & Zvacek, 2015, p. 10) used these technological advancements to develop distance education training programs. The popularity of distance education and blended-learning courses necessitated the advancement of course management systems (CMS; Chou & Chou, 2011) and "computer managed instruction systems, from which LMSs are derived" (Szabo & Flesher, 2002, p. 1).

Social Context

With the floodgates opened for new online learning opportunities, companies rushed to market LMS software for use in both the business and educational markets (Adams Becker, et al., 2017). Blackboard, one of the most well known of LMS software designers, was developed in 1997 to "provide a user-friendly means by which college professors could put course information, including syllabi, reference sites, and study guides, on the web" (Bradford,

Porciello, Balkon, & Backus, 2007, p. 302). Subsequent competition developed, leading to the creation of several types of LMS options including proprietary software such as Desire2Learn (D2L; 2017), founded in 1999 and Canvas (2017), which was released in 2011. Additionally, free open-sourced LMS options were made available to educational institutions such as Moodle (n.d.), founded in 2002; Sakai (2014), released in 2005, Edmodo (2016), released in 2008, and Google Classroom (n.d.), released in 2014.

Although many educational institutions and teachers recognized the benefits of using an LMS, acceptance and use has not been at a level that meets most USDOE (n.d.) technology implementation goals. Many K-12 schools have encouraged teachers to conduct professional development training specifically focused on LMS implementation (Adams Becker, Freeman, Giesinger Hall, Cummins, & Yuhnke, 2016); however, there are several barriers that quickly become apparent, namely teacher attitudes and motivations. Many states have determined that the best way to help schools, especially schools with limited resources, integrate an LMS into classrooms is to provide a singular system that is paid for and supported by the state education department.

In 2015, the North Carolina Department of Public Instruction (NCDPI) determined that they would provide Canvas as the state-supported LMS (Canvas, 2015a; Canvas, 2015b; North Carolina Department of Public Instruction, 2015). Although Local Education Agencies (LEA) are not required to use Canvas, they are strongly encouraged to take advantage of state resources, including professional development opportunities which can assist teachers with implementation concerns; however, LEA districts still face challenges of motivating teachers and students to accept and integrate the new technology, i.e., an LMS, into their course curriculum (Mouakket & Bettayeb, 2015; Pynoo, et al., 2011).

Theoretical Context

There are multiple theories surrounding the rationale for using an LMS in the classroom including: reasoned action and planned behavior, innovation and technology acceptance, self-determination and motivation, pedagogical structure and concerns-based approaches. Each of these theories has a uniquely different approach to understanding how an LMS can and should be utilized in a learning environment. Additionally, many of the theoretical concepts for this study are based upon constructivist paradigms (Kara & Sevim, 2013), namely that an LMS can be used by both teachers and students to develop their own learning environments. For this study, I used the unified theory of acceptance and use of technology (UTAUT) model and the technological pedagogical and content knowledge (TPACK) model as the primary theoretical frameworks; however, each of these models is predicated on previous theoretical models, including the theory of reasoned action (TRA), theory of planned behavior (TPB), and technology acceptance model (TAM). Additionally, I addressed theoretical concerns about how LMS implementation can be integrated with assistive technology (AT) and universal design for learning (UDL) principles.

Although many quantitative research studies have been conducted on overall teacher attitudes towards using technology in the classroom (Marangunić & Granić, 2015; Mouakket & Bettayeb, 2015; Teo & van Schaik, 2012; Teo & Zhou, 2017), limited qualitative studies have been conducted on teacher and student attitudes towards using an LMS, specifically within a K-12 educational environment (Klobas & McGill, 2010). Additionally, many researchers have only utilized a singular framework or model within their study and, therefore, have received limited results on why teachers choose to implement an LMS into their course. Once the attitudes towards the use of an LMS are identified, strategies can be developed and enacted to

help other instructors successfully integrate an LMS into their curriculum (Kruger et al., 2015). Additionally, social influence (SI) and facilitating conditions (FC) are important constructs for technology integration and play a significant role in why teachers chose to implement an LMS in their course (Teo, 2010).

Situation to Self

I have taught for over 12 years in a variety of educational settings including junior high school, high school, and community college, using many formats including face-to-face, fully online, and blended. Within the past five years I have utilized several LMS options, including Blackboard, Moodle, Google Classroom, and Canvas in my courses and have been challenged pedagogically in how to use these effectively to engage student learning. While considering how I personally use an LMS to engage my students, and after discussing the topic extensively with my peers, both who currently use an LMS and those who have chosen not to, I discovered the need to delve more deeply into this area of interest. While most of my peers have a basic familiarity with LMS resources, many do not choose to utilize the multiple options available to them. Therefore, I wanted to conduct an intense study to specifically explore the phenomenon of secondary teachers integrating an LMS within a blended-learning course environment.

Both an ontological and axiological philosophical assumption led to the research topic choice because I identify a personal value and bias within the study (Creswell, 2013). I felt strongly from my own teaching experiences with using an LMS that there are significant pedagogical advantages and sufficient learner results stemming from the use of this type of system; however, I also embrace the reality that other educators have different experiences with an LMS, which has shaped their perceptions of teaching using these tools.

The paradigm used to help shape this study draws primarily from a postpositivism framework and uses logical and empirical research based on multiple perspectives from research participants (Creswell, 2013; Lincoln & Guba, 1985). Therefore, the study intent is to explore multiple perspectives from secondary teachers who currently use an LMS in their classroom and identify various attitudes and motivations for LMS use. Additionally, I currently use the LMS Canvas and therefore, will use a transcendental approach in order to bracket my personal experiences, sometimes "known as the epoche process" (Moustakas, 1994, p. 22) to gain a fresh perspective of the phenomenon (Gall, Gall, & Borg, 2007).

Problem Statement

The problem is that as federal, state, and local mandates push for the use of an LMS within a secondary educational environment, there are significant concerns that merely implementing an LMS into an educational system without significant stakeholder involvement could diminish overall teacher effectiveness and learner achievement (De Smet, Bourgonjon, De Wever, Schellens, & Valcke, 2012; Kimmons, 2015). Most of the research studies that have been conducted on LMS usage have utilized quantitative data analysis methods, and many of the studies have recommended that future studies consider addressing qualitative concerns (Ferdig & Kennedy, 2014; Hustad & Arntzen, 2013; Tondeur et al., 2012).

Additionally, much of the LMS research has been conducted in the higher education field, with limited studies within a secondary education environment (Klobas & McGill, 2010; Means, Toyama, Murphy, & Baki, 2013). Secondary teachers have a unique understanding of the implementation and use of an LMS within a blended-learning classroom that cannot be explained solely by quantitative data analysis. Therefore, I examined secondary teacher experiences integrating an LMS by obtaining data using a qualitative research design, namely a

methodological transcendental phenomenological approach (Creswell, 2013; Gall et al., 2007; Moustakas, 1994), to partially address the significant qualitative gap in research literature concerning LMS use within a secondary educational blended-learning environment. Specifically, I focused on the LMS Canvas, a cloud-based system created by Instructure (2017) in 2011 to connect all the digital tools and resources teachers use into one simple place (Canvas, 2017). I performed research in a rural high school district located in the Southeastern United States that recently implemented Canvas within its secondary schools and conducted interviews with teachers who had a vested interest in discussing the overall impact of Canvas within their classrooms. By examining the motivations and attitudes of teachers in a qualitative study and evaluating the results through the two specific theoretical frameworks, I hope to contribute to the literature and provide significant qualitative data relating to the acceptance and integration of an LMS in the classroom.

Purpose Statement

The purpose of this phenomenological study was to investigate teachers' experiences integrating the LMS Canvas within a blended-learning course in a rural high school district located in the Southeastern United States. An LMS will be generally defined as an online resource that allows for technology integration within an instructional course (Porter, 2013; Sanga, 2016). The theories guiding this study are the unified theory of acceptance and use of technology (UTAUT; Venkatesh, Morris, Davis, & Davis, 2003) model, and the technological pedagogical content knowledge (TPACK; Koehler & Mishra, 2005) model as they relate to the acceptance and integration of an LMS in the classroom.

Significance of the Study

Learning Management Systems (LMS) are an integral part of secondary education and the LMS Canvas plays a centralized role in the blended-learning environment (Juhary, 2014; Sanga, 2016). Teachers who have chosen to use this technology tool have done so based on multiple rationales and motivational reasons. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. The significance of the study will be to provide stakeholders, e.g., teachers and administration, qualitative data analysis that could encourage more teachers to utilize an LMS in their blended-learning classroom environment.

Increased use of interdisciplinary teaching methods and the logistical struggles that teachers face to integrate educational materials within multiple classrooms and student groups can be drastically mitigated by the use of an LMS (Park & Mills, 2014). Research suggests that stakeholders who lack the motivation, both intrinsic and extrinsic, to utilize an LMS will eventually neglect the very system that was created to help them teach more effectively (Cigdem & Topcu, 2015; Walker, Lindner, Murphrey, & Dooley, 2016); however, all technological innovation requires foundational knowledge of the various technology resources in addition to a willingness to implement the technology (Rogers, 1995). This study provides the foundational knowledge concerning LMS theory and applicable uses within an educational environment.

Learning analytics has become a developing field in which data analysis is used to enhance student learning (Firat, 2016; Kimmons, 2015), and data management through the use of an LMS is a significant method for collecting data for analytic research (Oliveira, Cunha, & Nakayama, 2016). Also called data mining (Liyanage, Gunawardena, & Kirakawa, 2016), learning related activities are stored within the LMS and used by various stakeholders, e.g.,

teachers, districts, and companies, to develop materials that will meet student needs (Vipond, 2016). As an adaptive technology, the LMS has tremendous potential to provide massive amounts of data to researchers for a variety of research studies, including predicting student retention and achievement based on usage (Adams Becker, et al., 2017). Therefore, further understanding of how an LMS can be implemented within an analytic framework can have long-reaching impacts on future educational research.

The research study also has significant implications within the technology research field, especially with the advent of the next-generation LMS, sometimes referred to as next-generation digital learning environments (NGDLE; Adams Becker et al., 2016; Brown, Dehoney, & Millichap, 2015a; Vipond, 2016). In the search to develop updated systems that support personal learning environments (PLEs), universal design for learning (UDL) standards, and data-driven assessment results, research plays an important role in establishing the suitability of the LMS in a classroom environment. In their *LMS Industry User Research Report*, Capterra (2015) stated that "learning management software, also known as eLearning software… [is] a $2.5 billion industry on the corporate side alone, and the combined corporate and academic LMS market is predicted to grow to at least $7.8 billion by 2018" (para. 1). Therefore, more research, especially qualitative, must be conducted to help guide the necessary development process within the LMS industry, which can then enhance the end user application in the classroom.

Lastly, the data research could be used as a resource in a local district's curriculum and technology departments to determine technology best practices, provide current technology integration statistics, and establish data evidence that the district is meeting and exceeding state and federal technology goals (Office of Educational Technology, 2017) by using an LMS. Additionally, the district in which the study is being conducted has recently established a 1:1

initiative by providing all students with iPads. A primary way this technology is being utilized in the secondary school system is through the use of an LMS. Qualitative data can be evaluated by the local school district to determine the effectiveness, not only of the 1:1 initiative, but specifically the beneficial and negative aspects of using specific hardware features with an LMS. Furthermore, training effectiveness can be considered in relation to the amount of initial training provided by the district and subsequent refresher training for stakeholders.

Research Questions

The following central research question and subsequent sub-research questions were used throughout the study to help identify the phenomenon of secondary teachers integrating the LMS Canvas in a blended-learning course.

Central Research Question

How do secondary teachers describe their experiences integrating the LMS Canvas within a blended-learning course?

With the increased use of an LMS in secondary education institutions, specifically within a blended-learning environment, a new area of research has arisen concerning the experience of secondary teachers implementing an LMS. In this study the LMS being utilized is Canvas, although generalization to other LMS programs can be applied because many support a basic function of engaging students in the learning process (Lochner, Conrad, & Graham, 2015). Both the UTAUT and TPACK theoretical frameworks used in this study are intended to explore the underlying perceptions that participants have in utilizing an LMS within their blended-learning classroom.

Sub-research question one. What motivational or attitude factors concerning acceptance of Canvas do participants describe?

Motivation and attitude factors are central to technology acceptance and use (Davis, 1989). Understanding the attitudes and motivations concerning the use of an LMS are critical to the framework of this study (Lee, Lee, & Hwang, 2015; Lochner, Conrad, & Graham, 2015). Within the UTAUT model, Perceived Expectancy (PE) and Effort Expectancy (EE) are significant aspects of technology acceptance and have similar comparisons within previous theoretical frameworks regarding technology acceptance (Teo, 2011; Venketesh et al., 2013).

Sub-research question two. How do secondary teachers describe organizational support concerning Canvas implementation and training?

Also within the UTAUT model, SI deals with the social aspect of technology use, namely how much influence peers have concerning the implementation of an LMS (Venkatesh et al., 2003; Teo, 2010) and FC addresses the "organizational and technical infrastructure" (Teo & Zhou, 2017, p. 514) support of technology usage. Venkatesh et al. (2003) identified that FC played a significant role in not only predicting intention to use technology, but also the continuation to use the technology and willingness to integrate additional technology resources in the future.

Sub-research question three. What are perceptions secondary teachers have about their personal teaching behaviors while teaching with Canvas?

The role of TPACK cannot be understated and is of paramount importance when addressing pedagogical and content knowledge concerns in the classroom, especially concerning LMS use (Koehler & Mishra, 2005). Integration of interdisciplinary and assistive technology philosophies, sometimes identified with UDL, is a key factor when considering the use of an LMS. Teacher perceptions about their own effectiveness while using Canvas in their course

(Ashrafzadeh & Sayadian, 2015) is an important aspect of the TPACK theoretical framework and is addressed throughout the study.

Sub-research question four. What are perceptions secondary teachers have about their students' results when using Canvas?

The role of TPACK is also of importance when discussing student achievement and learning potential (Koehler & Mishra, 2005). While research has not shown definitively that simply by using technology student achievement will increase (Clark, 1983; Clark, 1984; Simonson, Smaldino, & Zvacek, 2015), there are many studies that suggest using technology within a learning environment will increase student learning (Ferdig & Kennedy, 2014; Means et al., 2009; Means et al., 2013). Therefore, the perceptions that teachers hold about the effectiveness of their use of Canvas regarding student results are important to the overall framework of the study.

Definitions

Terms pertinent to the study are listed and defined.

1. *Assistive Technology (AT)* – "Any item, piece of equipment, or product system… that is used to increase, maintain, or improve functional capabilities of a child with a disability" (IDEA, 2004, Sec. 602(1)).

2. *Attitude Towards Use (ATU)* – "The extent to which a teacher possesses positive feelings about using technology" (Teo, 2011, p. 2433).

3. *Behavioral Intention to Use (BIU)* – "The degree of a teacher's willingness to use technology" (Teo, 2011, p. 2433).

4. *Blended-Learning (BL)* – "Courses that integrate online with traditional face-to-face class activities in a planned, pedagogically valuable manner… where a portion (institutionally defined) of face-to-face time is replaced by online activity" (Picciano, 2007, p. 9).

5. *Computer-Assisted Instruction (CAI)* – "Computer usage focused on programming teaching used in various fields" (Aparicio, et al., 2016, p. 293).

6. *Computer-Based Instruction (CBI)* – "Emerged from programmed instruction and teaching machines in the late 1950s [and have] four distinct phases" (Sözcü, et al., 2013).

7. *Computer-Managed Instruction (CMI)* – "Manage the learning program of individuals in terms of 1) diagnostic assessment of performance relative to some standards and 2) prescriptive assignment of learning resources relevant to those standards" (Szabo & Flesher, 2002, p. 2).

8. *Course Management System (CMS)* – "An informational and communication technology (ICT) tool that can be used to facilitate and balance communication channels within a blended learning environment" (Chou & Chou, 2011, p. 463).

9. *Effort Expectancy (EE)* – "The degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450).

10. *Facilitating Conditions (FC)* – "The extent to which a teacher believes that factors in the environment influence his or her decision to use technology" (Teo, 2011, p. 2433).

11. *Information and Communications Technology (ICT)* – "Generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware, software applications, and connectivity" (Alemu, 2015, p. 171).

12. *Learning Management System (LMS)* – "A web-based application that supports teaching and learning by enabling instructors to create and organize content for learners" (Sanga, 2016, p. 11).

13. *Perceived Ease of Use (PEU)* – "The degree to which a teacher believes that using technology would be free of effort" (Teo, 2011, p. 2433).

14. *Performance Expectancy (PE)* – "The degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447).

15. *Perceived Usefulness (PU)* – "The degree to which a teacher believes that using technology would enhance his or her job performance" (Teo, 2011, p. 2433).

16. *Social Influence (SI)* – "The degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451).

17. *Subjective Norms (SN)* – "The extent to which a teacher perceives that most people who are important to him think he should or should not use technology" (Teo, 2011, p. 2433).

18. *Universal Design for Learning (UDL)* – "A scientifically valid framework for guiding educational practice that (A) provides flexibility in the ways information is presented… and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students…" (U.S. Department of Education, n.d., Sec. 103(24)).

Summary

In summary, secondary school systems have been challenged by higher education schools to keep pace with the growing trend to offer LMS resources to their teachers and students. Limited qualitative research is available from the teacher's perspective considering the

various impacts of using an LMS, specifically Canvas, within a blended-learning course. The

purpose of this phenomenological study is to investigate teachers' experiences integrating the

LMS Canvas within a blended-learning course in a rural high school district with the UTAUT

and TPACK models as guiding theoretical precepts. A central research question along with

three sub-research questions was identified and provided the framework used throughout the

study. The significance of the study will be to provide stakeholders qualitative data analysis that

could encourage more teachers to utilize an LMS in their blended-learning classroom

environment. Additionally, the data could be used as a resource in a technology department to

determine technology best practices, provide current technology integration statistics, and

establish data evidence that the district is meeting and possibly exceeding state and federal

technology goals in the use of an LMS.

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter Two will consist of a literature review that will identify key aspects of the use of an LMS by secondary school teachers within a blended-learning classroom. A literature review allows the opportunity to provide a thorough evaluation of the research in the topic field (Boote & Beile, 2005), identify a gap in the research, and propose a study to address that gap (Douglas, 2014). Most of the research concerning this topic has been quantitative based and geared towards the higher education realm. Therefore, more qualitative data-driven research is necessary to address the areas of significance identified by teachers who currently use an LMS and would not be available with a quantitative method. Additionally, there is a significant gap in the literature concerning the merger of technology use and the pedagogical concerns associated with secondary education blended-learning needs. Simply stated, teachers might be familiar with the technology of an LMS but not use it effectively in their classroom setting because of various concerns or training deficiencies.

The primary theoretical framework models used in the study will be addressed, which will include a discussion about previous technological and pedagogical theories and models. Related literature will be explored including the history of secondary education, focusing specifically on technology integration, including the creation of innovative high schools, and the increase of blended-learning classrooms. Additionally, the recent development of LMS technologies, specifically the LMS Canvas will be discussed, and benefits and results in the implementation of an LMS will be considered. Throughout the chapter, I will also provide evidence of a gap in the literature and support for the central research question and sub-questions.

Theoretical Framework

A theoretical framework allows the researcher to view a topic through a specific lens and research focus, which in turn helps to formulate research questions applicable to the study (Rockinson-Szapkiw, Spaulding, & Swezey, 2014). As with all educational designs, an understanding of the foundation upon which technological integration is built becomes critical, especially when it concerns technology acceptance and motivation to utilize an LMS. Therefore, a review of previous significant theories and models that have considered the technological and pedagogical implications for technology use will be conducted. Finally, the two theoretical framework models utilized in the study will be fully addressed.

Previous Significant Theories and Models

The study of technological innovation has seen a tremendous shift throughout the past century as new ideas and frameworks have been developed for technology integration. Many of the models have been utilized in both the corporate and education fields because of the need to research stakeholder acceptance and usage. Often the theories have been posited within a few months of each other, allowing researchers the opportunity to compare and contrast the benefits and discuss the differences. In other instances, new technologies have been introduced and rapidly expanded upon, necessitating the need to integrate previous knowledge into new theoretical frameworks for researchers to consider.

For this study, I used the unified theory of acceptance and use of technology (UTAUT) model and the technological pedagogical and content knowledge (TPACK) model as the primary theoretical frameworks; however, each of these models relies on previous theoretical ideas including the motivations and attitudes towards technology acceptance and utilization, in addition to innovation and concerns-based theories. The following theories or models

concerning technology innovation or integration have had a profound impact on how an LMS is evaluated within the educational environment. The order is arranged based on when the primary theorists first suggested the idea or when the frameworks were specifically integrated into mainstream discussions; furthermore, the unique roles that each one has played in the technology movement varies in significance and will be discussed in the following sections.

Diffusion of innovations (DOI). The diffusion of innovations (DOI) model was first posited by Everett Rogers in 1962, although the theorist has conducted subsequent research in recent years and additional insights considered. Rogers (1995) defined DOI as "the process by which an innovation is communicated through certain channels over time among members of a social system" (p. 5). An innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 11), and diffusion refers to the acceptance of technology by stakeholders throughout an organization (Gao & Wu, 2015). One of the core components of Rogers' theory is the "innovation-decision process… a progression that involves five stages" (Kaleta, Skibba, & Joosten, 2007, p. 112). These five stages or attributes determine whether a specific technology will be successful in adoption, or conversely result in its failure of implementation (Ashrafzadeh & Sayadian, 2015).

According to the DOI model, once a new technology such as an LMS has been introduced in a social system or environment, a natural progression will take place and stakeholders will move through the stages or quickly reject the technology as unusable. Typically, researchers are concerned the most about the first three stages: knowledge, persuasion, and decision, within the adoption process (Kaleta, et al., 2007). Additionally, DOI considers "five adopter categories including innovators, early adopters, early majority, late majority, and laggards… and are based on the rate of adoption of an innovation and reflect the

rates that faculty adopt technological innovations" (Gautreau, 2011 p. 6). Although DOI has been used as a stand-alone theory in many research studies (Dooley, 1999; Pereira & Wahi, 2017), more recently the concepts found within DOI have been incorporated within other theories such as TAM and UTAUT. The importance of understanding the foundations of DOI for this study revolve around the concepts relating to the acceptance of a new innovation, namely an LMS within a secondary classroom environment.

Concerns-based model (CBAM). Coming on the heels of the DOI model, the concerns-based model (CBAM) was developed by Hall (1974) and focused on how new innovations were integrated into an educational environment. Similar to DOI, the CBAM utilizes the stages concept in regard to technology acceptance and use. These scale points were called stages of concern (SoC; Hall, 1974) and include: "(0) awareness, (1) informational, (2) personal, (3) management, (4) consequence, (5) collaboration, (6) refocusing" (Hall, George, & Rutherford, 1979, p. 7). Each of these stages or levels "characterize the attitudes of potential adopters toward an innovation" (Lochner, et al., 2015, p. 63) and are identified by an SoC questionnaire.

Several research studies have combined both the DOI and CBAM theoretical frameworks to undergird their technology research (Ashrafzadeh & Sayadian, 2015; Dooley, 1999), while others have primarily focused on the CBAM model integrating the SoC questionnaire (Lochner, et al., 2015; Matar, 2017). Lochner et al. (2015) specifically focused on secondary school teachers' LMS acceptance using the CBAM model and discovered that a majority of educators were primarily concerned with the awareness stage; consequently, they were nowhere near a point in their professional career to even consider the implementation of an LMS. This result suggests that although the federal, state, and local administrations insist that educators utilize some form of an LMS within the classroom, there is still a high degree of concern by teachers

for how to integrate the technology successfully (Sanga, 2016). Nonetheless, the concepts found in CBAM play a large role in how teachers perceive a new innovation, such as an LMS, and the process steps they must go through in order to adapt the LMS for advantageous purposes.

Theory of reasoned action (TRA) & theory of planned behavior (TPB). Two psychology-based theories were co-opted and utilized for technology acceptance and have been the foundation for most of the technology usage theoretical frameworks developed in the last 30 years. Both the theory of reasoned action (TRA; Fishbein & Ajzen, 1975) and theory of planned behavior (TPB; Ajzen, 1991) were posited to help researchers determine the degree to which initial attitudes and beliefs impact actions and behaviors. Each theory considered a social behavior being predicted based on the evaluation of a user's intention. The defining research component of both TRA and TPB regarding technology acceptance and usage in the classroom can be established with a basic question, i.e., what is the teacher's attitude towards technology and does this determine why teachers choose to use new technologies?

Dr. Timothy Teo has written extensively on the topic of technology acceptance and integration, specifically incorporating the theoretical principles of TRA and TPB into his research designs (Teo & van Schaik, 2012; Teo, 2013; Teo, Zhou, & Noyes, 2016; Teo & Zhou, 2017). According to Teo and Noyes (2014), in TRA "an individual's intention to perform an action is driven by two antecedents: attitude towards the behavior and subjective norms" (p. 51). With the addition of perceived behavioral controls (PBC), the subsequent TPB was established to further identify how behaviors can be predicted based on attitudes (Teo & van Schaik, 2012).

The importance of each of these particular theories identifying attitudes towards technology use cannot be overstated, and nearly all theoretical constructs and models discussed further have been built upon the foundations established by TRA and TPB (Sadaf, Newby, &

Ertmer, 2016). Within the realm of LMS usage, teacher attitudes towards the various

technologies play a significant role in determining successful integration. Additionally, TRA

and TPB theoretical concepts lay a critical foundation within sub-research questions one and two

because they consider the underlying attitudes associated with technology integration.

      Self-efficacy theory. Self-efficacy is another theory that has had a tremendous impact on

the study of technology usage and the teacher attitudes towards integration. Originally identified

as social learning theory (Bandura, 1977), the theory was later renamed to the more recognized

social cognitive theory (Bandura, 1986); however, both titles include the concept of self-efficacy

(Bandura, 2012). Self-efficacy is defined as "the personal judgment about one's capability to

adopt certain behaviours [sic] and actions in order to accomplish certain objectives and expected

outcomes" (Paraskeva, Bouta, & Papagianni, 2008, p. 1085). Teacher efficacy is defined as a

teacher's "confidence in their ability to promote student learning" (Dixon, Yssel, McConnell, &

Hardin, 2014, p. 112), and focuses on the "belief of a teacher about [their] own abilities to plan,

realize education, influence learning and results of students" (Fenyvesiová & Kollárová, 2013,

p.1). Albert Bandura (2012), reasserted the impact that social cognitive theory plays in both

teacher and student behavior, and higher teacher efficacy has been shown to impact student

learning and achievement (McGee & Wang, 2014).

      Although the idea of teacher efficacy can vary based on various site and situation

contexts (McGee & Wang, 2014), a teacher's belief or self-expectation about their capabilities

and the subsequent outcome expectancy they have for their students is of primary concern to

educational research (Fenyvesiová & Kollárová, 2013). In regard to using technology,

sometimes referred to as computer self-efficacy (CSE; Alshammari, Ali, & Rosli, 2016;

Compeau & Higgins, 1995), the beliefs that an educator possesses about the importance of technology can determine their success with using technology.

Paraskeva et al. (2008) conducted research on secondary teachers' integration of technology and stated, "Teachers with a strong sense of self-efficacy are more open to new ideas and they are more willing to experiment with new methods at the same time offering students new and different learning opportunities or experiences" (pp. 1084-1085). Additionally, research on blended-learning models in secondary school environments has shown that self-efficacy plays an important role in the success of both teachers and students with the integration of technology usage (Vinh-Thang, Nakamori, Tu-Bao, & Cher Ping, 2016). Self-efficacy is also a primary construct found within the UTAUT model and LMS usage studies (Cigdem & Topcu, 2015; Fathema et al., 2015; Lee et al., 2015; Lwoga & Komba, 2014), which will be discussed in further sections.

Self-determination theory (SDT). Although attitudes towards technology can determine technology usage, technology acceptance can also depend on the concepts found within motivation theories such as the self-determination theory (SDT; Lee et al., 2015; Abdallah, Ahlan, & Abdullah, 2016). As in TRA, TPB, and self-efficacy, "beliefs determine their level of motivation, as reflected in how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles" (Bandura, 1989, p. 1176). Deci and Ryan (1985), the primary theorists who coined the theory and conducted extensive research in this area, stated, "Motivation concerns energy, direction, persistence and equifinality—all aspects of activation and intention" (Ryan & Deci, 2000, p. 69); therefore, both attitudes and motivations play a crucial role in determining technology acceptance and use.

Motivation consists of two unique aspects, namely intrinsic and extrinsic. An operational definition of intrinsic motivation is "when a person does the activity in the absence of a reward contingency or control" (Deci & Ryan, 1985, p. 34). Conversely, "extrinsic motivation refers to behavior where the reason for doing [an activity] is something other than an interest in the activity itself" (p. 35). Simply stated, the behavior is either intrinsically or extrinsically motivated, and therefore, outcomes can both be predicted and observed. The core component of SDT examines both of these motivation aspects (Deci & Ryan, 2002; Chen & Jang, 2010); nonetheless, several researchers have examined how SDT can be utilized within the research on technology usage (Sørebø, Halvari, Gulli, & Kristiansen, 2009; Lee et al., 2015). Previous theories and models discussed, e.g., DOI, CBAM, self-efficacy, TRA, and TPB, each have components of motivation within their framework, allowing researchers to realistically integrate them for study purposes. Both intrinsic and extrinsic motivation play a tremendous role in determining LMS usage and have a significant impact on the development of sub-research questions one and two.

Technology acceptance model (TAM). The technology acceptance model (TAM) was developed by Davis (1989) to determine an accurate measurement scale for two specific extrinsic variables to explain the behavioral intention of using technology (Findik & Özkan, 2013). Based on the ideas of TRA, the model focused on attitudes towards technology and has been used to predict the technology usage of many different groups including those within the educational field (Teo, 2010). The two scaled ideas are perceived ease of use (PEU) which is defined as "the degree to which a person believes that using a particular system would enhance job performance" (Baytiyeh, 2014, p. 18), and perceived usefulness (PU) which is the "degree to which a person believes that using a particular system would be effortless" (pp. 18-19).

TAM originally concentrated on helping businesses and corporations identify how employee attitudes and beliefs impacted their use of technology (Teo, 2010) and has been used as a significant theoretical framework in a multitude of research studies (King & He, 2006; Schepers & Wetzels, 2007; Yousafzai, Foxall, & Pallister, 2007a; Yousafzai, Foxall, & Pallister, 2007b). TAM has been instrumental in identifying the attitudes and usability of an LMS, both in higher education and K-12 curriculums (Emelyanova & Voronina, 2014). It is important to note that most research studies conducted on early distance learning formats used TAM as the theoretical construct (Alshammari et al., 2016). TAM is a robust theoretical model that has been utilized throughout the instructional technology (IT) field and online learning realm; therefore, TAM is widely held as the standard by which other models are based upon and many have integrated PEU and PU as a part of their overall framework (Fathema, et. al., 2015; Alharbi & Drew, 2014; Juhary, 2014). Both the theory and theorist played an integral part in the development of UTAUT (Venkatesh et al., 2003) and Davis has written extensively on extrinsic and intrinsic motivation to use computers in various work environments (Davis, Bagozzi, & Warshaw, 1992).

Community of Inquiry (COI). The community of inquiry (COI) theoretical framework was developed by Garrison, Anderson, and Archer (1999) and is composed of teachers and students whose educational experience is comprised of "three essential elements: cognitive presence, social presence, and teaching presence" (p. 88). In essence, knowledge is gained when all three of these elements are present within the community-based structure of an online learning environment. Since most LMS use occurs within an online or blended-learning environment, Shea and Bidjerano (2013) conducted research on how the use of COI, namely how collaboration, discussion, and feedback impacted student learning. Additionally, Rovai

(2002) has conducted extensive research on the various impacts of social community on distance learners and developed the Classroom Community Scale (CCS) to measure classroom community and its sub-scales, connectedness and learning. The CCS has become the standard measurement for quantitative analysis concerning classroom community learning and has a robust evaluation process. Teachers who use an LMS in their classrooms in an online or blended-learning environment are typically looking for collaboration opportunities to engage the community aspect of their classroom. The COI model incorporates the pedagogical expectations of using an LMS to engage students in a meaningful way with the learning process.

Primary Theoretical Framework Models

Although each of the theories discussed previously have played a significant role in the development of technology perceptions, acceptance, and implementation, I combined the UTAUT and TPACK models to provide theoretical framework guidance for this study. Both of the models have drawn upon previous theories and constructs; however, they are uniquely suited to support the central research question and sub-questions. The next section will examine each of the models in depth and consider how they are utilized throughout the research study.

UTAUT. Venkatesh et al. (2003) formulated the UTAUT model in response to a review of eight theoretical models concerning information technology research. The UTAUT model not only expanded upon the TAM model, but considered the TRA, TPB, DOI, and social cognitive theory, in the study of technology acceptance (Venkatesh et al., 2003). The model attempts to predict both the behavioral intention to use (BIU) and attitudes towards use (ATU) by identifying four factors, "performance expectance (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC)" along with four moderators including "age, gender, experience, and voluntariness" (Venkatesh, Thong, & Xu, 2016, p. 329; Figure 1). Like the

TAM, the UTAUT is primarily an extrinsically motivated model (Hew & Kadir, 2016),

identifying technology acceptance based on behavioral factors that are typically externally

driven; however, there are some intrinsic motivations that can be extrapolated from several of

the factors found within the UTAUT model (Davis et al., 1992; Lee, et al., 2015).

Performance expectancy (PE). Performance expectancy (PE) is defined as "the degree

to which an individual believes that using the system will help him or her to attain gains in job

performance" (Venkatesh et al., 2003, p. 447), and is one of the strongest predictors of

technology usage. PE is closely aligned to PU found within the TAM model (Davis, 1989) and

is an extrinsically motivated factor. In essence, if a technology is perceived to be useful as a

tool, then there is a higher likelihood not only of it being used but also with it being actively

engaged. Expectancy is defined as "one's perceived probability of the consequence of

performing a behavior" (Chen, 2011, p. 1502); therefore, the attitude towards the technology,

i.e., perception, directly impacts the behavioral intention to use and ultimately the

implementation of use (Venkatesh et al., 2003). Additionally, PE is linked to Deci and Ryan's

(1985) self-determination theory of perceived enjoyment and the intrinsic motivation that

continues to occur even after a technology no longer significantly increases an individual's

performance (Lee et al., 2015). Within the realm of education, the perceived performance of a

system and expectation of benefits are two of the most critical factors in whether or not teachers

will utilize a particular piece of technology in the classroom setting.

Effort expectancy (EE). Effort expectancy (EE) is defined as "the degree of ease

associated with the use of a system" (Venkatesh et al., 2003, p. 450), and is most closely aligned

with PEU in the TAM model (Davis, 1989) as a predictor of the intention to use a technology

resource (Brown, Dennis & Venkatesh, 2010). EE can be evaluated in both a voluntary and

involuntary environment (Lwoga & Komba, 2015) and is considered both an extrinsic and intrinsic motivation factor, namely due to an individual's belief about a particular technology's ease of use and the self-efficacy of the individual towards technology in general. The complexity of EE cannot be overstated because effort is perceived, and therefore, can interact with a variety of factors including attitude, motivation, behavior, and personality. In essence, an individual's perception of how much effort will be expended learning and using a new technology can impact their BIU or ATU of that technology. This consideration can be valid for both voluntary and mandated implementation, although it is important to note that if an individual feels a technology system is too complex to use, the likelihood of them using it diminishes significantly (Venkatesh et al., 2003). Within the educational field, the concept of EE is extremely important due the limited amount of time an educator has to implement new technology, and the initial perception of how much effort will be required to utilize the technology effectively.

Social influence (SI). Social influence (SI) is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 451). SI is closely related to the subjective norms (SN) found within TRA and TPB (Ajzen, 1991; Fishbein & Azjen, 1975) and are directly linked to extrinsic motivation factors. The social aspect of using technology has been widely misunderstood and although Davis (1989) did not include social norms in his TAM theory, research bears out the importance of including the concept of both SN and SI in technology acceptance and use (Schepers & Wetzels, 2007). Venkatesh et al. (2003) stated that SI "has an impact on individual behavior through three mechanisms: compliance, internalization, and identification" (p. 452) and

the social aspect of technology acceptance is very evident within the educational field, especially as it relates to teachers integrating new technologies in their classrooms.

Additionally, social pressures from federal, state, and local administration along with peer influence can create an environment where educators are forced to use technology systems regardless of whether they have the desire to or not. Many education institutions require their teachers to use various technology resources such as an online grade book program due to a continued emphasis on data management, analysis, and instant communication for stakeholders (Sanga, 2016). Although the standard practice at most higher education institutions is to use an LMS, many secondary institutions do not require teachers to use a particular LMS. It is important to consider that although SI can be a strong factor in using technology, it does not assure successful integration or continued use by an educator. In fact, the opposite could possibly occur where the addition of technology creates a negative impact and creates more stress or diminishing returns on teacher effectiveness (Teo & Zhou, 2017); however, it should be noted that the impact of SI is limited when an individual already has technology experience and is comfortable using various technologies in their field of expertise (Brown et al., 2010).

Facilitating conditions (FC). Facilitating conditions (FC) are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p. 453). FC involve a multitude of resources including training, availability of materials, and logistical or administrative support (Teo, 2010; Teo & Zhou, 2017); however, research has determined that FC do not play a large role in the behavioral intentional to use the technology resource, rather it directly impacts whether a technology will continue to be used (Venkatesh, 2003; Figure 1). The FC support that is provided to teachers directly impacts the attitude towards the technology and therefore, the

motivation to use it in a classroom environment (Teo, 2010). FC have the ability to enable educators to successfully use the technology within their course and have a positive experience, or it can create a barrier of usage that negatively impacts implementation and often results in reduced effectiveness in the classroom (Fathema, 2015).

Moderators. Venkatesh et al. (2003) also included four moderators into the UTAUT model including age, gender, experience, and voluntariness (Figure 1) and suggested that each moderator can impact the factors in a unique way. While each moderator has been evaluated within the research conducted by Venkatesh et al. (2003), research is still limited on how significant this impact can be (Venkatesh et al., 2016). Furthermore, it can be assumed that each of these moderators can play a significant role within the educational field due to the unique demographic identity and structure of educational institutions.

LMS usage. Since initial development, multiple research studies, largely quantitative in methodology, have been conducted using the UTAUT model. Many offshoots of the theory have been evaluated (Venkatesh et al., 2016), allowing researchers to utilize the model to determine the effectiveness of an LMS within both the K-12 and higher education fields (Teo, 2011; Ferdig & Kennedy, 2014; Keong, Albadry, & Raad, 2014). Fathema et al. (2015) used an updated version of TAM, similar to the UTAUT framework to specifically focus on the LMS Canvas and explored faculty attitudes and user acceptance of the technology. The researchers determined that system quality, perceived self-efficacy, and facilitating conditions were significant in predicting whether or not faculty would fully integrate an LMS in their classroom. Teo and Zhou (2017) further extended the concept of technology usage to specifically focus on teachers' philosophical beliefs regarding a constructivist or behaviorist worldview. The researchers posited the perspectives and beliefs that teachers hold towards teaching and learning

will significantly impact whether or not they will actively utilize a technology resource such as an LMS in their classroom. Unfortunately, one of the limitations of the UTAUT model is that it does not fully investigate the difference between initial use and continued use of a technology resource or focus specifically within a classroom environment. Also, there is limited amount of qualitative studies that use the UTAUT framework because the model lends itself more to quantitative data evaluation procedures and analysis. This is why an additional theoretical framework of TPACK must be merged with the UTAUT model to effectively discuss LMS use, primarily in an educational setting.
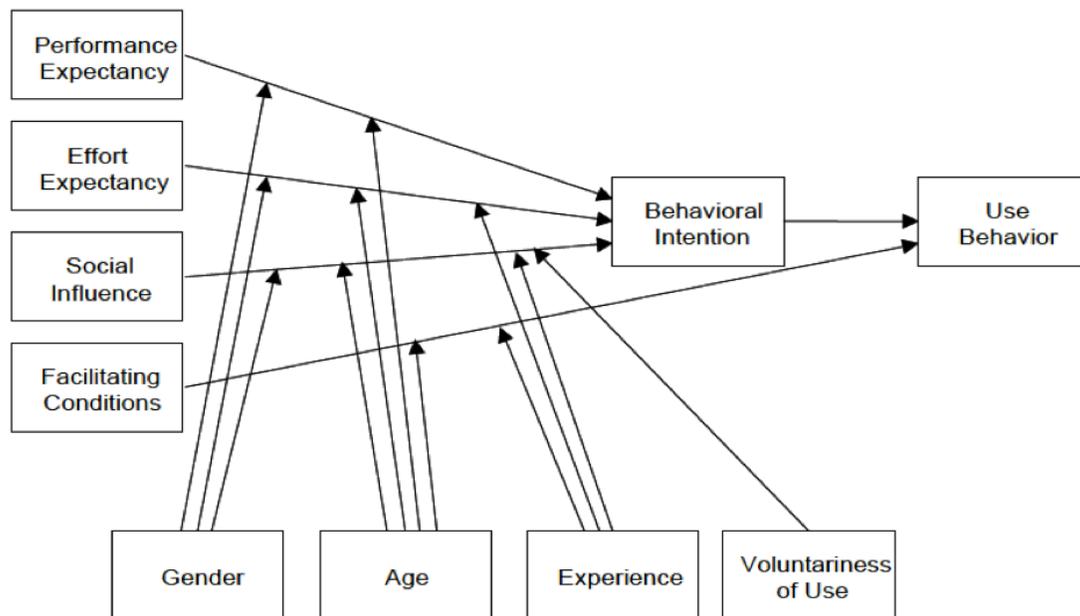
Figure 1. UTAUT model (Reproduced by permission of the author and publisher; Copyright © 2003, Regents of the University of Minnesota; Appendix E)

TPACK. The TPACK is a relatively new technology framework developed by Koehler and Mishra (2005; Figure 2), which join together the knowledge of using the correct technology resources to properly teach the subject material. Although based on an older pedagogical, content, and knowledge (PCK) theoretical principle posited by Shulman (1986), TPACK eschews the idea that by simply using technology, the information will be taught and grasped by

the learner. Rather, the central idea "is that learning to teach a particular subject matter requires not only understanding the content itself but also developing appropriate instructional skills that are appropriate for learners" (Koehler, Mishra, Kereluik, Shin, & Graham, 2014). TPACK considers each area: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK), as "interrelated and inextricably linked" (Graziano, Herring, Carpenter, Smaldino, & Finsness, 2017, p. 373), forming partnerships between each (Figure 2).

A tremendous amount of qualitative and quantitative research has been conducted in recent years on the impact of TPACK (Herring, Koehler, & Mishra, 2016; Rosenberg & Koehler, 2015; Voogt, Fisser, Roblin, Tondeur, & van Braak, 2013) focused on various disciplines, education levels, and teacher development ranges. TPACK has been studied within the integration of science curriculums (Pringle, Dawson, & Ritzhaupt, 2015), English courses (Smith, 2013; Yuksel & Yasin, 2014), social studies (Gómez, 2015), universal design for learning (UDL) and special education programs (Benton-Borghi, 2013; 2016 Courduff et al., 2016), and online and distance education programs (Archambault & Crippen, 2009). Both pre-service teacher (Mouza, 2016) and in-service teacher development (Harris, 2016) along with self-efficacy studies (Bilici, Yamak, Kavak, & Guzey, 2013) using the TPACK model have been conducted. Lastly, the theoretical perspectives surrounding TPACK have been fully established (Graham, 2011; Voogt, Fisser, Tondeur, van Braak, 2016) and TPACK has been critically evaluated as a valid instrument of study (Drummond & Sweeney, 2016; Kabacki Yurdakul, et al., 2012; Cavanagh & Koehler, 2013).

Ultimately, "The TPACK framework provides the structure needed to describe technology integration as the interplay between technology, pedagogy, and content" (Herring, Koehler, & Mishra, 2016, p. 4), and an LMS is a tremendous resource that integrates all of the

key components of TPACK. Unfortunately, often teachers assume that just because an LMS is

utilized, students will automatically be able to learn the material better; however, a thorough

understanding of TPACK and the role technology should play in the delivery of content

knowledge provides the teacher with the tools necessary to design and develop their LMS course

materials effectively (Graziano et al., 2017; Koehler, Mishra, & Cain, 2013). It should be noted

that there is a limited amount of qualitative research, specifically regarding how an LMS can

meet TPACK model frameworks; therefore, additional qualitative based methods should be

utilized to further address nuances in this area.
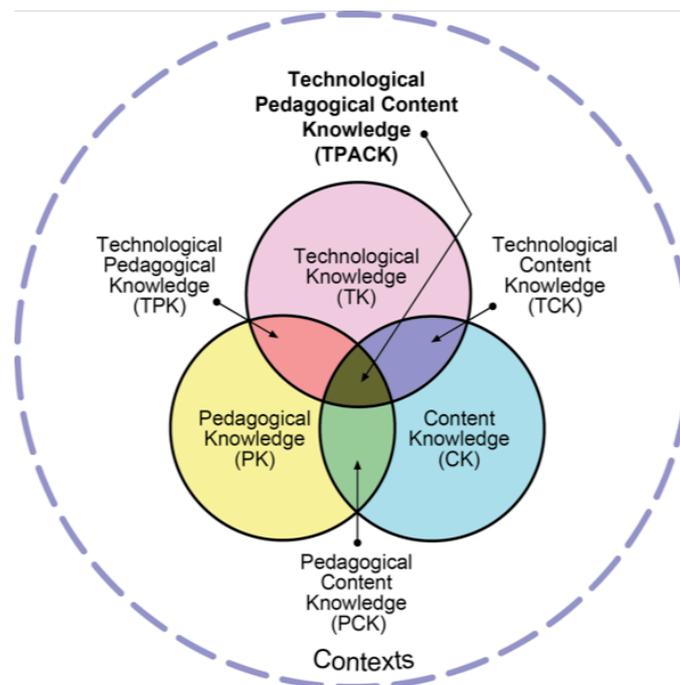
Figure 2. TPACK model (Reproduced by permission of the author and publisher, © 2012 by
tpack.org; Appendix F)

Related Literature

  Although the theories supporting the study have been identified, consideration of recent

literature will be conducted to establish the relationship between current research and the overall

intent of the study, namely the consideration of an LMS used within a secondary blended-

learning classroom environment. Information and communication technologies (ICT) have made a tremendous impact within the educational environment and have created an enormous opportunity for both students and teachers to learn a plethora of technology resources. While ICT has varying definitions depending on specific areas of focus, for the purpose of this study ICT will be defined as generally relating "to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware, software applications, and connectivity" (Alemu, 2015, p. 171). Consequently, the specific ICT resource evaluated in this study concerns the use of an LMS within a secondary blended-learning classroom.

As such, the history of the secondary education movement will be discussed along with specific considerations dealing with recent innovative high school developments focusing on blended-learning and technology use. The historical background and development of LMS technology throughout the past century will be considered, leading to a discussion about Canvas as the specific LMS utilized for the study. Lastly, LMS implementation benefits and concerns grounded in research studies will be examined, with an emphasis on how an LMS has been utilized in the classroom by secondary teachers in a blended-learning classroom environment.

Secondary Education

Horace Mann is considered one of the fathers of the public-school movement, often called common schools (Finkelstein, 1990), in the early 1800s. The secondary high school movement can be traced back to the early 1900s, specifically between 1910 and 1940 (Goldin & Katz, 1999). A direct result of the progressive movement, the "second great transformation of American education" (p. 685) changed the way the United States taught a new generation of young adults. The National Educational Association (NEA), created in 1857, was a leader in

developing how this new high school movement would develop in the 20th and 21st century (Bohan, 2003; National Education Association, 2017). Although secondary education institutions were originally private in nature, a progressive shift towards public education created new concepts of educational responsibility predicated upon the idea that government was now responsible for a child's educational training.

Goldin and Katz (1999) credited the rapid rise in college attendance after World War II with the increase in high school attendance during the late 1930s. The quality of educational institutions and the individuals they taught were directly linked to the tremendous technological advancements that shaped the 1950s through 1970s era (Goldin & Katz, 1999). With the advent of technology integration in schools, the movement also increased the amount of government oversight regarding the use of educational resources (Bohan, 2003). Additionally, compulsory education laws (Thomson Reuters, 2017) created a need for meeting the various demands of students who either could not attend traditional schools or desired a unique educational experience. One way that both public and private educational institutions met those demands was to create various opportunities and programs that integrated new technologies and redefined traditional schooling. Although distance education programs were already in existence and utilized by many colleges and universities (Simonson et al., 2015), a new blended-learning approach was integrated into the secondary education framework.

Blended-Learning Movement

Blended-learning (BL) has increasingly become a valid educational method in both higher education and K-12 learning environments (Mirriahi, Alonzo, & Fox, 2015; Wong, Tatnall & Burgess, 2014) and created a new paradigm of learning that encourages customization, diversity, initiative, self-direction, and collaborative relationships (Yildirim et al., 2014). In a

seminal work on BL perspectives conducted by the Online Learning Consortium (OLC; 2017),

formally known as the Sloan Consortium, Anthony Picciano (2007) provided a definition of BL

to help narrow the broad spectrum of interpretations. For the purpose of this study, BL is

defined as "courses that integrate online with traditional face-to-face class activities in a planned,

pedagogically valuable manner… where a portion (institutionally defined) of face-to-face time is

replaced by online activity" (Picciano, 2007, p. 9). A tremendous amount of research has been

conducted on the benefits and deterrents of a BL classroom (Halverson et al., 2014; Henrie,

Bodily, Manwaring, & Graham, 2015; Means et al., 2013; Mirriahi, Alonzo, & Fox, 2015;

Wong, Tatnall & Burgess, 2014), and the *National Educational Technology Plan* (NETP; Office

of Educational Technology, 2017) has actively promoted the advancement of BL classrooms as a

goal for education reform.

Many of the newly developed BL schools are called innovative high schools and

integrate a plethora of technology-enabled classroom spaces. In North Carolina, cooperative

innovative high schools (CIHS) have been established to "expand students' opportunities for

education success through high quality instructional programming" (North Carolina Department

of Public Instruction, n.d.b., para. 1). These CIHS are usually found on community college

campuses and high school students are dual-enrolled in both high school and college with a goal

of obtaining an associate's degree. For example, in North Carolina, a career & college promise

(CCP) program (NC Community Colleges, 2018) was instituted, which "allows eligible NC high

school students to enroll in college classes… [and] earn college credit they can take with them

after graduation" (North Carolina Department of Public Instruction, n.d.a., para. 1).

The NWC Horizon Report 2016 K-12 Edition (Adams Becker et al., 2016) stated that in

the next five years innovated spaces in high schools, including a focus on online and BL

environments, would outpace the traditional design for brick and mortar schools; however, a BL

environment requires significant infrastructure including a system that allows the teacher and

student to interact with lesson materials (Al-Busaidi, 2013) while maintaining analytic records

for administrative purposes. The infrastructure need within the BL movement spawned the

development of an LMS and subsequent training and integration goals established by various

stakeholders. Ultimately, the LMS provided tremendous value to the development and

integration of BL goals by offering a valid framework that can be used by all stakeholders in the

educational process. The created LMS not only met the demands of BL learning, but also

propagated the increased use of BL learning throughout the educational community, thus

engaging in a symbiotic relationship.

Development of the LMS

With the creation of both online and BL opportunities, educational institutions

desperately sought ways to facilitate the learning environment and help both teachers and

students integrate instructional technology into an easy to use format. Learning systems were

established as a means to manage courses, students, and data. Although the systems produced

numerous design flaws, each development iteration allowed for designers to integrate new

resources and technology updates. LMSs are defined as "a web-based application that supports

teaching and learning by enabling instructors to create and organize content for learners" (Sanga,

2016, p. 11). The phrase typically refers to a cloud-based resource such as Moodle, Blackboard,

Canvas, or Google Classroom and "can be a means to conveniently provide access to content,

assess students, give feedback, and promote teacher-student and student-student communication"

(Porter, 2013, p. 84).

The use of an LMS or course management system (CMS) has become a popular framework in which secondary and higher education programs are meeting the educational needs of "digital natives" (O'Brien, Aguinaga, Hines, & Hartshorne, 2011, p. 33). Previously an LMS was simply considered a repository where information could be accessed in an organized fashion and utilized for training purposes; however, with the growth of online education and the advent of virtual schools such as the Florida Virtual School (FLVS; 2017) and the North Carolina Virtual Public School (NCVPS; 2017), the LMS has been restructured as a personal learning environment (PLE; Conde et al., 2014). Increasingly, many schools are utilizing an LMS as an interdisciplinary learning tool to integrate a cross-curricular approach for student learning (Ji Yong & Mills, 2014). Additionally, LMS utilization has become popular in the UDL and assistive technology (AT) movements, assisting students with disabilities (SWD) and allowing teachers to quickly modify assignments and provide important resources for students (Alnahdi, 2014; Graf & Kinshuk, 2014; Graf, Kinshuk, & Liu, 2009; O'Brien et al., 2011). In the following section, the historical development of the LMS and subsequent identification of Canvas as the primary LMS used in the study will be addressed.

Historical development. The Association for Educational Communications and Technology (2005) defined instructional technology as "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" (pp. 8-9). With the advent of radio and television in the early 20th century, the "visual instruction" or "visual education" (Reiser, 2001a, p. 55) movement was born and a generation of learners would be taught using the latest technology available. One of the first instructional technologies that would fit the AECT definition was the creation of the teaching machine. Encyclopedia Britannica (2017) defined a teaching machine as "any mechanical device used for

presenting a program of instructional material" (para. 1) and is most often used in computer-managed instruction (CMI; Szabo & Flesher, 2002), computer-assisted instruction (CAI; Pagliaro, 1983; Aparicio, Bacao, & Oliveira, 2016) or computer-based instruction (CBI; Dick, 1965; Niemiec & Walberg, 1989; Sözcü et al., 2013) formats.

Sidney Pressley is credited with developing the first teaching machine called the "automatic teacher" (Petrina, 2004, p. 305) in 1924. The stated intention of the machine was to "automatically give and score a test and… teach informational and drill material more efficiently, in certain respects, than the human machine" (p. 312). The simplicity of the teaching machine was to provide individuals with motivation for providing a correct response to a set of questions in an electronic format and allowed them the opportunity to progress at their own rate of learning (Kara & Sevim, 2013). Although Pressley's machine was not initially accepted within the educational field, the technological innovation did propel additional conversations for how emerging technologies like teaching machines could be integrated into the educational system (Niemiec & Walberg, 1989; Skinner, 1958; Skinner, 1961; Stolurow & Davis, 1963). Walter Dick (1963) wrote an extensive report on the implications of CBI and discussed the role of teaching machines in education stating, "Research seems to indicate that students perform just as well using programed (sic) texts as they do using conventional teaching machines… the versatility… opens a virtually unlimited area of research on learning [and] the potential of programing (sic) for individual differences" (p. 41).

The U.S. military was an inadvertent participant in the advancement of instructional technology, especially during and after World War II (Reiser, 2001a, Reiser, 2001b). The Department of Defense (DOD) funded research on instructional training methods in order to develop systematic programmed instructional materials for training purposes. The need to

quickly train a military for advanced warfare and the civilians who would be assembling the technology used for warfare became a driving factor in the development of training resources. The impact on the education field was quickly noticed and experiments using the same techniques began to be conducted in the classroom. The noted psychologist and behaviorist, B.F. Skinner, promoted the use of teaching machines to engage learners in the learning process (Skinner, 1958; Skinner, 1961; Reiser, 2001b), and his constructivist theories shaped a new generation of learning behaviors by encouraging the use of technology driven training devices. Skinner provided new conceptual ideas of teaching machine being used as an assistive technology for the learning process rather than a simple tool to help individuals remember process sequences initially conceived by Pressley (Kara & Sevim, 2013).

Continual technological developments including the Advanced Research Projects Agency Network (ARPANET), a precursor to the Internet and the World Wide Web (Mbuva, 2015; Simonson et al., 2015), allowed for continual development of innovative instructional technologies. The invention of the microchip and subsequent development of the microcomputer, colloquially known as the personal computer (PC), revolutionized the educational scene (Niemiec & Walberg, 1989; Szabo & Flesher, 2002; Westera, 2015) and created a new genre of teaching opportunities and learning styles. In 1960, the Programmed Logic for Automatic Teaching Operations (PLATO) was developed by the University of Illinois and was considered one of the first CAI systems to be used in an educational format (Smith & Sherwood, 1976). Many universities, "such as the University of Chicago, the University of Wisconsin, and the University of Iowa" (Simonson et al., 2015, p. 10) used these technological advancements to develop distance education training programs.

The increased use of computer technology in the classroom drastically expanded the amount of research that was conducted on the educational and societal impacts regarding students (Roschelle, Pea, Hoadley, Gordin, & Means, 2000). In 1989 a team of researchers, led by Marlene Scardamalia and Carl Bereiter, coined the phrase computer supported intentional learning environment (CSILE) referring to "environments that foster rather than presuppose the ability of students to exert intentional control over their own learning" (Scardamalia, Bereiter, McLean, Swallow, & Woodruff, 1989, p. 52). Further research conducted by Scardamalia & Bereiter (1994), Schacter (1999) and Roschelle et al., (2000) within the framework of CSILE established the importance of providing a structured collaborative technology that could be utilized within a classroom format.

It is important to note that that Roschelle et al. (2000) provided a caveat of the CSILE approach stating, "Computer-based technology is only one element in what must be a coordinated approach to improving curriculum, pedagogy, assessment, teacher development, and other aspects of school structure" (p. 78). In spite of the cautions, schools were now transitioning to utilize CSILE concepts and attempts were made to quickly implement computer education in a classroom setting. With the popularity of distance education and blended-learning courses providing benefits to students and profitablilty to both schools and development companies, the resulting stimulus necessitated the advancement of a CMS (Chou & Chou, 2011) and "computer managed instruction systems, from which LMSs are derived" (Szabo & Flesher, 2002, p. 1).

Current advancements in the LMS field. With the floodgates opened for new online learning opportunities, companies rushed to market LMS software for use in both the business and educational markets (Adams Becker et al., 2017). Blackboard, one of the most well-known

of LMS software designers, was developed in 1997 to "provide a user-friendly means by which college professors could put course information, including syllabi, reference sites, and study guides, on the web" (Bradford, Porciello, Balkon, & Backus, 2007, p. 302). Subsequent competition developed, leading to the creation of several types of LMS options including proprietary software such as Desire2Learn (D2L; 2017) founded in 1999, and Canvas (2017) launched in 2011 by Instructure (2017), an educational technology company founded in 2008.

Additionally, free open-sourced LMS options were made available to educational institutions such as Moodle (n.d.), founded in 2002; Sakai (2014), released in 2005, Edmodo (2016), released in 2008, and Google Classroom (n.d.), released in 2014. Current research on LMS advancements by Educause (2017) and the Bill and Melinda Gates Foundation (2017) have promoted the advancement of a next generation digital learning environment (NGDLE; Brown et al., 2015a; Brown et al., 2015b), which will focus on "interoperability; personalization; analytics; advising and learning assessment; collaboration; and accessibility and universal design" (Brown at al., 2015a, p. 1).

Canvas by Instructure. In 2011, a new player in the LMS market made significant strides in allowing third party vendors the opportunity to design education technology that could be integrated into an LMS. The LMS Canvas was unveiled by its parent company, Instructure (2017), and quickly gained attention for its fierce competition within the LMS market. In 2012, Capterra (2017a), a software review company with tremendous influence in the business market, ranked Canvas 13th as the most popular software. In 2016, Capterra (2017b) had moved Canvas up to 8th place with customer reviews giving 4 out of 5 stars (Capterra (2017c). According to the Canvas website, their LMS is "used by more than 2,000 universities, school districts, and institutions around the world" (Canvas, 2017) and is one of the fastest growing LMS providers

(Kruger et al., 2015). Research specifically focused on Canvas is becoming prevalent within the

LMS field and includes faculty usage and transitions from previous LMSs (Fathema et al., 2015;

Sanga, 2016; Satar & Akcan, 2014).

In 2015, the North Carolina Department of Public Instruction (NCDPI) determined that it

would provide Canvas as the state-supported LMS (Canvas, 2015a; Canvas, 2015b; North

Carolina Department of Public Instruction, 2015). Although Local Education Agencies (LEA)

located in North Carolina are not required to use Canvas, they are strongly encouraged to take

advantage of state resources, including professional development opportunities, which can assist

teachers with implementation concerns; however, many LEA districts still face challenges of

motivating teachers and students to accept and integrate the technology, e.g., the LMS Canvas,

into their course curriculum (Mouakket & Bettayeb, 2015; Pynoo et al., 2011).

LMS Implementation Benefits

There are many positive benefits that come from using an LMS including serving "as a

medium to stimulate pedagogical processes by blending traditional learning practices and online

learning environments" (Alghamdi & Bayaga, 2016, p. 2310). Most LMSs provide education

stakeholders the opportunity to organize the learning environment by providing core components

such as course management tools and web-based communication resources (Mirriahi et al.,

2015; Yildirim, Reigeluth, Kwon, Kageto, & Shao, 2014). A key benefit to LMS use is simply

that it provides an educator a tool to manage the learning process (Lochner et al., 2015).

Learning analytics. A significant benefit of an LMS is the application of learning

analytics, often called data mining (Liyanage et al., 2016). Learning analytics is defined as "the

measurement, collection, analysis, and reporting of data about learners and their contexts, for

purposes of understanding and optimizing learning and the environments in which it occurs"

(Brown et al., 2015a, p. 6). Data mining has become a developing field in which data analysis is used to enhance student learning (Firat, 2016; Kimmons, 2015), and data management through the use of an LMS is a significant method for collecting data for analytic research (Oliveira, Cunha, & Nakayama, 2016). In essence, learning related activities are stored within the LMS and used by various stakeholders, e.g., teachers, districts, companies, to develop materials that will meet student needs (Vipond, 2016).

Traditionally, analytics has simply been used to track student progress and verify completion of assignments. "Teaching analytics, the use of analytics to inform both the design and the conduct of a course" (Brown et al., 2015a, p. 6), allow teachers the ability to take a deeper look at their teaching pedagogy and even design the course and assignments to meet individual needs. As an adaptive technology, the LMS has tremendous potential to provide massive amounts of data to researchers for a variety of research studies, including predicting student retention and achievement based on usage (Adams Becker et al., 2017).

Universal design for learning. As online learning becomes the new norm in educational theory, a shift of focus is forcing educational systems to reevaluate how to teach students, especially those with diverse learning needs (Cavanaugh, Repetto, Wayer, & Spitler, 2013; Vasquez & Serianni, 2012; Vasquez & Straub, 2012). The universal design for learning (UDL) concept has become the centralized theory for the integration of technology for students with diverse learning needs. As a theoretical framework that "provides flexibility in the way information is presented… [and] reduces barriers in instruction" (Scott, Temple, & Marshall, 2015, p. 101), UDL is often used within the technology field to help educators address the needs of students with learning disabilities and help provide accommodations when necessary. The Center for Applied Special Technology (CAST) has designated the UDL designed curriculum as

one that is "providing multiple means of engagement, multiple means of representation, and multiple means of action and expression" (Borthwick, Anderson, Finsness, & Foulger, 2015, p. 87). The UDL theory has also been incorporated within both the TAM and TPACK frameworks to encourage educators to consider the needs of a variety of learners, especially those with special needs (Benton-Borghi, 2013; 2016; Courduff, Szapkiw & Wendt, 2016).

Assistive technologies. Assistive technology (AT) and instructive technology (IT) integration are two ways that diverse learner population needs are being met within the curriculum. Özgüç and Cavkaytar (2014) differentiate between the two by stating, "IT can improve academic development… [and] plays an important role in instructional delivery, providing practice opportunities and increasing motivation" (p. 52). Conversely, "AT compensates for students with difficulties and enables the learner to improve their performance" (p. 52). The Individuals with Disabilities Education Improvement Act (IDEA; 2004) further defined AT as "any item, piece of equipment, or product system… used to increase, maintain, or improve functional capabilities of a child with a disability" (sec. 602 1a).

B.F. Skinner's insistence that a teaching machine, in this case an LMS, could be used as a type of AT provided a new generation of teachers and learners with the tools to increase student learning. Kara and Sevim (2013) identified a type of AT called adaptive system, similar to an LMS, which provides teachers and students the ability to facilitate an adaptive learning environment. Adaptive learning is defined as "a usage of technology to help students in their learning process. It provides content and services to meet the needs of individuals or groups" (Kara & Sevim, 2013, p. 111). The adaptive system, in this instance an LMS, provides a fairly efficient and relatively inexpensive method to provide assistive technology resources such as personalized instruction videos and web-related features to a large group of students and allows

students the ability to interact with the material at their own pace. Additionally, the LMS limits

teacher variation of the material and provides standard course materials for students, thereby

increasing the positive educational impact that teachers can have on their students (Szabo &

Flesher, 2002). In essence, the reduction of human error or even the effects of poor teaching can

be mitigated by the application of an LMS within the classroom.

Personalized learning. The educational principles behind UDL and AT can also be

implemented within a traditional classroom setting, and teachers are quickly integrating the

various resources to help all of their students because it can be adapted to meet a plethora of

needs. AT has become the new emphasis for personalized learning in the education field, and

with the increase in technology use in K-12 education, students are receiving a student-centered

learning focus. For example, audio/visual and kinesthetic technology has made tremendous

strides in helping students receive individualized instruction based on their specific needs

(Hamilton, 2015). With the advent of the digital generation, teachers are integrating ideas

established by Vygotsky's zone of proximal development (ZPD; Miller, 2011) to help diverse

learners construct individual identities within an online realm.

An example of this could be the use of a representative avatar in an LMS like Edmodo,

Canvas, or Moodle for identification. Additionally, many educational games use avatars

selected by the students to represent them throughout the game, and students are able to

construct an identity for themselves regardless of their particular learning need. The advent of

virtual reality (VR) within the educational field, often called virtual learning environments

(VLE; Hew & Kadir, 2016; Vasquez et al., 2015), has opened a myriad of opportunities for

diverse learners to interact with their peers and instructors in an environment that allows the

student a modicum of control, which might not be possible in a real-world scenario.

Another area where diverse learners can thrive within an online environment is the use of a personal learning environments (PLEs), in which both teachers and students control the learning environment focusing on the student's unique style of learning (Vasquez et al., 2015). Many teachers have recognized the benefits of having an LMS for remediation purposes, allowing their students additional opportunities to redo or resubmit work without the social stigma usually associated with extra time spent in class working with the teacher one-on-one; however, the impact of an LMS on those in the academically intellectually gifted (AIG) community can also be evaluated within a PLE environment. Notably, the LMS provides teachers with tools and resources that can challenge their higher achieving student yet not overwhelm other students. When this type of PLE occurs, authentic differentiation can occur in the classroom and teacher self-efficacy is increased (Dixon, et al., 2014). Yildirim et al. (2014) called this integration of an LMS into the education environment a personalized integrated education system (PIES) and stated the "LMS appear to be the most promising tool to facilitate learner-centered instruction in information-age schools" (p. 722). It should be noted that most of the studies conducted with an emphasis on UDL, AT, and PLE learning using an LMS used a quantitative methodological approach with limited focus on qualitative data analysis; therefore, it is important to stress that statistical data might not always portray the full picture or impact within these particular areas.

Interdisciplinary learning. According to Parks and Mills (2014), "An interdisciplinary methodology has been defined… as two or more disciplines which combine their expertise to jointly address an area of common concern" (p. 299). Current research conducted by the New Media Consortium (NMC; 2017) and the Consortium for School Networking (CoSN; 2016) have concluded that many schools are embracing new models for educational instruction including the

interdisciplinary learning concept (Adams Becker et al., 2016). In essence, students have the opportunity to gain credit from one assignment for multiple classes. An example of this would be a project assigned to a student requiring them to design a virtual road trip across the United States. Students would be given specific criteria from their math teacher to conduct a mileage chart and calculate gas usage and vehicle wear, and the science teacher could require weather or geologic data along the chosen route. The student's English and literature teachers could require a journal log of various places visited and possibly a requirement to visit significant literature related regions that will be studied during the semester. The history teacher would require geographic and demographic information about the sites visited, and the technology instructor would require a website created to provide daily updates and pictures for family and friends.

One of the logistical struggles with the interdisciplinary teaching method is the logistical struggle that both teachers and students would face integrating educational materials within multiple classrooms and student groups. These hurdles can be drastically mitigated by the use of an LMS, and a platform can be established to not only incorporate a PLE for individual students but "enhances the efficiency of learning" (Park & Mills, 2014, p. 300). Additionally, teachers can work together in professional learning communities to design assignments and coursework that will allow for specific focus on the pedagogical and methodological development of ideas; however, the implementation of the interdisciplinary teaching process is contingent upon all teachers utilizing the same LMS and having familiarity with the system itself.

Learning tools interoperability (LTI). A recent addition to the LMS structure is the ability to utilize a variety of technology resources as an attachment within a course or assignment design. LTI "refers to a specification developed by the IMS Global Learning Consortium that enables the integration of internet-based learning applications with online

platforms offered by learning providers" (Training Industry, 2013). Simply stated, these learning applications provide more adaptability for teachers who already use a variety of web-based applications within their teaching framework. The importance of LTI technologies within the LMS field has been recognized by large publishing companies such as Cengage (n.d.), Pearson (2018a), and McGraw-Hill (2016) with competition to establish accessibility agreements between the various companies and LMSs using the LTI technology. Additionally, test creation sites like Problem-Attic (2018b) or Pearson's (2018) Schoolnet, video resources like Khan Academy (2018), and various virtual labs can all be linked via a LTI, allowing districts and teachers to connect other applications and external resource already being used within a single LMS and creating a powerful teaching tool.

Technology standards. In the past several years, the Office of Educational Technology (OET; n.d.), under the jurisdiction of the U.S. Department of Education (USDOE; n.d.), International Association for K-12 Online Learning (iNACOL; 2015), and International Society for Technology in Education (ISTE, 2017a) have allocated significant resources to study the impact using digital technologies in the classroom has on student learning. A key impetus for the development of ICT for education has been federal and state mandates that technology standards be developed and implemented throughout the United States. According to the *NETP,* the goal is to set "a national vision and plan for learning enabled by technology through building on the work of leading education researchers; district, school, and higher education leaders; classroom teachers; developers; entrepreneurs; and nonprofit organizations" (Office of Educational Technology, 2017, p. 3). Within this plan is a focus on infrastructure network standards that allow for interoperability between systems including LMS resources. The ISTE (2017) has also contributed to establishing technology standards by creating the *ISTE Standards*

for Educators (2017b), and teachers have used these standards to guide them in implementing new technologies in their classrooms (Hamilton, 2015).

In North Carolina, the Department of Public Instruction (DPI) has created a digital learning plan based off of the OET and ISTE standards with the stated goal of building "upon the existing foundation to develop a coherent long-term strategy that sets directions and priorities, supports innovation, and provides resources to enable the State's educators and students to benefit fully from digital-age teaching and learning" (Friday Institute, n.d., para. 1). The innovative digital learning initiatives discussed in the plan summary (Friday Institute, 2015) directly align with the *NC Digital Learning Competencies for Classroom Teachers* (North Carolina Department of Public Instruction, n.d.c.; Public Schools of North Carolina, n.d.) and include a focus on using an LMS to enhance technology competencies; therefore, teachers and students who utilize an LMS in the classroom are achieving the technology goals and standards that state and federal agencies have mandated.

LMS Implementation Concerns

Even though there are some tremendous advantages with implementing an LMS, there are also significant disadvantages. Yildirim et al. (2014) stated that "major problems with available technology are poor customizability of the system, limited interoperability with other LMSs, poor reusability, high cost, lack of pedagogical affordances, and teachers not applying pedagogical principles when they use LMSs" (p. 724). Each of these concerns can impact both the behavioral intention to use and the actual implementation of an LMS (Venkatesh et al., 2016) found within the UTAUT framework. Additionally, struggles with new technology in the classroom can have a major impact on teaching, thereby unraveling the positive aspect of the TPACK framework. The following section will address various concerns with LMS

implementation and identify specific theoretical factors that are impacted. It should be noted that most of the research found concerning LMS implementation concerns was primarily quantitative in nature and did not always identify the qualitative experience of study participants.

UDL and AT. There are both benefits and challenges with the integration of UDL and AT within an LMS. Graf and Kinshuk (2014) discussed the current technology of LMSs that are used by most colleges and universities in the United States and is quickly being incorporated into the elementary and secondary school environment. One of the difficulties with a traditional LMS such as Blackboard, Moodle, or Canvas is that the system does not "automatically provide different courses, learning material, or learning activities for different learners" (Graf & Kinshuk, 2014, p. 772). Ultimately the instructor is tasked with making sure the AT actually adapts for the individualized needs of their students, which can be time consuming and beyond the teacher's technological abilities. In effect, "LMSs typically present exactly the same course for every learner without consideration of the learner's individual characteristics, situation, and needs. Such a one-size-fits-all approach often leads to frustration, difficulties in learning, and a high dropout rate" (Graf & Kinshuk, 2014, p. 771).

Learning styles. Recent advancements in AT have allowed teachers and students more flexibility in their course design and instructional practices; nonetheless, there is much more work that can be done to create a fully integrated PLE for students. Graf, Kinshuk, and Liu (2009) discussed an important aspect of using an LMS as an AT, which involves the identification of a student's learning style. In a face-to-face or blended learning course, the instructor has the ability to interact personally with the student and identify specific learning styles or needs and integrate that knowledge within the LMS; however, in a fully online course, the ability of the instructor to not only identify and address a student's learning style, but to

manipulate the LMS to accommodate those needs is drastically limited. In addition to learning

style concerns, research suggests, "LMSs tend to be course centric rather than learner centric"

(Liyanage et al., 2016); therefore, instructors can often be more concerned with the basic

development and implementation of the LMS as a whole instead of using the LMS to provide a

PLE. Ultimately, educational institutions are accused of focusing more on the administration of

the learning process rather than the actual learning achieved by the student (Adams Becker et al.,

2017; Brown et al., 2015).

     Time, cost, and overload. It should be noted that one of the struggles, from an

instructional viewpoint, is the amount of time and energy that the creation of an online identity

takes (Al-Busaidi, 2013). Additionally, both students and teachers must be trained in the

instructional methodologies used in the new technology field, which can be problematic for

those without a strong background in this field. The costs associated with the integration of an

LMS as IT and AT technologies specific to diverse learner needs is quite extensive and many

school systems simply cannot meet the financial requirements (Adams Becker et al., 2016;

Yildirim et al., 2014). Educators who are interested in using an LMS to help meet various

student needs, such as UDL and AT implementation goals, are oftentimes overwhelmed by the

amount of knowledge and time that is required in the development and implementation process.

     Both of the factors of PE and EE found within the UTAUT theoretical framework play an

important role in whether or not teachers will integrate an LMS into their coursework. If

teachers perceive that the amount of time it takes not only to learn a new system, but also to

integrate it in their pedagogical methods is unusually high, they will be less likely to utilize the

technology. Additionally, the necessary combination of both TP and PK found within the

TPACK model is often overwhelming to new teachers who are struggling with the basics of CK.

It can also be difficult to an experienced teacher to change their tried and true methods of lesson preparation and delivery.

Fathema et al. (2015) conducted a study specifically using the LMS Canvas and discovered that although 99% of colleges and universities have an LMS in place, only a limited number of faculty were taking advantage of the multiple capabilities that were available in the system. Brown et al. (2015) discovered similar results stating, "Despite the high percentages of LMS adoption, relatively few instructors use its more advanced features" (p. 2). The study conducted by Fathema et al. (2015) suggested that FC played a significant role in whether or not instructors were willing to use the system and incorporate the various capabilities within their course teaching. Unfortunately, the lack of technology at home, including Internet access and updated hardware can also prevent students from accessing online material from an LMS. Lastly, students can also become overloaded with the amount of technology resources they have to interact with, and there is a danger of creating a situation within the learning process called the law of diminishing returns. Simply stated, the more students are forced to use technology, the more frustrated they become with accessing the material; therefore, the less they actually use the technology and subsequently the less they learn.

Technology hardware. A key element within a technology driven educational environment is the focus on one-to-one (1:1) initiatives and its use with an LMS to help facilitate student learning. In a 1:1 initiative, all students in a class, grade level, or school are provided individual devices "as a means to increase technology access, transform teaching and learning, and promote digital equity" (Warschauer, Zheng, Niiya, Cotton, & Farkas, 2014). The theory behind 1:1 initiatives is the concept of "ubiquitous computing" (Storz & Hoffman, 2013, p. 2), or simply that computer use should be embedded into the everyday life of a student. Seymour

Papert, a pioneer within the 1:1 computer initiative, "likened a classroom with limited computer access to students sharing several pencils and expecting the impact of limited resources not to effect learning" (Storz & Hoffman, 2013, p. 2).

1:1 initiatives have been discussed and experimented with for many years, most notably by The Friday Institute for Educational Innovation (n.d.), with 12 North Carolina schools taking part in the NC 1:1 Learning Initiative in 2009 (Corn et al., 2010). A meta-analysis conducted by Zheng, Warschauer, Lin, and Chang (2016) determined that there were significant academic benefits for a 1:1 classroom environment along with increased "use of high-yield instructional strategies to engage students in learning" (Williams & Larwin, 2016); however, one of the struggles faced is what type of device should be used with 1:1 initiatives (Office of Educational Technology, 2014). With the recent advancements in technology, specifically the introduction of iPads and Chromebooks into the educational market, schools are concerned about which hardware devices to use for 1:1 initiatives, specifically in relation to an LMS.

iPad. The first iPad was released in 2010 by Apple and has seen tremendous growth in the past seven years, specifically in the educational realm (Apple, 2017b). The increased development of applications (apps) and subsequent upgrades of technology infrastructure have made the iPad a worldwide phenomenon with students as young as two years old able to navigate the complexities of a computing device with as much data processing power as was on the Space Shuttle Apollo mission (Experts Exchange, n.d.). iPads have the ability to wirelessly connect and download apps that are specifically geared towards educational learning. Although the touch screen feature of an iPad can limit certain types of literary expression, most schools have chosen to buy external keyboards to solve the issue. Additionally, the full complement of

Apple products including Pages, Keynote, and Numbers are available on an iPad along with

training programs for teachers to receive Apple certification (Apple, 2017a).

   Chromebook. Chromebooks were introduced in 2011 by Google in a response to the hold

that Microsoft and Apple had on the personal computer market (Google, 2011). The

Chromebook uses the Chrome web browser and all apps can be downloaded from the Chrome

store. In 2016, Chromebooks outsold Apple products and are challenging the number of

Microsoft-based products being sold (The Verge, 2016). The primary recipient of Chromebook

sales has been educational institutions who use cost-based analysis when evaluating the expenses

and upkeep of providing students with a computing device. Additionally, the ability to use G

Suite for Education, including Google Docs, Forms, Sheets, and Slides along with Gmail, has

served to entice many schools to invest heavily in Chromebooks (Google for Education, n.d.a).

Teachers are also able to receive training and certification to "help educators and schools better

integrate Google tools by providing direct training and other services" (Google for Education,

n.d.b).

   Dilemma with using 1:1 devices with an LMS. Educational institutions are at a

crossroads concerning which device to utilize in the classroom with 1:1 initiatives, primarily

regarding an LMS. Most LMSs work with both an iPad and Chromebook because they are

cloud-based applications and can be accessed using support apps or web browsers. Although

iPads have been in the classroom longer, they are more expensive to repair and have proprietary

software that does not easily work with other systems. Chromebooks are significantly cheaper

yet have some technical and security issues that challenge information technology departments

(Nadel, 2017). Additionally, various features on the iPad, such as a rear-facing camera for

recording purposes (Johnson, 2015) or touch and swipe features for application access, along

with familiarity with mobile devices such as the iPhone or Samsung Galaxy allow ease of use by students; however, Chromebooks have integrated keyboards, direct connection with Google tools including Gmail and Google Drive, and larger screens for visibility purposes (Johnson, 2015).

Prior to advancements in LMS integration, some devices could not easily access the LMS and technical issues were a struggle in using a LMS in the classroom; nevertheless, many of these issues have been resolved and most LMS programs can be easily accessed on any device. The lingering dilemma is now whether the device allows the user to fully utilize all of the benefits the LMS has to offer. For example, most LMS programs have discussion board capabilities, which are used by teachers to establish higher-level understanding of the material and provide opportunities to engage in constructive dialogue concerning various topics. While an iPad has the versatility of accessing the discussion board and even allowing students the option of verbally speaking in their response, a Chromebook allows students the ability to type their responses quickly and efficiently; therefore, teachers must be cognizant of the different types of devices their students are using in order to delineate their instructional pedagogy to fit that device's particular restrictions or abilities. Students who struggle with providing a written response might do well with an iPad verbally recording their statement, another student who needs the ability to "think through their fingers" as they type and visualize their response might be much better served by a Chromebook.

Additionally, the data evidence for whether iPads or Chromebooks serve students better in a 1:1 classroom specifically using an LMS is very minimal. In fact, although much research has been done on the impact of an LMS and 1:1 initiatives, no current research studies on the impact of 1:1 initiatives on LMS use was discovered. Several opinion articles in various

educational journals (Johnson, 2016; Nadel, 2017) concerning personal ideas surrounding the

iPad verses Chromebook debate were discovered; however, there were no scholarly-reviewed

studies that compared the impact of iPad verses Chromebook, much less ones that focused on the

use of an LMS utilizing a particular device.

  Student achievement. Since the LMS is a recent addition to educational learning theory,

research results have been varied when assessing the impact on student achievement and

learning while using this particular digital learning resource (Yuan & Xiaoyu, 2015). Student

achievement is a very broad term and is extremely diverse in application and meaning depending

on what results are being evaluated. Ultimately, the primary goal of the implementation of an

LMS within a course of study is to assist the student in his learning objective and mastery of the

subject material. The determination of what can be considered mastery becomes an important

delineation when applied directly to the impact of using an LMS; therefore, the secondary goal

of an LMS is to produce a familiarity within the learning process of using a digital framework

for learning (Sanga, 2016). In essence, more qualitative and quantitative research needs to be

conducted in order to determine whether teachers and students are accepting the technology and

are satisfied with the achievement levels reached.

  LMS acceptance and implementation struggles. Although many educational

institutions and teachers recognized the benefits of using an LMS, acceptance and use has not

been at a level that meets most USDOE (n.d.) technology implementation goals. Many K-12

schools have encouraged teachers to conduct professional development training specifically

focused on LMS implementation (Adams Becker et al., 2016); however, there are several

barriers that quickly become apparent, namely teacher attitudes and motivations. Pynoo et al.

(2010) used the UTAUT model to conduct a study specifically focused on secondary education

teachers and their acceptance of a digital learning environment (DLE) and discovered a key determinant for use was attitude and behavioral intentions. Many states have concluded that the best way to help schools, especially schools with limited resources, integrate an LMS into classrooms is to provide a singular system that is paid for and supported by the state education department; nonetheless, the LMS is simply a tool or resource that "can hinder the quality of teaching depending on how it is perceived and used by faculty (Walker et al., 2016, p. 49). It should be noted that that many researchers have stated the implementation of an LMS is significantly predicated on a teacher's willingness to integrate it into his classroom and not necessarily on the SI or FC found within the UTAUT model concepts (Pynoo et al., 2010; Teo and Zhou, 2017).

The increased use of an LMS has allowed instructors to develop course content that meets the needs of various learners, including those who utilize distance education opportunities and a blended-learning environment (Henrie et al., 2015; Means et al., 2013; Wong et al., 2014). Unfortunately, simply having an LMS technology in place does not automatically guarantee teacher acceptance and student success (Fathema et al., 2015). The success of an LMS primarily deals with the attitudes, motivations, acceptance, and usage by both the teacher and the user (Almarashdeh, 2016; Gautreau, 2011; Murphy & Rodríguez-Manzanares, 2009; Sánchez & Hueros, 2010; Sørebø et al., 2009).

Summary

In summary, a literature review identifying key aspects of the use of an LMS by secondary school teachers within a blended-learning classroom was conducted. Much of the research concerning this topic had been quantitative based and geared towards the higher education realm, revealing several gaps in the literature. There are several excellent theories

posited and models designed addressing the technological applications and pedagogical concerns with implementing an LMS in a secondary blended-learning classroom. The primary theoretical framework models of UTAUT and TPACK were explored, including a discussion about previous theoretical frameworks applicable to the current research study. Related literature dealing with the history of secondary education, focused specifically on technology integration including the creation of innovative high schools and the increase of blended-learning classrooms was reviewed. Additionally, a discussion concerning the recent development of LMS technologies, specifically Canvas was discussed and LMS benefits and results were considered. Throughout the chapter, evidence of gaps in the literature and support for the central research question and sub-questions was provided.

CHAPTER THREE: METHODS

Overview

In order to identify the motivations and attitudes of teachers who use Canvas in their classroom, I conducted a transcendental phenomenological study that examines interview transcripts and educational artifacts (e.g., Canvas courses). The following sections will justify the design appropriateness for the study and discuss the influence of design methodologies proposed by Moustakas (1994). I will describe the proposed study sites and participants in detail and consider how a descriptive questionnaire was utilized in participant selection and demographic evaluation. Procedures for completing the research study following the Liberty University Doctor of Education Dissertation Handbook (Liberty University, 2017a) including obtaining IRB approval, obtaining consent forms from sites and participants, and final submission of the dissertation manuscript will be addressed. I establish the role of the researcher, outline data collection including a thorough discussion of interview and focus group questions and consider data analysis procedures formulated by experts in the qualitative research fields (Creswell, 2013; Gall et al., 2007; Moustakas 1994; Patton, 2015; Saldaña, 2016). Lastly, I will establish validity by evaluating the trustworthiness of the research methods and consider the ethical ramifications of the research study.

Design

This study used a qualitative-based research design, based on a transcendental phenomenological approach (Creswell, 2013; Gall et al., 2007; Moustakas, 1994), to research the phenomenon of teachers using an LMS within a blended-learning classroom environment and write the essence of why teachers choose to utilize an LMS. I sought to examine teacher experiences integrating an LMS by obtaining data using a methodological approach (Creswell,

2013; Moustakas, 1994). I focused on the LMS Canvas, a cloud-based system created by Instructure in 2011 to "connect all the digital tools and resources teachers use into one simple place" (Canvas, 2016, para. 5).

Qualitative Approach and Assumptions

Qualitative research is defined as the study of "things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, p. 2). In the strictest sense of the word, research is structured to identify the specific qualities that are inherent within a topic being studied, which usually cannot be quantified. Creswell and Poth (2018) stated that qualitative research is used "because quantitative measures and the statistical analyses simply do not fit the problem" (p. 46). Qualitative research is sometimes identified as "interpretive research" (Gall et al., 2007, p. 31) because the data collected is evaluated and synthesized to provide various meanings instead of concrete data analysis.

Found within qualitative research principles are basic philosophical assumptions or paradigms that are brought to the table of research knowledge (Rockinson-Szapkiw et al., 2014). Although there are many epistemologies available for consideration, I used a postpositivistic assumption within this research study. According to the basic framework of postpositivism, I analyzed multiple perspectives from participants and brought to the study a bias that included my personal beliefs and values about an LMS (Creswell, 2015; Gall et al., 2007; Rockinson-Szapkiw et al., 2014). This philosophical assumption shaped both the interpretative approach and design methodology used throughout the study.

There are several types of interpretative approaches found within a qualitative study including: narrative, phenomenology, grounded theory, ethnography, and case study (Creswell,

2013); however, this study used a phenomenological framework to focus on the overall meaning or lived experience of a phenomenon, namely LMS usage. According to Clark Moustakas (1994), phenomenological research is geared towards determining "what an experience means for the persons who have had the experience and are able to provide a comprehensive description of it" (p. 13). Foremost in a phenomenological research study is the central question born out of intense curiosity and personal history, which provides a guiding focus throughout the research (Moustakas, 1994). Creswell and Poth (2018) stated, "The basic purpose of phenomenology is to reduce individual experiences with a phenomenon to a description of the universal essence" (p. 75). Additionally, a specific perspective within the phenomenological approach called transcendental phenomenology will be further utilized. It should be noted that a case study approach was also considered for the study; however, considerations regarding the parameters of multiple participant sites and the variety of subjects being taught using Canvas limited the ability of studying the topic within a "bounded system" (Creswell & Poth, 2018, 96). With these considerations in mind a phenomenological framework was determined to be the most conducive approach for this study.

Transcendental Phenomenology

There are several major components involved in the transcendental phenomenological model and Moustakas (1994) based much of his philosophical framework on the writings of Edmund Husserl. Transcendental phenomenology is built upon the concept of "subjective openness" (Moustakas, 1994, p. 25) and a purity of idea or freshness (Creswell, 2015). Within the philosophical framework lies the theory of epoche in which "the everyday understandings, judgments, and knowings are set aside, and phenomena are revisited, freshly, naively, in a wide-open sense, from the vantage point of a pure or transcendental ego" (Moustakas, 1994, p. 33). In

essence the researcher transcends his personal biases about the topic in order to consider a phenomenon from the participants' experiences. Ultimately, "The value of the epoche principle is that it inspires one to examine biases and enhances one's openness even if a perfect and pure state is not achieved" (Moustakas, 1994, p. 60).

Another concept within the transcendental phenomenological realm is the researcher must conduct the study with intentionality, which is comprised of both the noema and noesis (Moustakas, 1994; Rassi & Shahabi, 2015). The "noema is that which is experienced, the what of experience, the object-correlate [while the] noesis is the way in which the what is experienced, the experiencing or act of experiencing, the subject-correlate" (p. 69). While many researchers still disagree about Husserl's depiction of noema and noesis (Kosowski, 2012; Williams, 2016; Zahavi, 2004), according to Moustakas (1994) both the noema and noesis must be present to identify the meaning of the phenomenon, which "is at the heart of a transcendental phenomenology of science" (p. 56).

Design Methodology

The primary way that Moustakas (1994) recommended organizing phenomenological research was to conduct interviews using two broad general questions, e.g., "What have you experienced in terms of the phenomenon? What contexts or situations have typically influenced or affected your experiences of the phenomenon?" (Creswell, 2015, p. 81). Moustakas (1994) provided three specific steps that must be taken within the process of conducting a transcendental phenomenological study: epoche, reduction, and imaginative variation. While the concept of epoche can be found within the theoretical framework of transcendental phenomenology, it can also be found in the methodological process steps as well.

Epoche. Moustakas (1994) determined that this was a process that must be done prior to conducting any data collection steps in order to prepare for gaining a fresh perspective of the phenomenon. One of the challenges with this process is "to be transparent to ourselves, to allow whatever is before us in consciousness to disclose itself so that we may see with new eyes in a naïve and completely open manner" (Moustakas, 1994, p. 86). In the epoche process, care is taken to evaluate the various personal knowledge biases that are brought into the study and then evaluate how those biases can be set aside to view the study from a different outlook. A conceptual analogy of the epoche process is the rudimentary idea of donning a variety of eyeglasses in order to consider different viewpoints. Some glasses allow the researcher to sharpen the focus, while others prevent too much glare from blinding one's sight. Each pair of glasses has a singular purpose and is worn to enhance a unique perspective for the individual wearing them.

Reduction. The next method is phenomenological reduction, a reflective practice that allows the researcher to consider the data and identify various themes throughout the research interview transcripts. A bracketing approach is used in order to focus specifically on the phenomenon and horizonalization, i.e., assigning the same value to every statement, is conducted. Lastly, themes are organized based on the horizons and "a coherent textural description of the phenomenon" (Moustakas, 1994, p. 97) is established. Simply stated, the reduction method reduces the data into equal data streams of information that can then be evaluated by the researcher in both a singular and pluralistic format, in order to prepare for the next process step.

Imaginative variation. A final method process step is the imaginative variation in which the various perspectives of the horizons are considered and "the eidos [or] the pure essence"

(Moustakas, 1994, p. 97) of the phenomenon is described and synthesized. The imaginative variation allows the researcher to take the reduced data and formulate the meaning of the phenomenon (Creswell, 2015). Moustakas (1994) separated the imaginative variation and synthesis process into two separate steps, although each are so closely interrelated that for the purpose of the study, I have merged them together. The central goal of the transcendental phenomenological research study should be to present "a unified statement of the essences of the experience of the phenomenon as a whole" (Moustakas, 1994, p. 100).

Design Appropriateness

In this study, I was interested in gaining descriptions and meanings connected with a teacher's experience with using an LMS, specifically Canvas, in a secondary blended-learning environment. A qualitative approach with a postpositivism epistemology is consistent with my philosophical viewpoint of studying the context, settings, and personal experiences of participants and interpreting data in a way that assigns various meanings to the data collected (Creswell & Poth, 2018). Additionally, a transcendental phenomenological research design is appropriate for this study because I wanted to consider the eidos of why teachers choose to utilize an LMS. I intentionally integrated my conscious perceptions, i.e., noema that an LMS has a significant impact for teaching behaviors, based on my previous personal experience, i.e., noesis with an LMS or technology in general. Due to my experiences with an LMS, I considered my own biases and suppositions and eliminated them, i.e., conducted the epoche process, in order to provide a fresh perspective within the study. Moustakas's (1994) methodology and philosophical framework was a robust match for the design of my study.

Research Questions

The following central research question and subsequent sub-research questions were used throughout the study to help identify the phenomenon of secondary teachers integrating the LMS Canvas in a blended-learning course.

Central Research Question

How do secondary teachers describe their experience integrating the LMS Canvas within a blended-learning course?

Sub-research question one. What motivational or attitude factors concerning acceptance of Canvas do participants describe?

Sub-research question two. How do secondary teachers describe organizational support concerning Canvas implementation and training?

Sub-research question three. What are perceptions secondary teachers have about their personal teaching behaviors while teaching with Canvas?

Sub-research question four. What are perceptions secondary teachers have about their students' results when using Canvas?

Sites

The proposed sites of the study were located within a rural high school district in the Southeastern United States. According to the U.S. Census Bureau (n.d.), the population estimate for the rural high school district in July of 2016 was 57,307 with 22.6% of the population under 18 years of age. In July of 2015, 56.1% of the population was White and 41% was African American. As stated by the district website, there are five high schools in the district, three traditional and two non-traditional including an Early College which meets on the campus of a local community college (Southeastern Public Schools, 2017b).

Based on information found on the Southeastern Public Schools Report Cards 2015-2016 District Snapshot, there are 540 teachers in the district with a student access to internet-connected digital learning technology ratio of 74% (Southeastern Public Schools, 2017a). The sites were chosen based on several factors including: recent integration of the LMS Canvas into all of the secondary schools by the district, proximity of the district to where the researcher lives but does not work in, and the ability of the LEA to make autonomous decisions on conducting research within its sphere of influence.

Participants

The initial study proposal planned to have approximately 10-15 teachers participate in the interview process, based on Moustakas' (1994) recommendation for a phenomenological study. I used a purposeful sampling strategy involving homogeneous sampling (Creswell, 2015) because the teachers selected were all from the same Southeastern United States public school district and currently use the LMS Canvas in their classroom. Additionally, the attempt was to select a maximum variation of participants with a diverse range of experience in teaching and subject matter qualifications, from different secondary schools within the district. A request was made to the district for a list of teachers who currently use Canvas in their classroom and a participation request email was sent to those individuals. A carbon copy (cc) of the email was sent to the teacher's principal and digital learning specialist (DLS) to make them aware of the request as well. Eleven teachers responded to my request for participants and those teachers were then contacted with additional information about the study.

A questionnaire, for descriptive purposes only (Appendix H), was provided to participants prior to interviews to identify demographic information and gain initial insight into their motivation and attitudes towards technology acceptance and use. The questionnaire was

based on the UTAUT theoretical framework (Teo, 2011), used a seven-point Likert scale, ranging from 1 – strongly disagree to 7 – strongly agree, and was completed using a Google Forms format. Permission to use the questionnaire was secured prior to use (Appendix G) and discussion about responses took place during individual interviews.

Procedures

The following procedures were completed prior to conducting the research study. I followed Liberty University dissertation proposal guidelines which consisted of submitting the "Title Page, Abstract, Table of Contents, Chapter One: Introduction, Chapter Two: Literature Review, Chapter Three: Methods, References, and Appendices with instruments, participant letters, and IRB applications" (Liberty University, 2017a, p. 16). I then submitted "the proposal for a research consultant review: milestone one" (p. 17), scheduled a time for the defense of the proposal, and defended "the proposal: milestone two" (p. 19).

I completed the Collaborative Institutional Training Initiative (CITI) noted in the IRB application checklist (Liberty University, 2017b) and "within 10 business days of the approved proposal defense" (Liberty University, 2017a, p. 19) submitted the IRB application. The research plan was submitted for review for an "expedited review" (p. 22) based on research being conducted on individual motivation in an educational setting.

Once I received "IRB approval: milestone three" (Appendix A; Liberty University, 2017a p. 21), I contacted the district superintendent (Appendix C) and school principals (Appendix D) using previously approved form letters. Once teachers for the study were identified, a teacher consent form was provided (Appendix B) and an initial descriptive questionnaire (Appendix H) was distributed using Google Forms. Interview dates and times were identified for each teacher and a focus group date and time was determined. Once all data

was collected, I used a computer assisted qualitative data analysis (CADQAS) program to analyze the data and write Chapter Four and Chapter Five of the dissertation. I submitted "the dissertation manuscript for a research consultant review: milestone four" (Liberty University, 2017a, p. 22) and submitted "the dissertation manuscript for a professional edit" (p. 23). Finally, I scheduled a dissertation defense and defended "the dissertation: milestone five" (p. 27).

The Researcher's Role

In this qualitative study, I embraced the role of a human instrument (Lincoln & Guba, 1985) and conducted analysis based on the following biases and assumptions. I am currently a high school American history teacher and digital learning coach who has a B.S. in Christian education, an M.A.T., and an Ed.S. in curriculum and instruction. I have designed and integrated blended-learning curriculum within several high school and college courses using Blackboard, Moodle, and Canvas as an LMS, and firmly believe that a teacher's acceptance and use of technology in the classroom enhances teaching behavior and enriches student learning. Although I do not have a personal relationship with any of the participants, I work within a similar environment using Canvas as an LMS in a blended-learning secondary classroom setting. When conducting interviews and analyzing audiovisual materials, I integrated previously learned knowledge about the topic to help identify and explain technical jargon for analysis. Additionally, I conducted a phenomenological reduction of the transcript, using both bracketing and horizonalization process steps in order to prepare for the imaginative variation and synthesis phase of the study, which revealed the central essence or meaning (Moustakas, 1994).

Data Collection

To ensure thorough data collection and ensure the quality and rigor of the research study, various rich data collection methods were used to crystallize study results (Gall et al., 2007). I

used triangulation of data collection methods including: individual participant interviews, document analysis of participants' Canvas courses, and a focus group discussion.

Semi-Structured Open-Ended Interviews

Conducting interviews is one of the primary responsibilities of the qualitative researcher as it allows for the participant to provide their individualized perspective (Moustakas, 1994; Patton, 2015). Additionally, in a phenomenological interview the aim is to "elicit a personal description of a *lived experience* so as to describe a phenomenon as much as possible in concrete lived-through terms" (Patton, 2015, p. 432). Participants were interviewed with an interview protocol form (Creswell, 2013; Appendix I) at least once, and the interview questions were provided to the participant at least a week prior to the interview. Interviews were conducted at the participant's workplace and were both videotaped and audiotaped. The audio was transcribed, and video footage was observed to evaluate facial expressions and behavior regarding questions during the interview.

Prior to the interview, the participant was asked to complete "a consent form for the human relations review board" (Creswell, 2013, p. 166; Appendix B). Each question provided a starting point for further probing questions, as recommended by Patton (2015), and participants' answers to the demographic questionnaire allowed me to identify areas for further discussion if necessary. Additionally, participants were provided a transcribed copy of their interview to adjust for any discrepancies and ensure the "emic perspective by member checking" (Gall et al., 2007, p. 475).

Semi-Structured Open-Ended Interview Questions

1. How long have you been teaching, and what do you consider the most rewarding part of education?

2. What are your personal experiences using an LMS within an online and blended-learning format?

3. How do you perceive the impact of online and blended-learning regarding the current educational experience for students?

4. What were your experiences in your teacher training at a college or university concerning the use of an LMS, and do you feel those experiences have impacted your use of Canvas?

5. What do you consider is your personal teaching style, e.g., teacher-centered or student-centered, and how does Canvas support that style?

6. What are some personal attributes, teaching philosophies, or experiences that you feel led to you using Canvas in your classroom?

7. What are some motivational factors and attitudes that lead you to utilize Canvas in your classroom?

8. What are some valuable features, benefits, or strengths with Canvas?

9. What are some positive experiences you have had with implementing or using Canvas in your classroom?

10. What are some missing features, drawbacks, or weaknesses with Canvas?

11. What are some negative experiences you have had with implementing or using Canvas in your classroom?

12. How much did your peers influence you to utilize Canvas in your teaching environment?

13. How much influence do you feel that you have made on your peers to utilize Canvas in their classroom environments?

14. What are your perceptions for why teachers choose not to use Canvas in their classroom environment?

15. What are some experiences with administration support regarding Canvas implementation and training?

16. What are some experiences with technical support regarding Canvas implementation and training?

17. What are your experiences and perceptions about using Canvas within cross-curricular or interdisciplinary learning?

18. What are your experiences with using Canvas within a Universal Design for Learning (UDL) approach as an adaptive technology to meet specific needs of your students?

19. What are your perceptions regarding your own teaching effectiveness and impact when using Canvas?

20. How do you perceive student results and possible benefits for students from utilizing Canvas?

21. If I was a student who was in your course, what are some things that you feel Canvas should allow me to do and learn that would have been different if Canvas was not available?

22. What influence on your teaching has Canvas had and would you choose to use it or a similar LMS in future courses?

23. What are your final thoughts regarding your personal use of Canvas in a classroom setting, or areas that you feel should be specifically identified as important for me to consider within this research study?

The question order, or sequencing, is specifically arranged to provide continuity for both the interviewer and interviewee and allowed for a variety of time frame responses including present, past, and future tense (Patton, 2015). All semi-structure interview questions were

designed to address the central research question of how secondary teachers describe their experience integrating the LMS Canvas within a blended-learning course.

Questions one through four were used as icebreakers and background questions (Creswell, 2013; Patton, 2015) in order to allow participants to get comfortable with the interview format and ideally lead them into further discussion about Canvas. The questions were also intended as experience questions (Patton, 2015) that allowed the participants to denote personal experience using various technology resources within their educational career. Previous experience with online and blended-learning courses and the use of an LMS for pre-service teacher education plays a significant role in teacher acceptance and motivation to use technology in the classroom (Ashrafzadeh & Saydaian, 2015; Teo, 2014; Teo & Noyes, 2011; Teo & Zhou, 2017).

Understanding the attitudes and motivations concerning the use an LMS are critical to the framework of this study (Lee et al., 2015; Lochner et al., 2015). The UTAUT theoretical framework used in this study was intended to divine the underlying perceptions that participants have in utilizing an LMS in their classroom. Questions five through seven were intended as opinion and values questions (Patton, 2015) in order to gain insight into perceived attributes and motivational factors that have influenced participants' acceptance and use of Canvas in their educational framework and teaching behavior, which is directly related to sub-research question one.

Within the UTAUT model, PE and EE are significant aspects of technology acceptance and have similar comparisons within TRA, TPB, and TAM (Teo, 2011; Venkatesh et al., 2013). Questions eight through 11 are singular questions (Patton, 2015) that focus on various aspects of Canvas as an LMS including positive and negative experiences of implementation and use.

Additionally, these questions also relate to sub-research question one, which focuses on the motivational or attitude factors concerning the acceptance of an LMS.

Also, within the UTAUT model, SI deals with the social aspect of technology use, namely how much influence peers have concerning the implementation of an LMS (Venkatesh et al., 2003), and FC addresses the "organizational and technical infrastructure" (Teo & Zhou, 2017, p. 514) support of technology usage. Questions 12 through 16 are directly related to sub-research question two focusing on organizational support regarding Canvas implementation and training. Question 12 considered how much influence the participants' peers had on their decision to use Canvas in their course. Question 13 allowed the participant to speculate about how much their own influence concerning their acceptance and use of Canvas has had on their peers' choice to utilize Canvas in their classrooms. Question 14 encouraged the participant to postulate why some of their peers choose not to utilize Canvas in their classroom, and provide various rationales based on their own experiences. The perceptions of why their peers might not use Canvas allowed me the opportunity to consider additional motivational or attitude factors involved in LMS acceptance.

Venkatesh et al. (2003) identified that FC played a significant role in not only predicting intention to use technology, but also the continuation to use the technology and willingness to integrate additional technology resources in the future. Questions 15 and 16 are also singular questions (Patton, 2015) designed to identify participants' experiences with administration and technical support regarding their implementation and use of Canvas. Although the questions only ask for experiences the participants have had with administration and technical support, I hoped to discover significant qualitative insights from the responses based on which school the participant works at, which could provide data for further research studies.

The role of TPACK concerning LMS use cannot be understated and is of paramount importance when addressing technological and pedagogical issues in the classroom (Koehler & Mishra, 2005). Questions 17 and 18 were concerned with the integration of interdisciplinary and adaptive technology philosophies within the framework of Canvas use. Questions 19 and 20 were focused on perceived teacher effectiveness and student results while using Canvas. Each of these questions directly relate to sub-research questions three and four concerning perceptions about personal teaching behaviors and student results when using Canvas.

Question 21 was a simulation question (Patton, 2015) that allowed the participant to verbally explain to a student why they chose to use Canvas to enhance the learning experience. Question 22 was a behavioral intention to use question and could stand as a one-shot question (Patton, 2015) if needed. The question incorporated both the perception of attitude and motivation in determining the influence Canvas has had on the user. Additionally, the question provided an opportunity to consider how valuable Canvas is and whether the benefits of continuing to use Canvas outweigh any negative aspects. Patton (2015) established the importance of providing a one-shot question to use in case of time constraints or if there are interview difficulties. Additionally, he suggested that many times the one-shot question allows the interviewee the opportunity to provide significant insight specific to the central phenomenon. Question 23 was a closing question (Patton, 2015) intended to allow the participant the opportunity to share any additional insights about their use of Canvas or reiterate a specific point previously made in the interview.

Document Analysis

Participants were asked to provide a visual demonstration of their LMS course(s) as an "audiovisual material" (Creswell, 2013, p. 160) or educational artifact data resource. The visual

demonstration entailed showing the course homepage, various assignments or assessments, and grading rubrics or course mastery specifications. Each of these visual demonstrations were specifically unique to individual teachers based on their perceptions of course structure and student use. Additionally, I requested screenshot images for reference notes and to provide a visual representation while examining interview data. Participants were asked to explain their perceptions concerning why they chose a particular framework or instructional model within their LMS, although no student data was provided. The LMS course demonstration took place during the initial interview with the participant.

Semi-Structured Open-Ended Focus Group

Participants were also invited to participate in an online focus group interview using a combination of face-to-face and YouTube Hangout (2017) in order to create a homogeneous environment where participants who use Canvas can cooperatively examine their individual experiences (Creswell, 2013). According to Patton (2015), the object of a focus group is to "get high-quality data in a social context where people can consider their own views in the context of the views of others" (p. 475). Additionally, Krueger and Casey (2015) suggested that the purpose of the focus group is not to come to definitive decisions, but to allow participants a natural setting in which to discuss various perspectives of a topic. Instead of the traditional role of an interviewer, "the researcher serves several functions in the focus group: moderator, listener, observer, and eventually analyst" (Krueger & Casey, 2015, p. 9).

The focus group interview used an interview protocol form using semi-structured, open-ended prompts (Creswell, 2013; Appendix J) to allow participants to provide their own perspectives and experiences while keeping the interactions in a focused direction (Patton, 2015). The discussion prompts were provided to the participants at least a week prior to the

focus group discussion and the discussion was recorded using both audio and video capabilities. Lastly, each discussion prompt provided a starting point for further probing questions (Patton, 2015).

Semi-Structured, Open-Ended Focus Group Prompts

1. Introduction Prompt – Please introduce yourself to the focus group and tell the group what school you teach at and what courses you currently teach using Canvas.

2. Discussion Prompt 1 – What were the motivational factors and attitudes that lead you to utilize an LMS, specifically Canvas, in your classroom?

3. Discussion Prompt 2 – How do you perceive the impact of online and blended learning regarding the current educational experience for students?

4. Discussion Prompt 3 – What were your experiences in your teacher training at a college or university using an LMS, and do you feel the experience has impacted your use of an LMS?

5. Discussion Prompt 4 – What are your perceptions for why teachers choose not to use an LMS, specifically Canvas, in their classroom environment?

6. Discussion Prompt 5 – What are some experiences you would share with teachers if you were asked to conduct a training session on integrating Canvas in a course?

The introduction prompt was used as a "social conversation… aimed at creating a relaxed and trusting atmosphere" (Moustakas, 1994, p. 114). Due to several participants not knowing one another, the question played a significant role in helping to identify the various settings and contexts from which each participant was addressing the group. Discussion prompts one through five were all related to the central research question; however, each prompt considered a sub-research question focus. Discussion prompt one identified the motivational and attitude

factors that are significant to the theoretical framework of the UTAUT model (Venketesh et al., 2013). Additionally, because of the district's emphasis on using Canvas as an LMS, the motivation to specifically use Canvas considered the SI and FC factors (Teo & Zhou, 2017). Therefore, discussion prompt one incorporated both sub-research questions one and two as the related framework for consideration.

As discussed in the individual interview section, previous experiences with online and blended-learning courses plays a significant role in teacher acceptance and motivation to use technology in the classroom (Teo, 2014; Teo & Noyes, 2011). Discussion prompts two and three allowed participants to recount their personal experiences with using technology, specifically an LMS and then identify if their students have had similar experiences in their secondary classrooms (Lochner et al., 2015). Additionally, interaction among group participants "enhance[ed] data quality" (Patton, 2015, p. 477) and allowed participants to actively engage with each other about how technology has impacted their classroom behaviors. These prompts directly related to sub-research questions three and four because the questions considered the perceptions of personal teaching behaviors and student results.

Similar to the open-ended interview question 14, discussion prompt four encouraged the participants to postulate why some of their peers choose not to utilize Canvas in their classroom and provide various rationales based on their own experiences. The perceptions of why their peers might not use Canvas allowed me the opportunity to consider additional motivational or attitude factors involved in LMS acceptance and relates to sub-research question one. Finally, discussion prompt five was a simulation question (Patton, 2015) that allowed participants to verbally explain to peers why they have chosen to use Canvas to enhance the learning experience for their students. This prompt provided participants the opportunity to utilize the TPACK

theoretical framework to address technology and pedagogical issues in the classroom (Koehler & Mishra, 2005) and addressed sub-research questions three and four.

<div align="center">**Data Analysis**</div>

Data analysis is a critical part of a qualitative study and Moustakas (1994) is a leader in the field of the transcendental phenomenological approach; however, in recent years John Creswell has risen as another expert in the qualitative study arena and has written extensively on the phenomenological design (Creswell, 2013; 2015; Creswell & Poth, 2018). Additionally, in his book *The Coding Manual for Qualitative Researchers*, Johnny Saldaña (2016) provided recommended applications and techniques for coding qualitative data, specifically using a CAQDAS program. The subject matter experts of Moustakas (1994), Creswell (2013; 2015), and Saldaña (2016) were considered when conducting data analysis for this study. Prior to data analysis, I personally conducted the epoche process (Moustakas, 1994) in order identify personal knowledge biases and evaluated how I could set those biases aside. Additionally, I considered the noema and noesis (Moustakas, 1994) within my personal experiences using an LMS to identify significant meanings found within the phenomenon prior to data collection in order to evaluate those meanings after data collection.

Pre-coding and Exploratory Coding Methods

Once data was collected, e.g., interviews and educational artifacts, I converted and organized the data by entering information into the CAQDAS program NVivo (QRS International, n.d.), which is used for qualitative data analysis (Creswell, 2013; Saldaña, 2016). The computer program allowed me to quickly access and manipulate the data, provided visual models, and "easily retrieve memos associated with codes, themes, or documents" (Creswell, 2013, p. 202). Prior to conducting more refined coding procedures, I conducted initial reading

and memoing (Creswell, 2013) analysis by reading transcripts, watching interview video footage, and viewing audiovisual material several times along with writing notes while exploring the various data sources.

I utilized the exploratory coding methods of provisional coding and holistic coding to provide "exploratory and preliminary assignments of code to the data" (Saldaña, 2016, p. 165). Provisional coding was used to establish a "start list of researcher-generated codes based on what preparatory investigation suggests might appear in the data before they are analyzed" (Saldaña, 2016, p. 165). This list provided a quick reference set of terms and concepts that was added to or changed as more refined coding was conducted. A holistic coding method was used by identifying or "lumping" (Saldaña, 2016, p. 166) each interview question and numerically coding them, such as IntQuest #01 through IntQuest #23. Since the interview was established as a semi-structured interview, each interview had slight variations, but the interview questions were able to be determined and generally coded; therefore, the holistic coding method allowed the grouping of similar question response concepts to be visualized together prior to first cycle coding methods being utilized.

First Cycle Coding Methods

Coding is a cyclical process and must be refined and reevaluated, which is the goal of using a variety of first cycle coding methods when engaging the data. After the initial exploratory coding methods were used, the next task was to reduce "the text or visual data into small categories of information… and then assign a label to the code" (Creswell, 2013, p. 184), looking "for categories, themes, or dimensions of information" (p. 186). Creswell (2013) stated that the coding and classification process could include "significant statements," which can then be developed into "meaning units" (p. 193). Additionally, a code can also symbolically

represent a "summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (Saldaña, 2016, p. 4). During the exploratory coding method cycle, codes were already established, which easily allowed for the use of the structural coding method. Saldaña (2016) stated, "Structural coding applies a content-based or conceptual phrase representing a topic of inquiry to a segment of data that relates to a specific research question used to frame the interview" (p. 98). The creation of these structural codes provided a framework to formulate additional codes during further qualitative data evaluation.

Continued reading of the data considered other types of first cycle coding methods including in vivo coding and concept coding (Saldaña, 2016). In vivo coding "refers to a word or short phrase from the actual language found in the qualitative data record" (Saldaña, 2016, p. 105) and there were opportunities to utilize specific words that participants used to establish a code that defined the data accurately (Appendix K). It should be noted that specific intent was taken to remove any interview questions or comments by the interviewer in order to ensure that only participant words were queried using the CAQDAS program. Concept coding uses words or short phrases to provide "suggested meaning broader than a single item or action – a bigger picture beyond the tangible and apparent" (Saldaña, 2016, p. 119); therefore, codes were formulated along with sub-codes, "a second-order tag assigned after a primary code to detail or enrich the entry" (Saldaña, 2016, p. 91), that fit within the parent code umbrella (Appendix L). Additionally, simultaneous coding was utilized, which "applies two or more different codes to a single qualitative datum" (Saldaña, 2016, p. 94), i.e., interview statements could fit within the parameters of several codes and even establish new codes. These coding methods were used as a precursor for the establishment of categories, as many of these codes became the categories used within the second cycle coding process.

Second Cycle Coding Methods

Attempts to establish themes from the data were utilized sparingly during initial coding methods although Saldaña (2016) offers "themeing the data" (p. 198) as a first cycle method stating that themes can be "discerned during data collection and initial analysis, and then examined further as interviews continue" (Saldaña, 2016, p. 199). Once initial codes were established, I used second cycle coding methods to create categories in order to further evaluate the data. The "primary goal during second cycle coding is to develop a sense of categorical, thematic, conceptual, and/or theoretical organization from [an] array of first cycle codes" (Saldaña, 2016, p. 234). Ultimately, the end result of secondary coding is to achieve data saturation, where the researcher "no longer finds new information that adds to an understanding of a category" (Creswell & Poth, 2018, p. 318). For this study, the primary second coding method used was focused coding in order to establish categories from data analysis. Saldaña (2016) stated, "Focused coding searches for the most frequent or significant codes to develop the most salient categories in the data corpus" (p. 240). Appendix M provides a list of chosen categories and the subsequent codes that helped formulate these categories.

Theme Development and Results Analysis

In the next analysis step, I utilized the developed codes and categories to formulate an interpretation of the data, which allowed me to synthesize the data and further develop perceptions of the phenomenon. Phenomenological reduction was considered to identify various themes throughout the data (Moustakas, 1994). A bracketing approach was used to focus specifically on the phenomenon, and horizonalization was conducted (Moustakas, 1994) to evaluate each code and category on its own weight and merit. The categories were grouped

together and four themes, which relate to each sub-research question, were established (Appendix N).

Finally, I considered the imaginative variation process step to consider the eidos of the phenomenon (Moustakas, 1994). I extracted the essence of the research and provided "tables, figures, or discussion" (Creswell, 2013, p. 191) to represent or visualize the data and provided "a composite description of the phenomenon incorporating both the textual and structural descriptions" (Creswell, 2013, p. 194). Lastly, a synthesis of the data was provided presenting "a unified statement of the essences of the experience of the phenomenon as a whole" (Moustakas, 1994, p. 100). The synthesis included considerations of the implications and outcomes (Moustakas, 1994) along with delimitations and limitations of the study.

Trustworthiness

Ensuring the trustworthiness of qualitative research is of paramount importance (Creswell, 2013) and "credibility, transferability, dependability, and confirmability" (Gall et al., 2007, p. 473) are all important characteristics of establishing the validity of a qualitative research study.

Credibility

Credibility, sometimes described as validation (Creswell, 2013), is an attempt at using multiple strategies to document the accuracy of research findings. Triangulation of data, peer review, member checking, and the clarification of my personal bias at the beginning of the study allowed for credibility to occur and for others to check my data analysis procedures to verify that the interpretation of the data had been sufficiently considered.

Dependability and Confirmability

Dependability and confirmability were "established through an auditing of the research process" (Creswell, 2013, p. 246). Two of the ways this was done was through dissertation committee review and IRB review. The research process was thoroughly vetted and significant interaction with experienced qualitative researchers was maintained throughout the study. Additionally, a thorough "review of the professional and research literature connected with the research topic and question" (Moustakas, 1994, p. 111) was conducted in order to help provide significant interaction of the topic with current literature. Lastly, a reflexivity process was utilized to identify bias and confirm as much neutrality as possible within a qualitative study (Creswell & Poth, 2018). My position was explicitly established and identified throughout the study and was used as a springboard to consider various themes identified by participants.

Transferability

I attempted to provide transferability of study results by providing readers with detailed descriptions of the participants, settings, and situations, allowing them the opportunity to formulate their own context. One of the goals of the study was to "enable readers to transfer information to other settings and to determine whether the findings can be generalized 'because of shared characteristics'" (Creswell, 2013, p. 252).

Methods

I used the following methods to establish trustworthiness within my study: triangulation of data, peer review, member checking, and reflexivity.

Triangulation of data. Referred to as crystallization by Gall et al. (2007), I triangulated multiple sources of information to support study interpretations (Creswell, 2015). Individual

interviews, audiovisual material, and a focus group discussion were used to enhance the accuracy of the study.

Peer review. Lincoln and Guba (1985) established the importance of having peers provide an external validation of study research. I requested that the dissertation committee and other members of the education community review study results and provide feedback concerning "methods, meanings, and interpretations" (Creswell, 2013, p. 251).

Member checking. Participants were given the opportunity to review and respond to the "preliminary analyses consisting of description or themes" (Creswell, 2013, p. 252) in order to critically examine my interpretations of the data and correct any errors or reconcile discrepancies (Gall et al., 2007; Creswell, 2015). Member checking also allowed participants the emotional satisfaction of knowing that their knowledge and contribution to the topic discussion had been correctly perceived and validated (Moustakas, 1994).

Reflexivity. I reviewed the transcripts to evaluate accuracy and to identify whether the interview conveys the "overall essence of the experience of the participants" (Creswell, 2013, p. 260). Additionally, I was accountable to my participants and considered how personal bias possibly influenced "participants' descriptions in such a way that the descriptions do not truly reflect the participants' actual experience" (Creswell, 2013, p. 259).

<div align="center">

Ethical Considerations

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Ethical considerations were given the highest consideration and followed the guidelines provided by the *Ethical Standards of the American Educational Research Association* (American Educational Research Association, 1992; Gall et al., 2007). Confidentiality, informed consent, and IRB approval will be discussed in the following sections.

Confidentiality

The records of this study will be kept private; however, due to the unique nature of subjects that participants taught, such as elective type classes, and the leadership roles that they held, there was a minimal risk of participants being identified. In consideration of the minimal risk, each participant was given the option of removing themselves from the study. All participants provided an email or verbal confirmation that they would still be willing to participate in the study even with the possible risk of identification. Pseudonyms were used to protect participant and site confidentiality, and no personal identifiable information (PII) about students was provided to me. A certified transcription service, whose security policies are governed by law, was utilized to transcribe individual interviews and the focus group interview. Research records will be stored securely and only I will have access to the records. The participant contact information, audio and video recordings, and all other data will be stored in a locked filing cabinet as well as on a password protected computer, and all materials related to the data collection will be destroyed three years after the completion of the study. It should be noted in reference to the focus group that I cannot assure that other participants will maintain the participant's confidentiality and privacy.

Informed Consent

I contacted the LEA, "a public board of education… to perform a service function for… secondary schools in a city, county, township, [or] school district" (U.S. Department of Education, n.d., para. 12) prior to beginning the study in order to gain permission to conduct the study. Additionally, I provided a formal request to the district superintendent and site principals asking to conduct the study (Appendix C; Appendix D). Lastly, a completed participant consent form (Appendix B) was required prior to conducting individual interviews with participants.

Institutional Review Board (IRB)

Prior to the study, in accordance with Liberty University's policies concerning research studies, I completed the required CITI training and submitted a completed IRB application along with supplemental documents (Liberty University, 2017b) to the appropriate agency. Permission was received by Liberty University's IRB to conduct the study (Appendix A).

Summary

In order to identify the motivations and attitudes of teachers who use Canvas in their classroom I conducted a transcendental phenomenological study with 11 participants that considers the phenomenon of secondary teachers integrating the LMS Canvas in a blended-learning course. The research design was fully discussed including the influence of Moustakas (1994) on the design methodology and the research questions were restated to provide the central theme of the study. The sites of the study were located within a rural high school district located in the Southeastern United States and chosen based on various factors. Participants in the study were chosen using a purposeful sampling strategy and a descriptive questionnaire based on the UTAUT was used to identify demographic information and attitudes towards technology acceptance. Participants took the questionnaire for descriptive purposes, which was discussed then during the interview.

Procedures of the study were discussed, and the role of the researcher was identified in order to establish biases and assumptions as the human instrument. Triangulation of data collection included individual interviews, document analysis, and a focus group interview. Each of these data collection methods was fully discussed and evaluated based on literature considerations. Data analysis was conducted using a CAQDAS designed to establish coding and category selection techniques. Moustakas (1994), Creswell (2013; 2015), and Saldaña (2016)

were considered in data analysis with specific emphasis on the epoche, reduction, and imaginative variation process step. Lastly, trustworthiness and ethical considerations were discussed including: credibility, dependability and confirmability, transferability, informed consent, and IRB approval procedures.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this phenomenological study was to investigate teachers' experiences integrating the LMS Canvas within a blended-learning course in a rural high school district located in the Southeastern United States. Eleven participants from three separate schools, with a variety of teaching experience and subject matter expertise, were selected and interviewed individually and a focus group consisting of four participants was also held. Participants are discussed in detail with consideration given to the unique perspectives concerning the use of Canvas in their classroom from each teacher. Each individual interview and focus group interview was conducted, transcribed, and uploaded into the NVivo software program. Additionally, screenshots of participant courses were uploaded and annotated to reflect various styles and preferences exhibited by the participants when using Canvas. The triangulation of data was established in order to enhance the accuracy of the study with the attempt being to reach saturation of data information (Creswell, 2015).

Once data analysis was conducted and information saturation reached, a total of 86 concept codes and sub-codes (Appendix L) and 11 categories (Appendix M) was identified, which were then reduced to four themes (Appendix N). Each of the themes and subsequent categories were thoroughly developed with the participant voice establishing how the codes and categories were shaped into the prevalent themes of the study. Lastly, the central research question and sub-research questions were evaluated based on category and theme development.

Participants

The 11 participants in the study ranged from 26 to 60 years old with 10 female participants and one male participant. Participants were selected from three different high

schools, designated as A, B, and C, from a rural school district located in the Southeastern United States. All but one of the participants were white with a classroom experience ranging from a low of four years to a high of 34 years of experience with a median range of 10 years. Eight participants in the study used Canvas within a core subject area with two participants using Canvas in an elective course, and one participant with a primary focus on exceptional children (EC). All teachers had experience designing and implementing their own Canvas courses, except for the EC teacher who served as a co-teacher for a virtual public-school Canvas course.

All participants were individually interviewed in a face-to-face format within a span of two months, and participants provided a screenshot of various parts of their Canvas course as a visual representation of how they have designed their course to meet their specific needs. A focus group was conducted with four teachers choosing to participate and utilized a combination of face-to-face and YouTube Hangout technology during the interview process. Member checking methods were used to establish trustworthiness within the study and allow participants the emotional satisfaction of knowing that their knowledge and contribution to the topic discussion had been correctly perceived and validated (Moustakas, 1994). Participants were given the opportunity to view their transcript data and respond in order to correct any errors or reconcile discrepancies (Creswell, 2015), and participants were given the opportunity to review and respond to "preliminary analyses consisting of description or themes" (Creswell, 2013, p. 252).

Even though specific attributes are presented for each participant, with permission provided by the participants to use their demographic data, a pseudonym was used to designate each participant in the study. Participant demographics are displayed in Table 1.

Table 1

Participant Demographics

Open Codes	Ann	Barbara	Courtney	Denise	Emily	Jennifer	Kathy	Lisa	Nancy	Russell	Tonya
Gender	Female	Female	Female	Female	Female	Female	Female	Female	Female	Male	Female
Age Range (years)	31-35	26-30	31-35	31-35	36-40	26-30	56-60	31-35	31-35	46-50	41-45
Teaching Experience (years)	4	5	14	10	17	4	34	10	10	5	18
Subject Area	Science	Math	History	Math	English	Elective	Elective	History	English	English	EC
School	A	A	A	C	C	B	B	A	A	A	C
Canvas Experience (years)	3	3	3	1	1	2	2	3	3	2	1

Ann

I met Ann in her classroom after her first day back from winter break. She had recently returned from an extended leave where she was able to use Canvas as an aid to continue teaching her course. She stated, "It was great 'cause everything was already on there… with my lesson plans I told [my substitute] what the titles of the assignments were… and it was a lot easier… I don't know what I would have done without Canvas." Ann's passion for her students was evident and the excitement she felt "to see how they evolve throughout the semester, both as individuals and in my subject" struck a positive note in the interview flow. Although relatively new to the teaching profession, Ann's vast experience in the scientific field of study allowed her to be selected as the science department chair. She has used Canvas for over three years and was one of the first at her school to implement Canvas into her courses. Additionally, as department chair she encouraged her peers to utilize a sandbox Canvas course within the science department for collaboration purposes.

With administration concerns about rigorous curriculum design (RCD), and the amount of intercounty student transfers, Ann felt that the best way to keep her students prepared for their science end of course (EOC) tests was to provide a centralized area where material and assignments were relatively standardized. In her view, Canvas provided an opportunity to "work with the people that are teaching the same subject as you… and if you have a positive team environment and good relationships with the people in your department, why wouldn't you want to work together." Ultimately, Ann stated that Canvas gives her the opportunity to differentiate assignments for her students, "helps the kids be more organized… [provide] ease of access for students to access to their class materials… and helps me with classroom flow."

Barbara

Barbara was a math teacher currently teaching foundational math courses with a high population of inclusion students. One of her most rewarding experiences as a teacher is "getting the kids to understand something they never understood before and making connections with [them]." As someone who has always struggled with math concepts myself, I found it extremely refreshing to interview a math teacher who cares about her students enough to utilize a variety of technology resources to help them learn. No stranger to using an LMS, Barbara is a consummate learner, currently working on her second master's degree in an online format with an action research emphasis on the use of the flipped classroom method. Technology has been a central part of Barbara's teaching style and Canvas just provided another resource for her to integrate within her natural teaching format.

During her five years of teaching experience, she has used Canvas for three of those years, most often using it in a supplemental role stating, "[Canvas] allows me to pull in other kinds of resources for my students and gives them access to my classroom while even outside of

my four walls." Although Barbara teaches a majority of inclusion students, she felt Canvas provided her students the opportunity to utilize "21st century skills, 'cause when you go to college, most of their stuff is already online… [and] they'll be better prepared". For those students who aren't necessarily planning on attending college, she stated, "I think students are able to gain skills on how to use technology, which I think makes them better individuals… [and] have skills that they could use in the future workforce."

Courtney

Courtney is a fellow social studies teacher, although her primary subject is civics and economics. One of the more experienced teacher participants with over 14 years in the classroom, Courtney stated that she struggled at first to implement Canvas in her courses and still has a learning curve to overcome. Courtney freely admitted that her personality leans more towards a Type A and she doesn't "like to change horses mid-stream and with something like a learning management system… [she] wants to start out by saying 'this is how we're gonna do this.'" She used a progressive approach in implementing Canvas by first using it as "just a place that [students] could go to, to get their notes, so that I wouldn't have to copy stuff down." Laughingly, she stated that "anything that will keep me away from the copy machine is a good thing, 'cause the copy machine and I do not get along." As Courtney became more familiar with how Canvas could be utilized in her course she explained, "More and more each semester, I'll add more things for them to do… like the formal assessment piece on Canvas."

One of the main features of Canvas that Courtney really enjoyed was the "discussion piece" in place of "conducting your traditional class discussion with 32 kids… 'cause you know, then you have those kids that don't ever want to talk in class, so it's kind of a way that their voice can be heard too." Even though Courtney was initially hesitant to use Canvas, she has

taken advantage of the school's digital learning specialist (DLS) on many occasions and has a coworker in the social studies department who also uses Canvas. Courtney stated, "We work together a lot… because it's nice when you have somebody that you can work with and figure things out together with." Ultimately, Courtney used Canvas because she felt "it allows students to take more initiative and responsibility for their own learning… and helps prepare students for what many of them will experience in education post high school."

Denise

Denise was the first teacher I interviewed for this study and her assistance in helping to secure other participants to interview was invaluable because her name was well known throughout the county as a teacher who uses Canvas. Along with her role as a math teacher at a non-traditional school, she also serves as a DLS for her school. Although this is the first year she has used Canvas, she stated that "other DLSs at the other high schools were having success with it and a lot of them really prefer Canvas. So, that was a big influence for us to switch over." In her own classroom, Denise started using Canvas because it "is more like what the college is using" and she wanted to make sure her students were prepared. With the data-driven teaching movement a large part of today's educational framework, as a math teacher, she is also "very impressed with the data that you get back from testing… and [she] understands the statistics that you get back from Canvas."

Denise stated that a part of her personality is that she is "very much open to change and digital technology so that really lets [her] explore different things and different aspects of Canvas." One of the benefits that she has noticed is that "Canvas is a lifesaver as far as getting material out [and] I don't have to make a lot of copies, and also it allows me to link [students] to different resources that can help accomplish what I need for them to accomplish." Furthermore,

"[Canvas] allows me to quickly distribute more dynamic materials to my students" and incorporate various math resources for learning purposes. Canvas also helps her to not be bogged down with papers because "with Canvas I can go in… [use] the speedgrader, quickly grade and get feedback to my students much quicker than if I were using paper copies." Additionally, what she has "noticed since switching to Canvas is students are going back more often to review things that we've put out before and I think that's helping them piece together the new stuff that we're learning."

Emily

Emily is a 17-year veteran English teacher who also teaches in a non-traditional high school setting and has experience in many different educational systems including using several different LMSs in the higher education realm. Although familiar with the logistical aspects of using Canvas, Emily stated that "it was very hard for me to transition into that facilitator role rather than the lecturer role." Since she works at a non-traditional school, she "learned early on we do things differently here. We try new things. We challenge ourselves. So, for me that's been a big pull to try to incorporate some of these new things."

It took a unique crisis to help Emily focus on how she could utilize Canvas more effectively. Due to student scheduling issues, similar to a college schedule where students only met 2-3 times a week, she had to structure her classes in a way that allowed students the opportunity to complete all work in their high school honors level classes. She would tell students that "they still had to have the same materials, so I gave them five days' worth of work in Canvas… [and] when we're not in class, this other stuff in Canvas you have to do on your own." Emily stated that "it was a disaster at first, because the kids didn't understand. They thought, 'Oh, well if I'm not in class, I don't have to do the work.'" Given time, she was able to

continue laying out Canvas in a "step-by-step, day-by-day" format and "that's been extremely helpful [and] saved me a lot of time and energy."

Emily really enjoyed the ability to use additional resources and can "embed links right in [Canvas]… so [students] always have access to the material," even if they can't take home textbooks because there are not enough of them to go around. Additionally, "One of the good things about Canvas, is you can differentiate," and give students more autonomy and get "them to be more responsible about their education." Along with the DLS at her school, Emily has continually encouraged other teachers to try Canvas, adding them to her "class just so they could see the way I set mine up… 'cause I think it really does save a lot of time." Emily finished the interview by stating, "I definitely like Canvas. I think it's easy to use… I like the fact that it's set up similar to [other LMSs] so when kids do get in their college classes they're prepared for that."

Jennifer

When I first met Jennifer, she had just completed an impromptu meeting with a student who had already had a rough day and it was only 9:30 a.m. As the student left the classroom, she looked over her shoulder to whisper an appreciation towards a teacher who she knew really cared about her troubles. After beginning the interview with this lateral entry health teacher, who had only four years of teaching experience under her belt, I discovered that this was a singular individual who would do anything in her power to help her students succeed in life. As a non-core subject area teacher, I was extremely interested in finding out why and how Jennifer used Canvas. When asked that question, she stated that it is "because it makes life easier for myself and my students."

Jennifer started using Canvas two years ago in a supplemental fashion, with just putting notes as a repository resource for her students, but quickly "built on it from there." She stated that the DLS "really helped me learn how to use Canvas. She was super patient with me 'cause I'm not technologically inclined, and she helped me front load all the information in there, and then helped me… figure out how stuff would go." Ultimately though, it was the adaptability factor that really intrigued her, noting "I can use it in any curriculum for any student with any educational level or ability."

One of the things Jennifer really liked about Canvas was that "it helps me to be more organized" and if students are out "they have access to all the same material at the same time so that they can keep up." In particular, Canvas provided a benefit to some of her homebound students by keeping classwork available and helping students not fall behind. Additionally, because of the "wide variety of kids" she teaches, she can easily differentiate by providing modified assignments and "can use Canvas to help with that and [students] can still access it and do very similar things as their peers so that it doesn't set them apart." Furthermore, Jennifer stated "I feel like I'm more effective with Canvas… like it gives more options. It allows my faster-paced students to not get bored. It gives my child who needs extra time to still have the material when they need it." Lastly, she felt that Canvas "also just prepares [students] for their future because so much stuff is online now that I feel like I'm doing a disservice not to give it to them."

Kathy

Meeting with Kathy was an enjoyable experience and listening to a teacher with over 34 years of teaching experience talk about her journey using Canvas in her art classroom was truly humbling. As a self-described "technology dinosaur," Kathy recognized that to be effective with

her students, she needed to earn her student's respect in the technology realm and one of the ways she does that is by utilizing Canvas in a supplemental fashion. She laughingly stated, "That's the way I look at it, if I can figure out how to use this, anybody can." I was extremely curious about how Kathy used Canvas in her art classes and she credited her school's DLS with helping her because she "just made it so simple for me to understand." Facing pressure by administration to utilize technology, especially with the district's 1:1 initiative, Kathy stated the DLS "helped me brainstorm ways that I could use Canvas and use online platforms in my classroom… [and put] all kinds of things about art in a sandbox that I could refer to and utilize." It also helped her meet yearly "professional development plan" goals by incorporating technology into her classroom.

Kathy felt Canvas created a very positive atmosphere for her students by holding her "kids more accountable" and also "makes me accountable too" by keeping track of assignments and allowing her to give feedback through Speedgrader. One of her favorite things about Canvas is "that if I'm absent, I have a substitute activity day portal [with] 22 different assignments that [students] can pick from, and they know they have to do two assignments for the whole day to get a 100." Additionally, Kathy liked how Canvas "provides a record like when I go back and click on assignments from back from the first week of the year… and I can go in I can look and reflect on how the kid's works have changed, etc." As we wrapped up our interview, Kathy stated as a final thought, "Canvas allows me to use technology the students are familiar with and makes the students accountable for turning work in by a deadline. It makes grading their work much faster and easier than before I used it."

Lisa

Lisa was another fellow social studies teacher who had been teaching for 10 years and was extremely happy with how Canvas helped her to create exciting an environment for student learning. She felt her role as a teacher was beginning to shift into a facilitator role, especially with the increase of the 1:1 initiative with her students using iPads. She stated, "I feel like Canvas allows me to kind've have everything prepped and organized… I am just like the direction giver and then the facilitator. I just check in and assist everybody, but they are the creators." Although it takes much more planning in preparation for the class "with Canvas, [the class] can get into so much more deep thinking than you can without a format like Canvas." Additionally, if Lisa is not in class for the day, or if a student is absent, "they can still keep up with the assignment." Lisa recalled that she had previously gone on maternity leave and "I had this big binder and every day had a file and we had to make copies. But now, if I went on maternity leave today, it would all be on Canvas... it has literally changed everything."

For Lisa, the motivation to use Canvas started with the district's focus on iPads being used in a 1:1 initiative and the administration's desire that teachers use technology in the classroom. Lisa was selected to receive additional training on Canvas so that she could be a resource for other teachers and she felt that she has been a positive influence on the teachers. She stated that she and another history teacher "work together a lot and we have shared ideas back and forth… [and] even though it's not the same subject, they can still do the same types of assignments." In Lisa's opinion, one of the best features about Canvas was the discussion boards and grading using Speedgrader. Additionally, accessibility and differentiation for different levels of learners is a huge advantage in utilizing Canvas. She stated,

Canvas allows me, and like I said this takes planning on my part, but I can go ahead and pre-select resources, load those onto Canvas, and that really saves some of my lower level learners time and struggle trying to figure out, 'Where do I go and how do I figure out how to research this?'

Ultimately, Lisa felt that her use of Canvas as a facilitator is helping her students "learn more, learn faster, and learn at a deeper level than they have ever been able to reach before." She stated, "I feel like they are gaining confidence in their ability to do it on their own, to be more independent… [and] I don't know what I would do without it, I really don't."

Nancy

Nancy was referred to me by a church member whose child was currently using Canvas for her English IV class and knew of this study. Nancy willingly agreed to talk with me, even though she was serving as the school testing coordinator and was right in the middle of a busy testing season. She stated that she "started using Canvas because I wanted to use less paper in class. I like being able to grade assignments online and not have to tote them home with me." After Nancy started using Canvas, she began to see some additional benefits including "being able to communicate with the students quickly." Communication with her students was definitely high on her list of positive benefits and features, stating, "Students can email me from Canvas" and it automatically is linked to her Gmail account and "I can reply from my email without logging on to Canvas." Additionally, Nancy stated that "I like that I can post announcements to [students] and have Canvas keep up with my agendas and learning targets for me. I also use discussions within class and the Speedgrader to view assignments quickly."

One of the more interesting aspects of Nancy's course is that she uses the announcements section to communicate with her students and assign that day or week's discussion topic or

focus. She personalizes each day or week by providing a statement of endearment or encouragement and then discusses the class goals for the day or week. A few of her most recent announcements are:

> Hello, my darling ones! This week is going to be one that you thought you wouldn't have in English IV; Hello, I don't about you but I'm exhausted. This week has been a crazy one; Hello loves. Today is presentation creation day; Hello, my darlings. I cannot be with you today due to [my child] being sick.

In each announcement, links are provided to additional pages or assignments for students to work on, making "it easier for students to keep track of what they have turned in and what they need to turn in." When asked what one of the best things about Canvas was, Nancy stated, "I think it puts more learning responsibility on the students…[and] it makes my life a lot easier to keep track of."

Russell

While walking with Russell back to his classroom for the interview, he was stopped three times along the way by students asking him questions and joking with him. With his quick wit and humor, I found him an engaging and energetic teacher and saw the draw that students have towards him and his style of teaching. Russell uses Canvas daily in his English classes by having his "students do a discussion board when class initially starts, and then post and grade assignments through Canvas." When asked why he chose to use Canvas, he stated, "It's all about the 21st learning environment of moving beyond the pencil and the paper and being able to utilize the digital learning… in the real world. I think it's very beneficial [and] a great tool." Student accountability was also an important reason for using Canvas because "it makes

[students] more accountable and it lets you know when something was submitted late… so I think it holds them more accountable for what they have to do."

Initially Russell was hesitant to use Canvas because he "was using Schoology and liked Schoology," but since it was a district initiative he felt it was something that he should buy into. He stated that the district provided "some training in it and the more I trained in it the more I'm like, 'Okay, I see things in this I can use and utilize.'" Additionally, the DLS at the school was "very, very supportive… [and] really good in helping and answering any questions… so the [technical] support… is really there." As an English teacher, Russell stated that one of the most valuable features of Canvas is that he "can grade assignments through the Speedgrader and therefore doesn't have to have a lot of papers, and don't have to take anything home, and I can grade and give the feedback." He has also used the passback feature between Canvas and PowerSchool, the state's grading program, to automatically update grades so that "once I've graded an assignment, [students] are able to see it right then and there."

As one of the first to use Canvas at his school, specifically the discussion board feature, Russell has been able to advise other teachers how to use Canvas once they saw how "beneficial it was." Students also seem to enjoy using the discussion boards in Canvas because "they get a kick out of reading what other people have written right then, and then sometimes I require them to respond to someone else's response, so they enjoy that engagement." When asked how his students like using Canvas, Russell stated, "The kids know from day one what my expectation is, so you just have to get on board… you have to buy-in with whatever I'm doing… there's no grey area." Russell enjoys "learning new things and if I feel like it's gonna help the kids, I'm cool. I'm good with it" because ultimately, "Canvas is just another tool for me to use in the class… and it works for me."

Tonya

Tonya was a lateral entry exceptional children (EC) teacher who had worked previously as an "advocate and behavior specialist" at a developmental center prior to working within the school system. With 18 years of experience in a high school setting, Tonya was intimately familiar with the struggles her students face in the academic world. Her experience with Canvas was the most diverse of all of the teachers interviewed because her role was primarily as a co-teacher within several Canvas courses spanning a variety of disciplines. She worked with students who use Canvas for other courses and helped those students navigate the coursework and submit assignments. At first it was difficult because as a co-teacher she sometimes "didn't even have the rights to [the Canvas course], but worked with a great team, and the DLS coordinator was able to… finally get us access." Additionally, the other "teachers were learning [Canvas] themselves [and] it was… a bit overwhelming to try to teach me and the kids… so you just kind of had to get in there" and learn the program.

Tonya stated that "within the last three years, our school decided to get on board with [a virtual public school] blended learning for the occupational course of study (OCS), for mostly biology [and] just now this year came on board with American history." This allowed Tonya the opportunity to teach the course in a collaborative way and adapt the material to meet the individual needs of her students. She stated,

> They're still getting co-teaching because they have their online co-teacher… [but]
> because it is online… [students] know exactly what they're gonna do that day and what's
> expected of them and I know what I'm supposed to cover that way and then the
> collaborative aspect between the teacher and I, we consult using a Google Doc... I like to
> be able to do some things together as a class, but then there's times where I like for them

to work on their own or in a group… [Canvas] allows it to be exactly at the pace that the OCS students need.

Tonya felt that one of the struggles her students had with using Canvas was the technology aspect because it can be "too time consuming," especially if something is not working right or the students aren't able to submit something. She stated, "There are aspects I totally love about [Canvas] but when you have days like that, I'm like, 'I'm just gonna have to do something different 'cause we've gotta move.' You gotta cover the material." After consideration, Tonya stated that one of the best aspects of Canvas is the ability to adapt content "so it covers a lot of accommodations that's in their individual educational program (IEPs)." Ultimately Tonya felt that by using Canvas students are "being facilitators of their own learning and they're more actively engaged… [and] I've evidenced student growth just in their progress."

Results

Each individual interview and focus group interview was conducted, transcribed, and uploaded into the NVivo software program. Additionally, screenshots of participant courses were uploaded and annotated to reflect various styles and preferences exhibited by the participants when using Canvas. Once data analysis was conducted and information saturation was reached, there were a total of 86 concept codes and sub-codes (Appendix L) and 11 categories (Appendix M), which were then reduced to four themes (Appendix N). The following sections will identify the initial coding results along with providing detailed tables with top in vivo results and concept codes. Next, categories and theme development will be addressed along with detailed tables and explanation for how each category was incorporated into each of the four themes. Finally, the central research question and sub-research questions will be evaluated based on category and theme development.

Initial Coding Results

Prior to conducting more refined coding procedures, I conducted initial reading and memoing analysis by reading transcripts, watching interview video footage, and reviewing Canvas screenshots several times while making annotations within NVivo about initial perceptions. The exploratory coding methods of provisional and holistic coding were utilized in an attempt to provide a start list of researcher-generated codes. These codes were selected based on preparatory investigation, personal experiences, and initial reading and memoing analysis. Additionally, using a holistic coding method, I was able to group each interview question and numerically code them, such as IntQuest #01. The use of the holistic coding method allowed me the opportunity to group similar question response concepts together in order to visualize all participant views together.

After the initial exploratory coding methods were used, several first cycle coding methods were used to identify various concepts that were revealed by participants regarding their use of Canvas. During the exploratory coding method cycle, codes were already established, which easily allowed for the use of a structural coding method. With this method, interview transcripts were coded based on established research questions and linked to sub-questions. Establishment of new codes was not conducted at this point, merely identifying participant statements that were related to a particular research question. An in vivo word search query was conducted with all participant data and it should be noted that specific intent was taken to remove any interview questions or comments by the interviewer in order to ensure that only participant words were queried using NVivo. The resulting method allowed me to establish 57 in vivo codes (Appendix K); however, Table 2 provides a list of the top results.

Table 2

In Vivo Results (Top Results)

In Vivo Codes	# Times Mentioned	In Vivo Codes	# Times Mentioned	In Vivo Codes	# Times Mentioned
Know; Knows; Knowing	268	iPad; iPads	91	Love; Loves; Loved	49
Student; Students	202	Tech; Technology; Technological; Technologically	82	Note; Notes	48
Work; Works; Worked; Working	172	Online	79	Better	47
Teacher; Teachers	171	Different; Difference; Differently	77	Digital Learning Specialist; DLS	47
Help; Helps; Helped; Helpful; Helping	156	Paper; Papers	68	Video; Videos	43
Make; Makes; Making	120	Easy; Easier	66	Discuss; Discussed, Discussion; Discussions	40
Learn; Learned; Learning	117	Figure; Figures; Figured; Figuring	65	Home	39
Assign; Assigns; Assigned; Assignment; Assignments	111	Access; Accessed; Accessible; Accessibility	59	Organize; Organized; Organizer; Organizers; Organization	38
Grade; Grades; Graded; Grading	103	College; Colleges	57	Allow; Allows; Allowed; Allowing	36

Note: Refer to Appendix K for a full list of in vivo results.

After an in vivo query was conducted, transcripts were reviewed using the concept coding method. Previously established codes were considered, new codes were created, and sub-codes were identified and placed within the parent code umbrella. Additionally, simultaneous coding was utilized to apply two or more codes to a statement or concept found within the interview transcript. The resulting method allowed me to establish 86 concept codes (Appendix L); however, Table 3 provides only the top results including aggregation of sub-codes.

Table 3

Concept Codes (Top Results including Aggregation of Sub-Codes)

Concept Codes	#	Concept Codes	#
Student Benefits Using Canvas	100	Administration Views of Canvas	25
Valuable Features, Benefits, or Strengths of Canvas	86	Collaboration Between Teachers	24
Teaching Effectiveness Using Canvas	74	College and Life Preparation	20
Motivational and Attitude Factors Using Canvas	57	Fear of Taking Canvas Away	20
Missing Features, Drawbacks, or Weaknesses of Canvas	55	Pre-Service Training Using an LMS	20
Tech Support	49	Universal Design for Learning - Adaptive	19
Canvas Course Structure	35	iPad vs. Chromebook	18
Why Teachers Don't Use Canvas	27	Continued Use of Canvas	10

Note: Refer to Appendix L for a full list of concept code and sub-code results.

Categories and Theme Development

Once initial codes were established, I used the second cycle coding method of focused

coding in order to establish categories from data analysis. Concept codes were evaluated, and

the most frequent and significant codes were separated into related topics. Further analysis of

the data was conducted, and the categories were refined to incorporate the salient points of the

research. Table 4 (Appendix M) provides a list of chosen categories and the subsequent codes

that helped formulate these categories.

Table 4

Categories (Alphabetical)

#	Categories	Codes (In Vivo and Concept)
1.	Absences	Absent; Student Absences; Teacher Absences
2.	Accountability and Responsibility	Accountable; Expectations; Removes Excuses; Responsible
3.	Adaptability and Flexibility	Adapt; Flexibility; Read-aloud Features; Supplemental; Teacher Adaptability; Universal Design for Learning – Adaptive; Standard Students vs. Honors Students
4.	Administration	Admin; Administration Views of Canvas; Canvas vs. Google Classroom; Fear of Taking Canvas Away; Professional Development; Standardization
5.	Issues	Apple Classroom; Cheating; Connectivity; Formatting; iPad vs. Chromebook; Missing Features, Drawbacks, or Weaknesses of Canvas; Training Students to Use Canvas; Trouble Using Certain Canvas Features; Uploading Assignments
6.	Organization	Ability to Quickly Locate Information; Organize; Planning; Student Organization; Teacher Organization
7.	Perceptions	Continued Use of Canvas; Help; Initial Reluctance to Use Canvas; Know; Technology; Time Required for Set-up; Why Teachers Don't Use Canvas; Work
8.	Resources	Assignment and Test Creation; Discussion Boards; External Resources; Lack of Textbooks; Link to External Resources; Notes; Resource; Repository; Videos
9.	Student Benefits	Benefit; College and Life Preparation; Communication; Engage; Individualized Learning; Learning and Review; Reduction of Stress
10.	Teaching Effectiveness	Classroom Flow; Data-driven Teaching; Facilitator; Grading; Makes Life Easier; Less Paper; Reusability; Saves Time; Valuable Features, Benefits, or Strengths of Canvas
11.	Training and Technology Support	Collaboration; Canvas Training and Support; Peer Influence; Pre-Service Training Using an LMS; Tech Support

The next step in the analysis process was to utilize the developed codes and categories to

formulate an interpretation of the data, which allowed me to synthesize the information and

further develop perceptions of the phenomenon. Phenomenological reduction, bracketing, and horizonalization was conducted to evaluate each code and category on its own weight and merit. The categories were grouped together and four themes, which relate to each sub-research question, were established (Table 5; Appendix N). It is important to note that many of the codes can be found within each of the categories, although they play a different role in how they impact the theme; however, for the purpose of this study, the categories are placed within the theme that most directly supports its development. Further analysis and discussion will identify how each category listed relates to theme development.

Table 5

Theme Development

Theme	Supporting Categories (Alphabetical)
Motivation and Attitude Towards Use	Absences; Accountability and Responsibility; Administration; Issues; Perceptions
Training and Technology Support	Training and Technology Support
Teaching Effectiveness	Adaptability and Flexibility; Organization; Resources; Teaching Effectiveness
Student Benefits	Student Benefits

Motivation and attitude towards use. Motivation and attitude played a tremendous role in why Canvas was used in a classroom setting and participants had a variety of reasons for why they felt Canvas worked for them and why they continued to use it. Often initial motivation to use Canvas was extrinsic, even from something so simple as Nancy stating that she "began to see the benefits of using Canvas after I decided to use less paper." As each of the participants began to discuss their motivation to use Canvas and their attitudes towards why they continued to use it even when facing issues, several motivations, both intrinsic and extrinsic began to emerge. Many of the categories share similar factors within the development of the other themes and each play a combined role in establishing a strong motivation and attitude environment for

Canvas use; however, the categories of absences, accountability and responsibility, administration, issues, and perception provide the strongest rationale for the development of this theme. The following categories are in alphabetical order merely for aesthetic purposes and not for a hierarchy of importance or emphasis.

Absences. Anyone who has been in the teaching profession has experienced the frustration of students not being in the classroom, whether for sickness or behavioral related concerns. Additionally, the pressure to provide substitute lesson plans can make even the sickest bed-ridden teacher contemplate the possibility of making it to school, just so she doesn't have to agonize over what her students might do to a substitute teacher. Kathy joked that her "plans say the information is on the board, they know how to do this, it's in Canvas, just tell them it's in Canvas and then that's it." In fact, almost all participants mentioned the impact Canvas has had on their ability to deal with absences, whether a student's or their own. Kathy went on to state, "If I'm home sick and I've got my computer, I can work on Canvas, I can make something right there… So that's just been wonderful to me." Emily concurred by adding,

> But it's been a wonderful thing because, for example, if I'm out sick one day, they have all their work in Canvas. They have no excuse whatsoever not to get their work done. If they're out sick and their parents call and say, "What does my child need to do?" Well, look in Canvas, it's step-by-step, day-by-day. So that's been extremely helpful. It saved me a lot of time and energy.

Jennifer continued with the sentiment by stating, "I can get information to my students when they are not physically present in my room," and even Tanya said that when her EC students "are absent they can still continue to work from home, provided that they have the internet."

Jennifer provided a heartfelt example concerning one of best motivations for why she uses Canvas. She stated,

A thing that I have experienced since I've been teaching high school is I have several students who have had a baby, and they're out for several weeks when they have a baby. Last year, I had one student in particular and she had new motivation to be graduating and to make a difference with her life and [Canvas] allowed me to do that for her. And so, when she came back, she was right there with us, and she was able to stay caught up, whereas before the chances of her failing my class would have been a lot higher because it was my hardest class… and that really made a difference for her.

Barbara has also experienced the importance of helping homebound students who are absent to complete work. As a flipped model proponent, she stated, "You could take video of your lectures and put it up [on Canvas], have [students] watch that, and then complete the same assignment, so it does help." It allows teachers the ability to provide teaching in a distance-learning format and "this is a benefit for them." Ann discussed the importance of having a central location for lesson resources so that when there is an unexpected absence, teachers can pull from a module within a sandbox course to use for emergencies. Ultimately the category of absences and the benefits that Canvas provides to both teachers and students is a strong motivation to not only begin using Canvas but encourage a positive attitude towards its continued use.

Accountability and responsibility. While being held accountable and responsible for work is not always an enjoyable thing, most educational psychologists would agree that students being held accountable and responsible for assignments provides a positive classroom environment. Many teachers look for ways to encourage their students to take responsibility for

their own learning and hold them accountable for that learning. Nancy felt that Canvas "makes it easier for students to keep track of what they have turned in and what they need to turn in… and puts more of the learning and responsibility on the students." Courtney stated that her students "know they can access Canvas, [so] I'll send home their paper stuff or email it to them and they can turn it in… you're still responsible for what you miss when you're not here, because it's on Canvas." Kathy also stated they she felt "it makes the kids more accountable… [because] there's no excuse." Ann declared that she felt Canvas "removes excuses because everything's available to them. It takes away the 'I don't know what we did that day. I don't have that worksheet.' Everything's on [Canvas]… their study guides are on there too."

Additionally, Kathy felt that Canvas allowed her to teach her students some life skill lessons beyond her classroom stating,

> They are required. They have a goal. They have a deadline and they have to decide how and when they're gonna meet those deadlines. That's the same thing as in real life. That's a part of life for most people, that they have certain things they have to do. They've gotta figure out when they can do it. They know they're accountable for it, and that's what happens on the job. So, I think it's good training in that way for 'em… for most of the time, they know there's no excuse and it keeps them accountable. And I don't care what they say, they like that. They want a little discipline. They want a little bit of accountability and expectations.

Russell agreed with this sentiment adding, "I hold the students more accountable for what they're giving me, and I try to alleviate them from doing the shortcuts." One thing he liked about Canvas "is that it locks you out when the assignment is due… and it lets you know when something was submitted late… so I think it holds them more accountable for what they have to

do." Setting expectations for students is a critical part of teaching and Jennifer stated that "Canvas allows student to see what is expected of them clearly for each unit or even course depending on how I set it up." Even when she is absent she has already "set expectations for that" and therefore the students already know what is required. Russell bluntly stated in his use of Canvas, "The kids know from day one what my expectation is so… for me, it's either you meet the expectations, or you don't. You have to buy-in with whatever I'm doing here. This is just the expectation."

Another area that several participants mentioned was that Canvas holds them as teachers accountable as well, especially for grading assignments. Kathy stated that "by trying to keep up with looking at everything, it makes me accountable too. And so, it makes it, in my mind somehow, it makes it more fair." Additionally, Canvas forces teachers to plan out what and how students are learning and engage with the learning process. Although it takes more planning Lisa stated that she feels "like Canvas allows me to kind've have everything prepped and organized, and so when the day comes, I am just like the direction giver and then the facilitator." After further analysis, most of the participants felt that Canvas provided good motivation for holding not only their students responsible and accountable for their own learning, but also themselves.

Administration. In any business environment, the boss usually dictates the emphasis or requirement that they would like their staff to pursue or focus on during that particular quarter or year. Similarly, school districts and administration determine which areas that they would like their teachers to focus on or develop during the school year. Often this is established in a professional development plan (PDP) and usually incorporates some type of technology. During the focus group interview, Jennifer and Kathy laughingly joked that the "motivation was that we

had to" but also felt like it was a positive goal because "we wanted to use it to the best of our

ability… and it was a part of our PDP." Kathy stated that "we have tremendous pressure to use

technology, the county has paid for this, you must use technology… [and] it's part of our

professional development plan every year." As an art teacher, Kathy definitely has some

challenges in how to integrate technology and meet other professional development goals such

as incorporating reading strategies, but she stated, "Canvas is great for that, because when you

read an artwork you are analyzing and critiquing an artwork. It's literally called reading an

artwork. So, I can cover that part of my professional development plan [and] campus-wide

professional development."

Another aspect of administration motivation for utilizing Canvas can be found in the

ability of Canvas to provide standardization for courses. As the science chair, Ann is in a

leadership position and directly responsible for helping her department meet state standards. She

declared, "Our admin is also on this thing where they want everybody teaching this… if you

teach the same subject, they want you teaching the same thing on the same day, using the same

assessments, etc..." Canvas allows her department the ability to create "a sandbox and work

with the people that are teaching the same subject as you." Additionally, Canvas allows the

administration to quickly verify what students are currently working on in class and even briefly

evaluate their teachers. Lisa revealed, "I think admin loves [Canvas] because if I have a student

that is absent or on suspension, they can just tell the parent that all of the information is on

Canvas."

Within any school system, the administration plays a crucial role in how teachers utilize

technology in their classroom environment. In the case of Canvas, most of the participants felt

that both the district and local administration were extremely supportive of its use, especially in

light of the 1:1 iPad initiative the district currently has. Russell expressed that "it's a district

initiative. They gave us this tool, they've asked us to use it, and I bought into it, and I like it…

and so my principal has fallen in love that I use [Canvas] every day." Even though most

participants didn't know if their administrators checked their Canvas course regularly, or even

had access to it, Emily has always felt encouraged by her administrator when a walk-through

occurred because "she's always very complimentary of the way the class is set up and all the

resources that the kids have access to. So, I feel like we've been supported a lot." Based on

participant responses, it is obvious that when teachers feel supported by the administration to

engage with Canvas, they are more motivated and have a more positive attitude towards its use.

It should be noted that while there is a tremendous amount of positive motivation that the

administration brings to bear on the use of Canvas, there are also negative aspects as well, which

can prevent teachers from utilizing Canvas. As stated previously, the administration plays a

critical role in development and integration of technology. Use of an LMS is not simply a

teacher concern but involves the district on a variety of levels. Of primary significance is the

cost factors associated with new technology and what hardware and software requirements are

needed. For example, Google Classroom is an LMS that is already attached to Google Drive,

which the county currently uses; however, Canvas is being pushed by the state as the LMS for

secondary school use but has a higher cost. Many students in the elementary levels have used

either eBackpack or Google Classroom and some teachers feel that the county might be "trying

to decide if they want Canvas or Google Classroom, and everyone's saying, 'We do not want

Google Classroom.'" Jennifer recognized that she needed an LMS to keep her courses organized

and that many of her students were already familiar with Google Classroom so she tried to use it,

but stated, "It does not seem as user friendly to me. It's easier in Canvas and just seems more

like an online course." Additionally, she wanted to "do what works best for me and my students;" however, there is still an unease in knowing which direction the administration would take concerning the choice of an LMS.

Fear of technology, specifically Canvas, being taken away by the district was a common concern throughout all of the participant interviews. One of the reasons that Nancy decided to use Canvas was "strictly because we were told it isn't going anywhere," but unfortunately, she knows that Emily's statement, "every two years you have to start all over" can be closer to the truth of the issue. When asked if she was a little nervous about Canvas being taken away, Lisa laughed and said, "Mm-hmm. 'Cause you know they often like to change things up on us… Canvas is like our baby and how we have it organized and our projects and our assignments… I really hope they don't." Jennifer stated her fear about Canvas being taken away succinctly,

> It's another one of those things and in my limited experience teaching I feel like we have a lot of things that we use for just a little while and then we change it, and then we use it for a little while and then we change it. And you get to a point... I can see clearly why I would get to a point where I would be like, 'Why bother? Why am I gonna invest a whole bunch of time and energy in this when you're just gonna take it away from me in a year…' It's frustrating. I'm praying they don't take it… I'm just starting to figure this out good and then you're gonna take it away from me. I can't be effective at anything if you keep taking it from me.

 Kathy, who has seen her share of technology changes throughout the years said, "If they take it away from me, I'm sure I will adjust. I'll have to, sink or swim. But, I'm just so happy with Canvas, I hope I don't have to make that change." Ultimately, teachers know that decisions made by the administration are based on a variety of concerns and responsibilities, but Emily

shared that she feels Canvas has "had a very positive influence and I would definitely like to continue using it… I have really enjoyed Canvas… and I would like to keep it. Particularly it!"

Issues. Motivation and attitudes towards use of Canvas are also impacted by the issues that are experienced by teachers when using various technologies. Although every participant interviewed currently used Canvas, they still identified issues and concerns that influenced their views about how effective Canvas could be, even though they freely admitted that Canvas wasn't actually the issue. Many of these issues revolved around connectivity and the ability to access the internet during school hours, or for many students, the lack of internet access at home. Lisa expressed that she liked students being able to download resources onto their iPad so "that they can access stuff from my classroom at home without the internet. That's important 'cause not all of our kids have the internet at home." Jennifer also used this Canvas feature stating, "Now they have access to [material] anywhere because as long as they're here, they can download it from Canvas and save it onto their device and have it even if they don't have internet access at home." Additionally, students who don't bring their device to school or have a damaged device are not able to use Canvas and therefore don't receive the full benefit of use.

Another issue participants discussed concerned struggles with uploading various assignments or viewing certain videos. Tonya explained that at first "there was a lot of glitches where we lost assignments" and Lisa stated that "my kids sometimes have a difficult time uploading an assignment into Canvas, and then they'll use that as their excuse as to why they didn't do something." Emily did express that often the uploading issue is "not a Canvas issue [but] helping students understand technology." When explaining why students can't open up certain videos, Tonya admitted that because iPads don't "have Adobe Flash player, they can't play the videos." As a science teacher who likes to use videos to enhance her lessons, Ann also

expressed her frustration with this but admitted that it was more of a flash player issue with the iPads and not really with Canvas.

Cheating and keeping students on task were also mentioned several times as issues faced by teachers. Many participants felt that they couldn't trust students not to cheat when they were taking quizzes or tests. Courtney bluntly explained,

Well this really isn't just Canvas, this is just technology in general, just students feeling like it's okay to just copy and paste from somewhere else. Just academic integrity. That is also another reason why I have not done the assessment piece on Canvas because I'm not 100% sure that… I don't know. Not that they can't cheat using paper and pencil but it's a little bit easier when it's online.

Nancy said that one of the things she has to address in her classroom is cheating because "students love to share documents on Canvas" but she protects against this by making "sure there are opinion questions or questions they can defend or support within assignments, so they complete them themselves." However, Nancy did acknowledge that one of the reasons that teachers chose not to use Canvas is because of "cheating or a lack of control on assignments." Several participants expressed satisfaction with the introduction of Apple Classroom as a means of helping them control what their students were accessing on the iPads. Russell had initially stated that he didn't use the test or quiz features within Canvas because of the issues with cheating but stated,

Now that I have Apple Classroom, that may be something that I will look into next semester because now I have control of your iPad and I can see what it is that you're doing… what I did find out initially was that when you're letting the students just use the iPads to do things… they like to cheat. And so to me at one point it had gotten out of

hand, so now that I have control of it, I may go back to giving some tests and quizzes on

[Canvas].

Ann also acknowledged that students have tried to cheat in her classroom, but she likes the

ability to reuse a test or quiz over and over, so she uses the various quiz features available in

Canvas "and it mixes up the answers for you, eliminates cheating to a certain extent there, where

if they look at their neighbor's screen and copy the answer, it might not be the same."

A final issue that teachers expressed frustration with was the availability of Canvas to

PowerSchool passback. PowerSchool is the required grading program that teachers use, and

Canvas has the capability to transfer grades from its grading program into PowerSchool;

however, Emily said that "the biggest issue I've had with Canvas is the grading system syncing

to PowerSchool." Several other participants explained that they were told this feature would

save them a lot of time, but they have not been able to get it to work correctly. Barbara stated

that she has been able to get the grades to transfer "though sometimes it does mess up when it

submits, when it translates into PowerSchool. It's kind of like duplicated. I've done it before

and it worked, it's just… sometimes I know it's iffy, from Canvas to PowerSchool." All of the

participants felt uncomfortable with only having Canvas as their sole gradebook and had a hard

copy as a backup. Courtney explained that she has her "students submit assignments on Canvas

[but] I don't put the grade in on Canvas, 'cause I don't like how it links to PowerSchool. I'm

still old school and keep a paper grade book and I'll put the grades in PowerSchool."

Perceptions. Perceptions often dictate how much impact any new idea or technology is

going to have in the classroom. This term truly encompasses the entirety of motivation and

attitude simply because of the strong emotional response that this concept exhibits. During the

in vivo coding review, the top seven results were an indication of how participants perceived

Canvas as a viable option in their classroom (Table 2). The stemmed words of *student* and *teacher*, two and four respectively on the list, identify the idea that both groups are impacted in some way from the use of Canvas. Whether a positive or negative impact cannot be determined from a simple word query, merely the perception that students and teachers are heavily involved in Canvas interaction.

Additionally, the other five top results involve words of action, effort, and engagement. The stemmed words of know, work, help, make, and learn all created the perception that Canvas provides the opportunity to be involved in the educational process, regardless of the stakeholder. For example, Kathy expressed a heartfelt perception about her view of Canvas stating, "I know it's very helpful, and I don't know how it works, I just know it works." She didn't necessarily understand all of the dynamics of the program but recognized the impact it was having on her students and their learning process. Jennifer declared that she tries "to focus on what works best for [students]… and what's gonna help them learn." She continued, "I feel like [Canvas has] been more beneficial for the students… because they can do it at a pace that works for them." Jennifer acknowledged the benefit her students were gaining by having continuous access to the materials and being able to complete assignments or review notes at any point of the day. Courtney stated that she feels using Canvas "helps 'cause it still allows me to provide information and scaffolding and all of that in a one stop shop." She stated that it also "helps me reach students who are more technology driven." Each of these participants perceived a useful aspect to how Canvas best suited their teaching structure and gravitated towards that particular benefit concerning their motivations and attitudes towards use.

There are of course other perceptions that participants expressed in direct relation to their motivations and attitudes toward Canvas use. Lisa declared "I really feel like it's important to stay current… technology… this is the future of education. This is where we're heading." Denise explained, "I'm very much open to change and digital technology so that's really let me explore different things and different aspects of Canvas." Russell expressed his feelings about why he specifically chose to use Canvas by saying, "I like learning new things and if I feel like it's gonna help the kids… I'm good with it." Courtney liked the fact that Canvas allowed her the opportunity to grow as an educator stating, "I'm probably gonna try the rubrics next semester… It's nice because it offers things where I can continue to grow and learn how to do new things 'cause you can get stale teaching the same thing over and over again." Each one of these teachers had a perception that Canvas allowed them the opportunity to interact with technology and ultimately with their students; therefore, the emotional response of perception directly impacted their motivation and attitudes towards using Canvas.

There are also negative perceptions for why teachers don't use Canvas, and participants shared their thoughts on why they were initially reluctant to use Canvas. Most notably was the fear of new technology, the time that it took to set up their course in Canvas, perception based on experience with other systems, and also the fear that Canvas would be taken away. In regard to using technology, Barbara stated that sometimes "[teachers] don't like technology, especially if they're older teachers I think they've just grown up with teaching not using it, and so they don't want to try something new." Emily, a seasoned teacher, confirmed this by expressing,

> Honestly, I think it's fear of technology. If you're trying something new... We're teachers and we get set in our ways, and it's very easy to stay that way. I think if I had remained in a traditional high school I probably wouldn't be as open to it. But because I'm in a

[non-traditional setting] and I've been here for nine years, I learned early on we do things differently here. We try new things. We challenge ourselves. So, for me that's been a big pull to try to incorporate some of these newer things.

Tonya agreed by expressing her thoughts, "I think for some people it's the fear of technology, or fear of change." As the most experienced in a classroom setting, Kathy provided a bit of levity to her fear of using technology saying, "At first Canvas was frightening 'cause I'm old like that, things like that are frightening;" however, she joked "but if I can figure it out, anybody can."

An often-addressed negative perception was simply the amount of time that it took to set up a course, especially for someone who has not used an LMS before. Jennifer referred to this when she was discussing Canvas with a co-worker and said that "she was going to try to [use Canvas] but she said she felt like it was going to be way more work and would be a lot more than she could afford at that moment." Jennifer continued by saying that she has those same feelings because "it can be overwhelming, and you just get to a point where you just cut out what you don't need… [saying] I've got to do A, B, and C, so I just won't do it." Tonya also acknowledged how much initial time it takes to start using Canvas by explaining, "It is overwhelming when you initially get started, we have to be honest. Trying to transfer everything over, it's overwhelming." Jennifer bluntly stated the reason that she initially resisted using Canvas "was time. I didn't want to spend the time and then didn't want to get attached to something they might take away from you." Kathy expanded on this statement saying,

I think a lot of teachers are so swamped for time. People wanna complain that teachers are, 'Oh, you're just using what you use before.' Well, if it ain't broke, you don't need to fix it, if it's working. Just for me, when I first heard of [Canvas], I was overwhelmed and like, 'Oh my God, they're gonna make us do what?' You just have to take the time to

have somebody explain it or figure it out yourself, and once you understand how to use

it... 'cause that's the hurdle, taking the time and figuring out how to use it. To me, that's

the thing. And a lot of teachers are like, 'I can't do one more thing.'

Courtney added an additional concern to the amount of time it takes to set up a course by

explaining that she had some negative experiences with other LMS programs. She stated,

I would be lying if I said that I wasn't reluctant when Canvas was first introduced just

because of my experience with Blackboard. I had tried to use Moodle before when I

taught an IB course and that was just a nightmare. Probably just fear and just loss of

control and time, 'cause it does take time, especially when you're figuring it out.

Ultimately, even though most participants had some negative perceptions that hindered their full

acceptance of Canvas at first, all participants expressed a sense of thankfulness that they had not

let those negative perceptions prevent them from utilizing Canvas and reaping the benefits for

themselves and their students.

Training and Technology Support. A reoccurring theme discovered throughout the

study was the importance of training and technical support. Often the technology support

involved resolving issues that would consistently arise, which definitely impacted the use of

certain features of Canvas and created frustration for using the LMS to its full potential. Most of

the participants had minimal experience with using any type of LMS in pre-service teacher

training with Lisa stating, "When I was in college there was nothing really like [Canvas] online."

Kathy joked, "I don't have a whole lot [of experience with an LMS] under my belt, because for

the majority of my career, there was no such thing."

When Nancy was asked about her experiences with learning how to use an LMS she

explained that "the only 'training' [she] had in college using an LMS was using Blackboard as a

student… other than that, I didn't have any." All of the participants had used some type of LMS during college, either for recent continuing education units (CEU) coursework or to complete an additional degree. Jennifer, one of the lateral entry participants explained, "all of my classes to get my teaching certification were online… I used Blackboard and Moodle… so that definitely helped." However, Courtney was brutally honest when she stated that one of the main reasons that she did not really use Canvas at first was that "the kids weren't familiar enough with it, and therefore I wasn't familiar enough with it," which led to her saying "okay, let's just forget this."

Throughout the interviews, a common denominator was lauded by each and every one of the participant when asked about their use of Canvas. That prevalent thread was the personal connection with a digital learning specialist (DLS) and the training and assistance they had received. While each participant had their own perception of how this person had been involved in their implementation of Canvas, every participant mentioned the DLS as having a significant impact. In fact, most of the participants would credit the DLS as the reason they used Canvas. Barbara stated, "We have a DLS… and she helps us when we have issues with Canvas… so she's great." Courtney explained that when she was initially setting up her course, "our DLS walked us through and helped us take baby steps… making [Canvas] fit in with what you already do… letting it help you do what you already do."

Russell expressed his appreciation by saying, "Our DLS is very, very, very supportive, and she wants to come in your classroom every opportunity she can get, to do anything… You never have to wait a couple of days for her to come and address any issues." Denise credited the administration for understanding the importance of having teachers in the role stating simply:

> I think it was a very smart move to take actual teachers and put them in the DLS roles
>
> and not just some person who's good with technology, because as a teacher we know…

we're not that far removed from what the regular teachers are doing. So, we know that

we need to come up with answers, not just problems. We need to come up with some

ideas and not just, 'Hey, here's this new tool. Why don't you check it out?' We come

with, 'Hey, here's this new tool. This would go really good with this topic in your

field… [so I] thought that was a really good move that the superintendent has done with

taking actual teachers and putting them in that role.

As a DLS herself, Denise discussed her feelings about being responsible to not only understand

and use Canvas but also train other teachers explaining,

At first, when you first get into Canvas, it's not as user-friendly because it's such a blank

slate, which is a good thing, but for some teachers and especially the DLS, I'm training

other teachers, so it's a little overwhelming for some teachers to get in there and realize

that they have to create everything.

At two of the schools, the administration felt that technology training was so important that they

have mandatory weekly or monthly meetings that teachers are required to attend. These

professional development meetings are intended to address technology concerns, not only with

Canvas but in other technology hardware or software areas as well. Russell affirmed that these

meetings really helped him decide that he was willing to give Canvas a try professing, "They

gave us some training [on Canvas] and the more I trained in it the more I'm like, 'Okay, I see

things in this I can use and utilize.'"

However, Tonya felt that at these meetings the DLS "are really good at introducing and

teaching us new things… but until you get in there and you navigate it yourself, you're not

gonna get familiar with it." A consideration for why it is so important that there is a DLS at

every school is that she can use her knowledge and experience to help build personal

relationships with the classroom teachers. Kathy has made good use of these meetings and the relationships that she has built stating the DLS has,

> Become the bridge… I mean, so many times you go to some kind of workshop or whatever but then you leave, and you think, oh that's a great idea and then you just kind of either forget about it or you don't have time for it. Having [a DLS] right there where they can walk in the door during your planning blocks, sit down with you, show you how to use it, show you what to do is invaluable to me… [our DLS] last year showed me how I could [set up my course] 'cause I couldn't see it and she could. She had a vision for what some things I could do, and she just helped me put it into place. And once she did, it was kind of like my starting point and then I sort of worked on it from there.

Several teachers brought up some frustrations about how the technology meetings have some drawbacks because they aren't divided into skills levels. Jennifer stated that the meetings "were often very frustrating because we had all skill levels in a group and some teachers were very vocal about how they felt about it both positively and negatively." Ann expressed feelings about the Canvas training meetings by saying,

> A lot of the training we received wasn't tiered... They don't say, 'Oh, if you're really tech-savvy, go to this session. If you're not tech-savvy at all, go to this session.' We all get the same training and I think that it moves too fast for some people and no one wants to be there after school anyway, so the people that are faster are like... 'I'm done.' And the people that didn't get it are still floundering, but no one's really trying to help them because everyone's just trying to go home. So, I think they just don't know how to use [Canvas] and are frustrated and don't really want to ask anyone for help and then you

have the teachers that spent all these years making the stuff that they already use, and

they don't wanna go home and remake everything that they've already made.

Emily felt that a lot of the Canvas training that was being conducted "has been very basic things

that we've already kinda figured out on our own" and she recommended that the next level of

training be more advanced "on some other features that I hadn't figured out yet."

Ultimately though, the amount of training provided by the DLS has now awakened a new

level of cooperation between teachers who use Canvas because of the ability to collaborate and

help answer questions that arose. Barbara explained,

If we ever get stuck about something, we go to each other. So, we just help each other

out with the things that she might know, or I might know… [and] we just help each other

out if we don't know something about a specific feature of Canvas.

Lisa said that she and Courtney "work together a lot and we have shared ideas back and forth."

Courtney chuckled when she stated that Lisa and she "work together a lot. She kind of led the

charge and I kind of followed just because it's nice when you have somebody that you can work

with and figure things out together with."

Peer influence has made a tremendous impact on teacher use of Canvas, especially the

utilization of various teaching features. Russell said that he "was the first one here to use the

discussion board on [Canvas] and then others started following suit, asking questions, and seeing

how beneficial it was." Emily said that even the baby steps are positive movements in the right

direction when discussing a fellow teacher starting to use Canvas. She stated, "A lot of our older

teachers are not as into the technology so it's a little bit harder for them to embrace it… but I

highly encourage it 'cause I think it really does save a lot of time." Tonya has been thrilled with

the amount of rapport that she feels with her co-teachers and explained that it has "made me

more collaborative with my professional learning community." As department chair, Ann used Canvas to create a sandbox course for her team and "found it easy to create modules… [because she] wanted to collaborate." She stated, "I think if you have a positive team environment and good relationships with the people in your department, why wouldn't you want to work together [using Canvas]?" Kathy's DLS also encouraged her to make a sandbox course and the DLS would put in "all kinds of things… that I could refer to and utilize if I want to. It's like having an extra resource to go into." In return for all the help Kathy received, she has encouraged her peers to look into Canvas saying, "This is a really good thing. Let me show you how this works. I've tried to tell them what a lifesaver it has been for me."

Teaching effectiveness. "I like Canvas and how it's setup. It's easy to use." "[Canvas] makes life a lot easier." "Canvas has made my life so much easier." "I enjoy using Canvas. It makes my life a lot easier to keep track of." "[Canvas] made my life easier… I don't know what I would have done without Canvas." "I definitely like Canvas. I think it's easy to use." Each of the six statements above was said by different participants who expressed their feelings about how easy Canvas was to use and how much easier it made their teaching. In all, the words *easy* and *easier* were said 66 times in relation to how teachers felt about Canvas and how effective they felt they were being.

Teaching effectiveness has many facets and is uniquely different based on perceptions. Effectiveness is difficult to define and based on in vivo coding was only actually stated seven times throughout the interviews; however, the perceptions that participants had concerning their own effectiveness using Canvas was evident by looking at Table 2 and considering the implications found in the following top results: know, work, help, make, and learn. Each of these words, with their related stems, provided insight into how participants viewed their

relationship with Canvas as a teaching tool. The following headings provide additional insight into how participants expressed that their teaching effectiveness was enhanced by the use of Canvas. Each category listed plays a role in the other developed themes; however, the unique aspects of these categories and the ways they interact with teaching effectiveness dictate that they be assigned to this particular theme. It is important to note that these headings are in alphabetical order and not in a specific hierarchy of importance or emphasis.

Adaptability and flexibility. One of the most important features about Canvas that participants mentioned was its ability to adapt to their unique needs as an instructor. Many of the teachers discussed the wide gap within their student's learning abilities in their classroom and between various classes. Their responsibility as an educator to individualize instruction weighed heavily on them and many felt that Canvas allowed them the opportunity to differentiate instruction to meet various student needs. Denise expressed her excitement with the ability of Canvas to help "make sure everything is ADA compliant… [and] there's a lot of possibility to differentiate." As a health teacher, Jennifer has had a lot of experience with a variety of student learning abilities and explained that Canvas has really allowed her to differentiate teaching in her classroom, stating:

> It has given me another way to get information to my students. I can teach the same
> material in different ways and even give extra information for my higher achievers who
> want to know more while I still have time to help my students who are struggling… I
> have kids with special needs, I have kids that need read aloud that need a separate room
> and that need extra work and modified assignments and I'm allowed to do that and I can
> use Canvas to help with that and they can still access it and do very similar things to their
> peers so that it doesn't set them apart. I feel like I'm more effective with Canvas. I feel

like it gives me more options. It allows my faster-paced students to not get bored. It

gives my child who needs extra time to still have the material when they need it. It helps

me keep everybody kind of equal and moving at the same pace in a way that they learn

the best.

Emily agreed saying, "I think that one of the good things about Canvas is you can differentiate.

Last semester I was having to differentiate with the different classes that I had." Lisa said that

some of her standard students struggle with research and she was able "to go ahead and pre-

select resources and load those onto Canvas" to help her lower level learners save time and

frustration with trying to figure out where to start with their research portion.

One of the struggles that teachers have is to make sure that students aren't being singled

out when they are given different assignments or remediation and Nancy explained that with

Canvas, "I can assign different assignments to students who may not be up to the same level as

others. I can have them complete remediation without other students knowing that's what they

are doing." Another great thing about the adaptability of Canvas, Tonya said, is that "the content

is adaptive… so it covers a lot of their accommodations that's in their IEPs." Often, teachers

lean more towards the differentiation aspect of learners who struggle with concepts but often

teachers who teach higher level classes such as honors and AP are able to adapt Canvas to meet

those needs. Ann explained that:

Even after I taught them something, and they did an activity, I like to provide a link to a

video that might explain it a different way, or give them a visual, especially, with my AP

class because they're the type that if they didn't get something, they go back and try to

figure it out. And sometimes giving them someone other than me, winds up being

helpful.

Students are also more willing to help each other when they have a system like Canvas that they understand, and Jennifer admitted that she's seen her students "show the other kids how to do stuff and work with them and help them do something differently whereas if I had presented they would just shut me down."

Another aspect of Canvas is the flexibility to reuse courses from semester to semester. Barbara shared that she "can export courses from one year to the next and can change things around. If one year I don't get to that, I can just unpublish it… I think it's the best thing." Additionally, many of the participants felt that the flexibility of Canvas allowed them to facilitate their courses more effectively. Emily explained her view by saying:

> I think I'm a better facilitator when I'm using Canvas. Again, my mindset is that I'm old school, if I don't tell 'em they don't know, and I know that that's not the way things work. I think it's been better because I'm a better teacher at getting them to collaborate, getting them to work together, getting them to discuss things. Giving them a little bit more... I don't know that autonomy is the right word. But just getting them to be more responsible about their education. Take more responsibility for it.

Lisa added her thoughts stating,

> Because of Canvas and because of our 1:1 initiative, I am a facilitator. This is definitely more of a student-centered classroom. I feel like Canvas allows me to kind of have everything prepped and organized, and so when the day comes, I am just like the direction giver and then the facilitator. I just check in and assist everybody, but they are the creators. I don't know what I would do without [Canvas], I really don't. I really love being a facilitator.

Ultimately, Jennifer summed up her views succinctly when asked what should be focused on regarding her experiences with Canvas saying "I think you should focus on its adaptability, that I can use it in any curriculum for any student with any educational level or ability. I love that Canvas allows me to pace my class how I want."

Canvas Features. The use of technology in the secondary classroom is prevalent and the features that Canvas provided to teachers helping them be more effective was discussed quite frequently throughout the interviews. The use of discussion boards was a main feature that teachers utilized in Canvas with most teachers expressing that they had used them at some point in their classroom. Russell stated that he uses Canvas daily by having his "students do a discussion board when class initially starts." He felt that students really enjoyed using this feature because he designs the posts so that "once you initially post your response, then you can see the other responses… and then sometimes I require them to respond to someone else's response, so they enjoy that engagement." Nancy also uses discussion boards within her class because she feels that "discussions also help you see where you are having a misunderstanding and how you should be perceiving something." Lisa said that she uses discussion boards often because:

> It allows all of my kids to have a voice… I really love those. I think that that's a good way to get the kids thinking outside the box and to kind've help each other, push each other to deep levels of thinking… I feel like with Canvas, we can get into so much more deep thinking than you can without a format like Canvas.

Courtney acknowledged that discussion boards help with classroom flow and management stating, "I have 32 kids in second period, so conducting your traditional class discussion with 32 kids is a classroom management issue. So, sometimes I'll use the Canvas discussion piece in

place of that." There were a few things mentioned about the discussion boards that caused some frustration and Russell stated that the "only issue that I have with Canvas is trying to maneuver between the discussion boards and trying to follow how the students are responding to the discussion board." For the most part, participants were very happy that Canvas provided this feature.

Although assignment and test creation were mentioned as features that were user friendly, a primary feature that was mentioned by almost all participants was Speedgrader. When asked about her favorite Canvas feature, Barbara simply responded, "I love Speedgrader… love Speedgrader," and Lisa stated, "I love Speedgrader 'cause it just collects it all for me. I can just click, click, click. Love that." Russell stated that he felt "the most valuable feature [about Canvas] is that I can grade assignments through the Speedgrader and therefore I don't have to have a lot of papers, and I can grade and give the feedback." As an English teacher, Nancy also liked the fact that she didn't have to take a lot of papers home with her saying she likes "being able to grade assignments online and not have to tote them home with me." Denise expressed that as a math teacher:

> The copies are a big thing 'cause if I get piles of papers that I need to grade, they usually sit in piles for quite a while. Whereas, with Canvas I can go in and it's a quick, the Speedgrader, quickly grade and get feedback to my students much quicker than if I were using paper copies.

Another aspect of Speedgrader that participants liked was the efficiency in grading. Emily stated that "the grading portion is great because a lot of the stuff, Canvas grades for you, so it's time-saving, definitely." Kathy explained that "it makes grading [student] work much faster and easier than before I used it," and Ann blunted said, "It makes my grading quicker."

Planning and Organization. Besides the ability of Canvas to allow teachers to adapt their course to meet student needs, the next most mentioned benefit in using Canvas was the ability to plan and organize their course. Ann stated that Canvas "just makes you so much more organized," and she went on to declare, "An organized teacher's a better teacher, for sure!" Jennifer laughingly joked:

I am a very anxious person that likes to be organized. And I feel better prepared to have it all right there… [Canvas] helps me to be more organized, it helps me to get all the information to everybody no matter what's going on.

Denise explained that by using Canvas she is,

Planning further ahead than I have planned in the past because I don't have to worry about, 'well I got to make these copies, and so I want to make sure this goes okay first before I go to the next thing.' It's like I've can have all these different ideas going and just drop them into Canvas and if they have decided I don't need to do this or I'd rather do that, it's already in there just kind of ready for me.

Tonya felt that Canvas "helped me become more organized, because the layout of it. You know what you're doing every day. You know the modules that you've got to get to and what you gotta cover." Ann agreed, stating "I think it helps me with classroom flow, as far as this is our day... What's the word I'm looking for? Class schedule, a daily itinerary... Routine!" Nancy also used Canvas to provide organizational structure because she "likes being able to communicate with the students quickly. I like that I can post announcements to them and have Canvas keep up with my agendas and learning targets for me."

Another aspect of the organizational benefit that Canvas brings is the ability to find documents and resources quickly. Courtney explained that Canvas is:

Like a digital binder. I'm a binder person, for all my hard copies of things, so it's like a digital binder, where, 'Okay. This is where this is.' And I have had instances where for whatever reason, I have deleted or misplaced the digital file, but I go to Canvas and it's there. I like it, again, as kind of that tool box there for the classroom. It's like the foundation piece.

Ann stated that Canvas "makes me more organized. It's not like I have to go digging for this file or that file, everything's just there. It also makes it easier for me to open up these digital files and edit them if I want to." Emily explained that how she organizes her class is that she gets "everything in Canvas ready the way I want the kids to see it, and then I literally can copy and paste it into the lesson plan. It sounds like extra work, but it really saves me a lot of time."

Many of the participants felt that Canvas allowed their students to become more organized as well and helps them have a central place to locate study materials and assignments. Nancy said that Canvas "makes it easier for students to keep track of what they have turned in and what they need to turn in." Denise explained:

The way that I organize Canvas, I do weekly, and I leave all the material and things linked for the kids up there. So, what I've noticed since switching to Canvas is students are going back more often to review things that we've put out before and I think that's helping them piece together the new stuff that we're learning… So, I feel like Canvas allows my students to be more organized.

Ann agreed that by using Canvas she is helping her students learn ways to take charge of their own learning process stating,

I think it helps keep them organized; they don't necessarily need to have a really organized notebook anymore to have access to their notes. All of their assignments that

they submit on Canvas they have access to, so it's nice that they can go back and look at

stuff if they want to. I think most importantly and probably what has helped, at least my

honors classes the most, is the availability of the study guide and the Quizlet around the

clock, so as soon as we start Unit One, all the Unit One study guides and Quizlet sets are

available to them, so the kids that are gonna study, study and do really well.

Lisa laughingly stated that "I feel like Canvas allows me to kinda have everything prepped and

organized, and so when the day comes, I am just like the direction giver and then the facilitator. I

don't know what I would do without [Canvas]." When asked about how she used Canvas, Nancy

boiled it down to one central idea that most participants would wholeheartedly agree on by

stating, "I enjoy using Canvas. It makes my life a lot easier to keep track of."

  Repository for Resources. A concern for most of the participants was the limited amount

of resources, such as textbooks, that students had access to. Barbara mentioned this concern,

stating, "We don't have textbooks. They haven't given us a textbook in years. [Canvas] has

helped me adapt to not having all the materials that a usual teacher might have." Courtney tells

the students at the beginning of her course that Canvas is "gonna be almost your textbook, 'cause

this is where your notes are gonna be… so it's gonna be their one stop shop for information."

Emily said that she really uses "Canvas a lot for the resources and the organization of the

course." She continued her explanation by stating that students:

Have more ways to learn through Canvas. It's not just reading the book and taking notes.

They have other resources they have access to through Canvas… I can put resources in

there, I can put YouTube videos in there, I can embed things in there that they can look

through and research and study without me standing up in front of the class talking 80%

of the time."

Amber agreed with the idea of Canvas being a repository for information stating, "The main reason I use Canvas is because it allows me to pull in other kinds of resources for my students and gives them access to my classroom while even outside of my four walls." Jennifer replied that at the beginning she had used Canvas:

> Mostly for resources for my kids and a place to put their files that they can access at any point during the semester, like once we get to this unit and I open it up. Then they have access to it for the rest of the semester, so it's great for like my kids who really need to see this material more than one time. It is really beneficial to have all the information right there for the kids, so they know that when they're out, they still have access to all of their materials.

When asked about how Canvas helps her, Lisa stated that Canvas allows her students "access to notes, websites, and resources… like my PowerPoint notes, now I can put them all on Canvas and they can have them 24 hours a day. They could have all of my Quizlets. Everything is in one place." Barbara succinctly declared that one of things she liked about Canvas is that it is "pretty much a place just to house everything."

Student benefits. A final theme that became evident throughout the interviews were the various benefits that Canvas provided for students. Although many student benefits can also be found in the other themes, three specific areas were identified: 21st century skills, student engagement, and college preparation. Each of these will be briefly discussed below and are listed in alphabetical order and not by hierarchy of importance or emphasis.

21st century skills. One of the most important skills that participants mentioned was that of 21st century technology integration. Emily expressed that students already use a variety of

technology and that by her using Canvas she thinks that "for students it's a good thing 'cause it sort of lends itself to their love of technology." Barbara stated,

> I think [Canvas is] really important 'cause it teaches the 21st century skills, 'cause when you go to college, most of their stuff is already online… I think students are able to gain skills on how to use technology, which I think makes them better individuals, not necessarily maybe their success academically, but at least they have skills that they could use in the future workforce or at least in the future in college, they'll be better prepared.

Russell agreed saying, "I think for our school system, it's all about the 21st century learning environment… and being able to utilize the digital learning… in the real world. I think it's very beneficial, I think it's a great tool." Jennifer felt strongly that she had a responsibility to her students to teach them how to use various technology tools and felt that Canvas "just prepares them for their future because so much stuff is online now that I feel like I'm doing a disservice not to give it to them."

College preparation. Participants also felt that by using Canvas they were fulfilling their responsibility to prepare students for college expectations. Nancy explained that she really didn't have a lot of experience using an LMS as a student and that is "why I'm in favor of using Canvas so often in class because they can get accustomed to how a college class might feel once they're there." Denise agreed stating, "having Canvas is really allowing me to prepare them for the expectations that they're going to see in their college classes." Lisa said,

> I feel like Canvas is more realistic of what their college experience is gonna be like… A lot of the kids I teach are gonna start taking college courses next year and I feel like this kind've bridges that gap between normal book to teacher learning classroom to what is gonna be expected of them in college, like discussion boards and different online

assignments… I feel like they're more prepared every year to go and do the college level

online. They're more capable.

Emily explained that if students "have this experience now and I can get them to learn how to

use this now, then I think it'll be helpful, it'll make them more successful on their college courses

when they take online classes." Each of these participants recognized an important aspect about

Canvas that not only were they helping students gain 21st century skills, they were using a tool

that helped students succeed in their college journey.

 Student engagement. Lastly, not only did participants believe that Canvas benefitted

students by preparing them for a 21st century and college environment, participants also felt that

Canvas allowed their students to be more engaged in the learning process and even motivated

them to become a facilitator of their own learning. Courtney declared that by using Canvas, "It

helps me reach students who are more technology driven… I think it makes them a little more

engaged in what we're doing." Although most teachers did not feel that Canvas made a

significant impact on student standardized testing scores, there was a high degree of confidence

that students who used Canvas were able to learn the material better simply because it allowed

them to engage in the learning process in a variety of ways. Tonya said that for her EC students:

 Canvas is a great asset to keep them more engaged and for them to be facilitators of their

 own learning and I've just seen them more engaged. They understand now. They answer

 questions. I can see them going ahead of me sometimes and they're looking through,

 they're wanting to get to their notes. 'Oh, did you know she posted this video?' They're

 excited about getting into it.

Lisa was very honest in her assessment about how she felt Canvas helps her students engage in

their own learning process stating,

I feel like my students are learning more, learning faster, learning at a deeper level than

they have ever been able to reach before. And I feel like they are gaining confidence in

their ability to do it on their own, to be more independent. They don't have to ask me

800 questions when they could just figure it out and I like that for them. I think… with

my honors kids, the creativity has really been increased. The creativity and the deeper

level of thinking. Even the more independence that I give them has increased.

Jennifer agreed that Canvas "seems to help my kids better. They feel better about coming in and

doing their work. They're more motivated to get their work done because they are a digital

bunch."

Research Questions

The central research question and sub-questions for the study are revisited below with

additional consideration for how participants interacted with the ideas posited throughout the

interviews. Although negative aspects of Canvas use were identified, the overall experience

with Canvas was very positive and each of the four themes: motivation and attitude towards use,

training and technology support, teaching effectiveness, and student benefits, along with their

related categories, support the central research question and subsequent sub-research questions.

Central research question. The central research question, how do secondary teachers

describe their experience integrating the LMS Canvas within a blended-learning course, was

answered in a variety of ways during the study. Motivations and attitudes about Canvas were the

central key to understanding participants' experiences with using Canvas. While teachers did

not always understand the technical aspects of the technology, Kathy summed up her experience

by stating "I know [Canvas is] very helpful, and I don't know how it works, I just know it

works." Courtney explained that in her experience with Canvas, it "allows me to provide

information and scaffolding… in a one stop shop." Each participant perceived a useful aspect to how Canvas best suited their teaching structure and gravitated towards that particular benefit; therefore, their experience with Canvas was directly tied to their motivations and attitudes towards its use in their classroom. Additionally, most of the participants felt that Canvas allowed them the flexibility and adaptability to structure Canvas to meet their personal goals for their classroom, which ultimately made their life easier. Ann explained her experience best by stating, "[Canvas] made my life easier… I don't know what I would have done without Canvas."

Participants' experience with Canvas was positive overall; however, issues with understanding, integration, and implementation of certain features within Canvas became evident throughout the interviews. One of the primary issues concerning participants' experiences with Canvas revolved around the ability of students to access the internet and the issues surrounding the use of iPads. Participants like Lisa really liked students being able to download resources onto their iPad because "not all of our kids have internet at home;" however, Barbara expressed that "a lot of kids say they hate the iPads" and find it difficult to use with submitting assignments. All participants felt that support from a DLS, who not only understood the program but also understood the pedagogical concerns associated with teaching secondary students, was a critical part of their integration experience. Jennifer was one of the biggest supporters of how crucial a DLS was to her experience with using Canvas. She stated, "The most helpful thing I think is the specific DLS who is a teacher and knows how we could use different things in different subject areas."

Sub-research question one. Sub-research question one consisted of the participant description of the motivational or attitude factors concerning their acceptance of Canvas. It is evident from participant expression that motivation and attitude played a significant role in their

use of Canvas, which established the first of the central themes throughout the research;

however, other related categories are explored within this theme as well. The ability to use

Canvas as a support for both teacher and student absences was identified by almost every

participant. Kathy expressed how wonderful it was to be able to work on Canvas from home

when she was sick, and Emily stated that "[students] have no excuse whatsoever not to get their

work done." Emily's statement also showed the importance of how much accountability and

responsibility played a role in a teacher's use of Canvas by encouraging students to take

responsibility for their own learning. Courtney also combined the absence and accountability

factor when she stated that she tells her student that "you're still responsible for what you miss

when you're not here, because it's on Canvas."

Administration played a critical role in providing an initial motivational push to use

Canvas along with the perceptions about how effective Canvas would be. The possibilities that

Canvas offered to teachers in a blended-learning course gave tremendous motivational incentives

for teachers to continue to use the resource. Kathy stated that she and her peers face

"tremendous pressure to use technology," and as part of their professional development they are

able to use Canvas to meet those requirements. Ann also considered that fact that Canvas offers

the ability to standardize learning by allowing her department the ability to create "a sandbox

and work with the people that are teaching the same subject as you," which allows for the

administration to promote an integration of state standards for reporting purposes.

Perceptions about Canvas truly encompass the entirety of motivation and attitude simply

because of the strong emotional response that this concept exhibits. Participants were extremely

varied on what motivated them to use Canvas, but a sub-category emerged that they enjoyed the

technology challenge Canvas brought to their teaching environment. Russell stated that he liked

"learning new things" and Courtney expressed that Canvas allowed her the opportunity to grow as an educator explaining that Canvas is "nice because it offers things where I can continue to grow and learn how to do new things." Although there were a lot of positive perceptions about Canvas, there were some negative ones as well, primarily dealing with the amount of time it takes to set up and maintain a course using Canvas and the fear that it might be taken away. Jennifer bluntly stated her perceptions about initially using Canvas saying, "I didn't want to spend the time and then didn't want to get attached to something they might take away from you." Ultimately though, all participants expressed a sense of thankfulness that they had not let the negative perceptions prevent them from utilizing Canvas and reaping the benefits for themselves and their students.

Sub-research question two. Sub-research question two focused on organizational support surrounding Canvas implementation and training. Pre-service experience with using an LMS did not appear to play a significant factor in whether participants were motivated to use Canvas, although those who had more experience with using an LMS during teacher training recognized and acknowledged the benefits associated with the use of an LMS. Nancy explained that "the only training [she] had in college using an LMS was using Blackboard as a student" and Courtney bluntly stated that one of the main reasons she did not use Canvas at first was that "I wasn't familiar enough with it." All participants felt they were given basic training concerning the technical aspects of Canvas: however, there were many features in the program that participants were not familiar with or had experienced a variety of technical issues. It was evident from participant interviews and Canvas course screenshot images that many of the key features in Canvas were not being utilized, although whether this was based on time needed to implement the features or a lack of training on understanding the features is unknown.

Connectivity issues and the lack of devices during crucial teaching impact times, such as review prior to testing, was a serious concern along with discussion of Canvas being used on an iPad verses a laptop device. Teachers expressed that there was a little bit of frustration with the iPads being taken up early for Christmas break and then used for testing. Kathy sighed while stating, "I can't start using Canvas until they get us our iPads back and I don't know how long that will take."

As stated under the central research question, all participants felt that the DLS played a significant role in helping them implement Canvas effectively in their classroom. Courtney explained that "our DLS walked us through and helped us take baby steps… making [Canvas] fit in with what you already do" and Russell simply stated that "our DLS is very, very, very, supportive." Mandatory training meetings and availability of the DLS to help with technology issues and address pedagogical concerns contributed substantially to the organizational support theme as well.

Sub-research question three. Sub-research question three engaged teacher perceptions about their personal teaching behaviors and effectiveness when using Canvas. Participants were confident in their teaching effectiveness prior to using Canvas; however, all felt that Canvas provided a tremendous amount of support to enhance their teaching effectiveness, which was witnessed by the supporting categories of adaptability and flexibility, organization, resources, and teaching effectiveness to develop a theme. Each of these categories consisted of codes that indicated satisfaction with how Canvas enabled participants to engage with their students more effectively, supplement their course material with additional resources, plan and organize their classroom lessons, and essentially make their life as a teacher easier by providing features such as discussion boards, speedgrader, and the ability to differentiate learning.

Throughout the participant interviews, a primary sub-category of adaptability emerged which dealt with teaching effectiveness, allowing teachers the ability to configure Canvas to meet their specific teaching styles and student needs. Emily provided a succinct analysis about how Canvas allowed her to be effective by stating, "I think that one of the good things about Canvas, is you can differentiate," and Tonya, who primarily teaches EC students, stated, "The content is adaptive… so it covers a lot of their accommodations that's in their IEPs." In all, many of the participants felt that the flexibility of Canvas allowed them to facilitate their courses more effectively with Emily explaining that she thinks she is "a better facilitator when I'm using Canvas… because I'm a better teacher at getting them to collaborate, getting them to work together, getting them to discuss things." Ultimately, participants felt that Canvas helped them be more effective as teachers with Jennifer summing up her experience by stating, "I can use [Canvas] in any curriculum for any student with any educational level or ability. I love that Canvas allows me to pace my class how I want."

Sub-research question four. The final sub-research question considered teacher perceptions about their student results when using Canvas. The final theme of the study identified student benefits and the ability of Canvas to provide various opportunities for individualized learning and even reduction in stress levels due to organizational factors found within the structure and various features of Canvas. The growth of 21st century skills were denoted as one of the key reasons that Canvas benefits students with Barbara expressing she thinks "students are able to gain skills on how to use technology, which I think makes them better individuals." Russell agreed saying that "I think for our school system, it's all about the 21st century learning environment… and being able to utilize the digital learning… in the real world."

Ultimately, participants felt that Canvas provided the most benefit to students by providing them with tools that could be utilized in college and life preparation. Denise explained that "having Canvas is really allowing me to prepare them for the expectations that they're going to see in their college classes," and Nancy explained that one of the main reasons she uses Canvas is to help students "get accustomed to how a college class might feel once they're there." While learning results measured by standardized testing methods were not considerably impacted by the use of Canvas, student preparation, engagement, and overall learning benefits were confirmed by participants as a direct result of their utilization of Canvas. Student engagement was promoted as a benefit for using Canvas and even encourage motivation to become a facilitator of their own learning. Tonya said that "Canvas is a great asset to keep [students] more engaged and for them to be facilitators of their own learning," and Jennifer agreed that Canvas helps students to be "more motivated to get their work done because they are a digital bunch."

Summary

The purpose of this phenomenological study was to investigate teachers' experiences integrating the LMS Canvas within a blended-learning course in a rural high school district located in the Southeastern United States. Eleven participants from three separate schools, with a variety of teaching experience and subject matter expertise, were selected and interviewed individually and a focus group consisting of four participants was also held. Individual participants were discussed in detail, with consideration given to the unique perspectives concerning the use of Canvas in their classroom. Once data analysis was conducted and information saturation was reached, there were a total of 86 concept codes and sub-codes and 11 categories, which were then reduced to four themes. Each of the themes and subsequent

categories were thoroughly developed with the participant voice establishing how the codes and

categories were shaped into the prevalent themes of the study. Finally, the central research

question and sub-research questions were evaluated based on category and theme development.

CHAPTER FIVE: CONCLUSION

Overview

In this final chapter, I discuss the results of the research conducted on teachers'

experiences integrating the LMS Canvas within a blended-learning course in a rural high school

district located in the Southeastern United States. A brief summary of findings is provided

describing the developed themes based on the research questions along with the epoche and

bracketing practice used during analysis. The essence of why teachers utilize Canvas in their

course is identified followed by a discussion concerning both the empirical and theoretical

applications of the study. This discussion will reflect on the theoretical framework of the

UTAUT and TPACK along with previous theoretical considerations. Additionally, I will

address observable behaviors and ideas concerning the use of Canvas in light of relevant

literature considered in Chapter Two. Next, implications for study results will be considered

along with identifying specific recommendations geared towards stakeholders. Both

delimitations and limitations will be reviewed and recommendations for future research

contemplated, followed by summary of the study.

Summary of Findings

The central research question, how do secondary teachers describe their experience

integrating the LMS Canvas within a blended-learning course, was answered in a variety of ways

during the study. Based on data analysis, four themes developed: (1) motivation and attitude, (2)

training and technology support, (3) teaching effectiveness, (4) student benefits, which along

with their related categories, supported the central research question and subsequent sub-

research questions. In the final analysis process, in which the essence of the phenomenon is

formulated, a central concept for why teachers use Canvas was reduced to adaptability.

Essentially, participants were each able to easily adapt Canvas in a way that met their teaching needs and strengthened student learning and engagement. The following two sections will further discuss a response to the research questions and identify the phenomenological essence of the study results.

Response to Research Questions

The central research question and sub-questions for the study are revisited below with additional consideration for how participants interacted with the ideas posited throughout the interviews.

Central research question. The central research question was evaluated based on the interviews conducted within the research study parameters. Each participant felt that Canvas allowed them the flexibility and adaptability to structure Canvas to meet their personal goals for their classroom. Their experience was positive overall; however, issues with understanding, integration, and implementation of certain features within Canvas became evident throughout the interviews. Additionally, all participants felt that support from a DLS who not only understood the program but also understood the pedagogical concerns associated with teaching secondary students was a critical part of their integration experience. Each of the four themes, along with their related categories, support the central research question and subsequent sub-research questions.

Sub-research question one. Sub-research question one consisted of the participant description of the motivational or attitude factors concerning their acceptance of Canvas. It is evident from participant expression that motivation and attitude played a significant role in their use of Canvas, which established the first of the central themes throughout the research. Administration played a critical role in providing an initial motivational push to use Canvas;

however, perceptions about how effective Canvas would be and the possibilities that Canvas offered to teachers in a blended-learning course gave tremendous motivational incentives for teachers continued to use the resource. Additionally, secondary benefits such as student accountability and responsibility along with the ability of Canvas to provide educational support during both teacher and student absence was a powerful motivational aspect for participants.

Sub-research question two. Sub-research question two focused on organizational support surrounding Canvas implementation and training. Pre-service experience with using an LMS did not appear to play a significant factor in whether participants were motivated to use Canvas, although those who had more experience with using an LMS during pre-service teacher training recognized and acknowledged the benefits associated with the use of an LMS. All participants felt they were given basic training concerning the technical aspects of Canvas; however, there were many features in the program that participants were not familiar with or had experienced many technical issues. Connectivity issues and the lack of devices during crucial teaching impact times, such as review prior to testing, was a serious concern along with discussion of Canvas being used on an iPad verses a laptop device. As stated under the central research question, all participants felt that the DLS played a significant role in helping them implement Canvas effectively in their classroom. Mandatory training meetings and availability of the DLS to help with technology issues and address pedagogical concerns contributed substantially to the motivational and attitude theme as well.

Sub-research question three. Sub-research question three engaged teacher perceptions about their personal teaching behaviors and effectiveness when using Canvas. Participants were confident in their teaching effectiveness prior to using Canvas; however, all felt that Canvas provided a tremendous amount of support to enhance their teaching effectiveness, which was

witnessed by the supporting categories of adaptability and flexibility, organization, resources, and teaching effectiveness in development of a theme. Each of these categories consisted of codes that indicated satisfaction with how Canvas enabled participants to engage with their students more effectively, supplement their course material with additional resources, plan and organize their classroom lessons, and essentially make their life as a teacher easier by providing features such as discussion boards, speedgrader, and the ability to differentiate learning.

Sub-research question four. The final sub-research question considered teacher perceptions about their student results when using Canvas. The final theme of the study identified student benefits and the ability of Canvas to provide various opportunities for individualized learning and even reduction in stress levels due to organizational factors found within the structure and various features of Canvas. Ultimately, participants felt that Canvas provided the most benefit to students by providing them with tools that could be utilized in college and life preparation. While learning results measured by standardized testing methods were not considered impacted by the use of Canvas, student preparation, engagement, and overall learning benefits were confirmed by participants as a direct result of their utilization of Canvas.

The Essence of the Experience

A qualitative transcendental phenomenological approach was used in this study in order to evaluate and synthesize participant interviews concerning their use of an LMS and extract the essence for why they chose to use Canvas. As a teacher who currently uses Canvas in a secondary educational setting, I wanted to make sure my own biases were set aside, or bracketed, in order to consider the phenomenon from the participants' experiences. Prior to the analysis, I utilized the reflexivity method and reviewed interview transcripts to evaluate accuracy

and identify whether the interview conveyed the "overall essence of the experience of the participants" (Creswell, 2013 p. 260). Additionally, I identified how my personal bias might possibly influence "participants' descriptions in such a way that the descriptions do not truly reflect the participants' actual experiences" (Creswell, 2013, p. 259). This epoche process was not only attempted prior to interviews, but also during data analysis, in order to conduct a reduction of data that allowed me to establish codes, categories, and themes that were consistent with participant views and not based on my own experiences (Moustakas, 1994).

The final steps in the analysis process were the imaginative variation and synthesis process in which the essence of the phenomenon is formulated. Moustakas (1994) stated that the central goal of the transcendental phenomenological research study should be to present "a unified statement of the essences of the experience of the phenomenon as a whole" (p. 100). As such, based on the codes, categories, and themes found within the research, the essence of why teachers use Canvas can be reduced to one statement provided by Jennifer in her final thoughts, "Canvas is adaptable… I can use it in any curriculum, for any student with any educational level or ability." Adaptability is truly the essence discovered in each of the participants' words and thoughts about using Canvas as an LMS in their classroom. Essentially, they were each able to easily adapt Canvas in a way that met their teaching needs and strengthened student learning and engagement. They enjoyed using certain Canvas features because it made life easier for them and their students; however, they relished the adaptability of Canvas and appreciated how the program offered them the ability to strengthen their unique teaching styles and preferences.

Discussion

Research is not conducted merely for the benefit of the researcher but for the benefit of the body of knowledge. Unfortunately, there has been a limited amount of both quantitative and

qualitative data available at the secondary educational level to evaluate the perceived impact

LMS implementation has on students, teachers, and school systems, revealing gaps in the

literature. By examining the motivations and attitudes of teachers in a qualitative study and

evaluating the results using two specific theoretical frameworks, I made an attempt to contribute

to the literature and provide significant qualitative data relating to the acceptance and integration

of an LMS in the classroom. In the following section the theoretical and empirical applications

for the study will be considered and discussed.

Theoretical Applications

In the literature review, the two main theoretical frameworks of UTAUT and TPACK

were combined and evaluated based on research data; however, several other models discussed

in the previous significant theories section also deserve consideration and will also be addressed.

Previous significant theoretical considerations. It is important to note that several

teachers stated that they were the first ones to start using Canvas or certain features of Canvas,

which then spread to other users. The diffusion of innovation (DOI) theory based on Rogers'

(1995) idea that "an innovation is communicated through certain channels over time among

members of a social system" (p. 5) is keenly revealed in these statements as stakeholders move

through various stages of acceptance of new technology. Most of the participants interviewed

would be considered early adopters or early majority adopters regarding their willingness to

utilize Canvas, although it should be noted that the limited amount of participants restrict the

ability to reflect an accurate rate of technology acceptance (Gautreau, 2011).

These same teachers were at a stage in their career that emphasized their concern with

using technology as a resource, an organizational tool, collaboration opportunities, and a

perceived responsibility for teaching their students technology integration (Hall, 1974). An

examination from the concerns-based model (CBAM) revealed that a majority of the participants who had chosen to use Canvas did so out of a higher level of concern (Sanga, 2016) instead of Lochner's et al. (2015) belief where most teachers are merely at the awareness stage of using a technology tool for their teaching and forced by administration to dip their proverbial foot in to test the water.

Similarly, the participants were extremely forthcoming about their feelings about how they felt Canvas allowed them to teach their students more effectively. This confidence of being a better teacher while using Canvas is directly relatable with the self-efficacy theory (Bandura, 2012), namely the perception that students are given more of an opportunity to learn the material by utilizing Canvas, which impacted how the participants felt they could teach the material effectively. Additionally, since participants felt they were more efficient, they were more open to new ideas about how to use Canvas to enhance their teaching (Paraskeva et al., 2008). I experienced this with almost every single participant during the interview when discussing various features about Canvas that they were not aware of. They were interested in pursuing ways that they could use Canvas more to their students' benefit.

The self-determination theory (SDT; Deci & Ryan, 1985) was also present in the participants' willingness to spend time in Canvas design, preparation, planning, and front-loading of material in order to reap the benefits, which directly corresponds to Fenyvesiová and Kollárová's (2013) assertion that teacher efficacy focuses on the "belief of a teacher about [their] own abilities to plan, realize education, influence learning and results of students" (p. 1). The intrinsic and extrinsic motivation was a significant factor in how much effort participants expended in utilizing Canvas. Simply put, participants spent time learning and using Canvas because they saw that it paid off in a variety of ways including saving time and allowing them to

be more organized; therefore, their behavior was adjusted "in order to accomplish certain objectives and expected outcomes" (Paraskeva et al., 2008, p. 1085).

UTAUT. The UTAUT model (Figure 1) expands upon the technology acceptance model (TAM; Davis, 1989) and attempted to predict both the behavioral intention to use (BIU) and attitudes toward use (ATU) by identifying four factors: performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC; Venkatesh et al., 2003). Each of these factors play a tremendous role concerning the role of technology; however, the study results appear to indicate a shift towards PE and FC as more indicative of whether Canvas will be used by teachers in a classroom format. While EE and SI did play an initial role in whether or not teachers at least attempted to use Canvas, the significance of the factors paled in comparison to the impact of PE and FC, which support the assumptions of both Teo and Zhou (2017) and Brown et al. (2010) regarding SI on technology use. For example, the administration's insistence that Canvas be implemented in participants' classrooms in some form or fashion, i.e., SI, did not fully convince participants that it was a worthwhile technology tool; however, the interaction with the DLS regarding all the ways Canvas could be utilized in the course, i.e., FC, played a significant role in participants' understanding of the value of the resource and subsequently align with Teo's (2010) assertion that FC support provides significant motivation to use technology.

Furthermore, it was discovered the once participants realized the benefits that Canvas offered as an instructional tool, i.e., PE, they were much more willing to learn the various skills to master the resource, even if that technology was difficult at times, i.e., EE. Additionally, the central concept for why teachers use Canvas was reduced to adaptability, a foundational integration principle within the role of PE (Davis et al., 1992; Lee et al., 2015). Therefore, I

agree with Venkatesh et al. (2003) that PE is one of the strongest predictors of technology usage; however, I disagree with his opinion that FC does not play a large role in BIU. Based on the data, a significant reason why participants initially used Canvas, and continued to use Canvas was because the DLS at the school actively provided training and the district consciously provided technical infrastructure and support for their staff to use Canvas.

The UTAUT model also included four moderators: "age, gender, experience, and voluntariness" (Venkatesh et al., 2016, p. 329; Figure 1). Although research is still limited on how much impact these moderators play on BIU and ATU (Venkatesh et al., 2003), it should be noted that all but one of the participants was female. Despite research not being conducted on teacher gender demographics of the district and which of those genders use Canvas, based on initial request to the district to provide information concerning those who currently use Canvas, it appears that females are more willing to utilize Canvas. Based on the demographic data of participants with an age range from 26 to 60 years old and a median experience range of 10 years, it appears that age and experience did not impact whether a participant used Canvas. It should be pointed out that there were no initial induction teachers, those who are typically in their first three years of teaching, who used Canvas. Since there might have been induction phase teachers in the district who used Canvas but chose not to participate in the study, I cannot accurately evaluate whether age or experience plays a significant role in whether a teacher uses Canvas. Lastly, unlike a typical college setting where an LMS is required for use, teachers are not required to use Canvas in the district; therefore, voluntariness did play a role in whether or not participants utilized Canvas and can also be attributed to EE as an extrinsic motivational factor (Lwoga & Komba, 2015).

TPACK. The central idea of TPACK (Koehler & Mishra, 2005; Figure 2) is that content knowledge, pedagogical knowledge, and technological knowledge are all interwoven to form a partnership between each concept (Graziano et al., 2017). Each participant displayed a tremendous amount of understanding between how their use of Canvas (technology) impacted their ability to teach (pedagogy) their content material; however, most seemed unaware of the theoretical principles that encompassed their decision to utilize Canvas. Simply, participants chose to use Canvas because they recognized the benefit to their teaching and not necessarily because of the theory surrounding the decision, which supports Koehler's et al. (2013) assertion that teachers have a limited understanding of TPACK principles. Supported by the research conducted by Herring et al. (2016), Rosenberg and Koehler (2015), and Voogt et al. (2013), an increased emphasis on the pedagogical benefit of using Canvas should be incorporated into all training in order to help teachers connect the theory with the practical applications within the use of technology. Based on the study results, it appears that the theory should be addressed and evaluated during future professional development training sessions, or even in pre-service training for educators within teacher development programs.

It should be noted that several participants used Canvas merely as a supplement to their teaching and did not fully engage students with all of the features available. Several reasons can be identified for this, including limitations of technology, student ability levels, and teacher preferences; however, each participant noted that the benefits Canvas brought to their classroom encouraged them to continue its use (Graziano et al, 2017). There did not appear to be the assumption by participants that by simply using Canvas, their students would learn material more effectively; furthermore, participants recognized the importance of pedagogical structure with the use of technology. Ultimately, there is no doubt that Canvas meets the goals of the

TPACK framework and allows teachers the ability to structure their course effectively to address

content knowledge, enhance pedagogical abilities, and develop technological mastery, and the

results of this study support the literature review research conducted using the TPACK model

(Graziano et al., 2017; Herring et al., 2016; Koehler et al., 2013; Voogt et al., 2013).

Empirical Applications

Throughout the research study, several different areas of observation and applications

were noted: adaptability, teaching engagement with the learning process, pre-service LMS

knowledge and impact, student preparation and learning, and technology concerns. Each of

these will be discussed in the following section.

Adaptability. The central phenomenon of Canvas use revolved around the adaptability

of the program to meet various teacher and learner needs. The ability to adapt Canvas for

various disciplines, learning styles, and personalized needs makes it an effective tool to use in

the classroom and provides an educator a tool to manage the learning process (Lochner et al.,

2015). Adaptive learning environments are a central framework to Canvas by providing

"content and services to meet the needs of individuals or groups" (Kara & Sevim, 2013, p. 111).

Participants also felt that Canvas allowed them to engage with their students even with an

absence of the student or teacher and instructions, assignments, and resources could all be

provided in a digital format, reducing stress and allowing course material to be accessed

regardless of location.

The personalized learning environment (PLE) of Canvas allowed teachers to control the

learning environment by focusing on the student's unique style of learning (Vasquez et al., 2015)

and providing an adaptive environment for a student-centered learning engagement (Hamilton,

2015). Additionally, based on the research conducted, participants felt very strongly that using

Canvas as an adaptive technology within an honors level course, a standard level course, and even an inclusion classroom was a tremendous benefit for their students. The ability of Canvas to provide differentiated instruction was a concept that was repeatedly stated and directly supported by the research provided in the literature review (Dixon et al, 2014; Yildririm et al., 2014).

It should be noted that many of the participants did not understand the phrase universal design for learning (UDL); however, when it was explained that this theory considered the needs of a variety of learners, especially those with special needs (Benton-Borghi 2013; 2016; Courduff et al., 2016), they expressed their belief that Canvas provided learning flexibility (Scott et al., 2015). Another consideration that should be addressed is the one-size-fits-all concept posited by Graf and Kinshuk (2014) regarding an LMS in which the authors address the lack of automatic differentiation available within a course leading to frustration. Based on the study results, teachers felt that they were able to quickly adapt Canvas to meet student needs and wanted the ability to manually differentiate the course for their students, which disputed parts of the analysis results suggested by the authors. Lastly, while not specifically mentioned in the research as a benefit of LMS use, the UTAUT factor of PE is strongly influenced by the adaptability of Canvas (Venkatesh et al., 2003).

Teacher engagement with the learning process. Motivation and attitude play a tremendous role in the use of technology (Teo, 2010). One of the benefits observed during the interview process was the excitement that teachers had within their course development process and the ability of Canvas to stimulate their own creativity. Prior research did not discuss the benefits that an LMS provided to teachers in their planning, preparation, and organizational flow of their classroom; however, it was very evident that Canvas gave participants a structural

framework within which to teach their class. Both extrinsic and intrinsic motivation found within SDT (Deci & Ryan, 2002) and TAM (Davis, 1989) was observed throughout the interviews concerning assignment creation, communication, grading and feedback, discussion boards, testing, resource repository, and instructional text. Each of these resources were all utilized through Canvas, with participants gravitating towards particular features that helped them engage students within the learning process.

Several participants mentioned that Canvas came at a good time in their career because they were becoming stale in their teaching engagement and Canvas allowed them to look at their material in a fresh and exciting perspective. Based on observation and discussion with participants, the use of Canvas forced the brain to rethink the teaching and preparation or planning process, which impacted teacher self-efficacy by establishing a sense of control of the learning environment; therefore, because higher teacher efficacy has been shown to impact student learning and achievement, Albert Bandura's (2012) social cognitive theory is supported by teachers using Canvas. Again, it should be noted that specific research on teacher motivations and attitudes towards the benefits of LMS use was extremely limited and more research should be conducted in this area.

Canvas also allowed teachers the ability to collaborate with each other to learn various technology skills and to stimulate creative ideas for assignments and use of features. The ability to problem-solve and resolve technology issues collaboratively was a positive aspect of teachers using Canvas, especially within the same discipline. An area that was addressed concerned the concept of Canvas interacting within an interdisciplinary or cross-curricular format (Adams Becker et al., 2016; Parks & Mills, 2014; New Media Consortium, 2017), and most participants felt this would be a really great way to collaborate; however, a major concern was that due to

logistical hurdles, such as student schedules, the feasibility would be a significant concern.

Canvas can also provide a natural bond between newer teachers, who are often more technology

savvy, and experienced teachers who might struggle more with the technology, producing a

symbiotic mentoring relationship. These relationships can be developed through common goals

of technology use and are an often-overlooked benefit of technology integration. Additionally,

the continuation of the UTAUT factor of SI, which is an extrinsic motivation, not only

encourages the initial use of a technology but to encourages continued use (Venkatesh, 2003).

It should be noted that there appeared to be a lack of knowledge with various Canvas

features that could have enhanced participant satisfaction with Canvas (Yildirim et al, 2014).

Many of the visual demonstrations of the courses provided by the participants were basic in

design features and lacked visual dynamics, which appear to support the research concerning the

problem of overload (Al-Busaidi, 2013) and the struggle to use more advanced features of an

LMS (Brown et al., 2015). Additionally, several pedagogical resources available in Canvas were

not known by participants, although after discussion they were very interested in learning more

about them. Motivational concerns were identified, specifically time and effort, concerning new

development ideas and use of various features.

In the same vein of thought, although Canvas provides analytic data information, only

one of the participants mentioned that they used this knowledge to structure their teaching

differentiation. The concepts behind data-driven teaching are numerous and a constant emphasis

is being made to evaluate student learning based on data (Firat, 2016; Kimmons, 2015; Oliveira

et al., 2016); however, most participants were not aware of the Canvas feature that provided data

analysis in an easy to view format. Based on this research study it appears that more focus

should be made, possibly by the administration, on helping teachers utilize the data that is

already being provided within Canvas to help guide instructional focus, which supports the study results conducted by Vipond (2016).

Pre-service LMS knowledge and impact. The literature review identified that previous experience with online and blend-learning courses play a significant role in teacher acceptance and motivation to use technology in the classroom (Brown et al., 2015; Fathema et al., 2015). While participants did feel that prior experience with an LMS during their pre-service or continuing education training was helpful, it was not a main motivator in utilizing an LMS. In fact, several participants had negative experiences with their online or blended-learning educational format and were hesitant to use Canvas because of that experience. Rather, the central motivation that I discovered was directly linked to a trained DLS helping teachers utilize the Canvas effectively for their specific pedagogical needs, supporting the study conducted by Fathema, et al. (2015). Further research should be conducted on the benefits of teaching pre-service teachers to use an LMS, not only the technology basics, but also the pedagogical skills that enhance student learning. Additionally, more emphasis should be placed on training skilled digital learning teachers who have utilized an LMS in a classroom environment and integrate them into the professional development process.

Student preparation and learning. Participants often stated that Canvas helped prepare their students for future college or career choices, not only because students will need to utilize various forms of technology, but also because of the digital learning environment they will face. In essence, Canvas is useful in preparation for both the higher education realm and career or technical trades, which supports the research conducted by Sanga (2016) on the goal of an LMS to produce familiarity within the learning process using a digital framework. Participants also

touted Canvas' ability to develop students' technical skills and provide accountability and structure to their learning process.

According to the literature, most research suggested that student learning is not significantly impacted by the use of an LMS (Yaun & Xiaoyu, 2015); however, based on this study, research participants felt they were able to better engage their students and subsequently, student learning was significantly enhanced. While statistical analysis might not show that students score better on standardized testing, conceptualized learning and test exam scores are two completely different concepts and should be addressed independently. It should be noted that even though research identified that instructors can often be more concerned with the basic development and implementation of the LMS as a whole instead of using an LMS as a PLE (Adams Becker et al., 2017; Brown et al., 2015; Liyanage et al., 2016), student learning appeared to be the driving factor in the use of Canvas. Several participants bluntly noted that if they didn't think student learning was occurring by their use of Canvas, then they wouldn't be using it.

Technology concerns. Research suggests the use of technology significantly impacts the use of an LMS (Pynoo et al., 2010), although participants felt that the instability of not having internet, struggling with device considerations, and facing technical issues played a huge motivating role in teachers not using Canvas. The Canvas program itself was not as much of a concern as the ability for students to use it effectively during class, at home, and on a variety of devices. Although participants considered the benefits of Canvas to overshadow the negative aspects of technology concerns, the stated issues still impact not only initial use but continued use of Canvas as a teaching resource. A participant mentioned that a peer teacher, who had used Canvas the previous year, no longer used it because of the internet connectivity issues she faced

in her classroom; therefore, as a subset of the FC factor within the UTAUT model, a strong emphasis should be placed on making sure technology concerns are evaluated and addressed in order to help provide a solid foundation for Canvas use, supporting the study analysis and conclusions discussed by Fathema et al. (2015).

Another area of discussion concerning the use of technology is the lack of knowledge by participants concerning how they are meeting various technology standards (Office of Educational Technology, 2017) established by federal and state mandates. Additionally, the technology standards, such as the *ISTE Standards for Educators* (ISTE, 2017b) and how they can be implemented effectively (Hamilton, 2015) did not appear to drive participants' use of an LMS. None of the teachers mentioned the *NC Digital Learning Competencies for Classroom Teachers* (North Carolina Department of Public Instruction, n.d.c), which includes a focus on using an LMS to enhance technology competencies; therefore, participants appeared to not fully understand how their use of Canvas was meeting a variety of technology standards mandated by the federal and state educational institutions.

Implications

In analyzing the research data, several implications of the study became clear and should be considered by various stakeholders. The following implications will be discussed and are listed in alphabetical order merely for aesthetic purposes and not for a hierarchy of importance or emphasis; however, each of the discussions will identify why not only Canvas, but all LMSs are a powerful resource for educational goals and should be considered individually and holistically when deciding on LMS implementation goals.

Adaptability as a Motivation

As stated in the summation of research section, the essence of this phenomenological

research study was, at its most basic root, that teachers use Canvas because they can adapt it to

meet their teaching needs. Canvas provides adaptability, which allows teachers the freedom to

use it in any type of course environment, with any type of student ability level, and in any level

of involvement, i.e. fully online, blended, or as a supplemental resource. The ability of Canvas

to provide differentiated instruction to students is a tremendous asset to any teacher, and the

ability to organize repository information for review and distribution provides a one-stop shop

for both teachers and students. Furthermore, students can use Canvas to meet their own

individual learning needs and hold them accountable and responsible for their own educational

goals.

While many LMSs claim to provide these capabilities, Canvas has further integrated with

state grading programs, such as PowerSchool (2017), test creation sites, such as Problem-Attic

(2018) or Pearson's (2018b) Schoolnet, and video resources, such as Khan Academy (2018) in

order to provide more adaptability for teachers who already use a variety of web-based

applications within their teaching framework. These learning tools interoperability (LTI)

quickly allow districts and teachers to connect resources already being used in a single LMS and

the capability to link other applications and external resource for learning create a powerful

teaching tool. Not only does Canvas allow teachers to teach more effectively, it also meets

digital learning goals established by local, state, and federal initiatives; therefore, a decision to

utilize any LMS must take into consideration the adaptability of the resource. Based on the

importance that teachers ascribe to the adaptability and flexibility of Canvas, I recommend that

districts emphasize these particular advantages when promoting the use of Canvas to their

teachers. I also encourage that training resources, whether designed for group or individualized instruction, focus on how Canvas is specifically adaptable to teacher and student needs and provide examples for educators to quickly visualize the benefits of Canvas.

College Preparation

With 99% of colleges and universities currently reporting they have an LMS in place and over 85% of faculty using an LMS consistently (Brown, Dahoney, & Millichap, 2015b; Dahlstrom et al., 2014), secondary schools must make sure students who are planning on attending college are ready to utilize the technology they will be required to use. The district in which the study was conducted has a high percentage of students who are participating in either a cooperative innovative high school (CIHS) or a career & college promise (CCP) program. Both of these programs utilize an LMS for their students and most participants felt that students were much better prepared for their college classes after they had utilized Canvas. As stated in the fourth theme, the student benefit of college and life preparation stemming from the use of Canvas cannot be discounted. Every participant felt that Canvas provided their students with additional resources and benefits that could be utilized in their college classes. Even those students who would not typically attend college still received technology benefits from its use; therefore, I recommend the continued and expanded use of Canvas or a similar LMS within the secondary classroom setting. Additionally, I recommend that secondary teachers be provided hands-on instruction concerning course design elements that students might see using a college LMS, in order to provide cognitive understanding while using Canvas within their own classroom framework.

Cost Analysis

Educational costs are at an all-time high and finances drive many decisions within a school system. For example, even though North Carolina has contracted with Canvas to provide a fixed price per student use (North Carolina Department of Public Instruction, 2015), financial obligations are still a concern for many districts. Return on investment should be an important factor in deciding whether to continue utilizing Canvas or switching to another LMS. A significant concern from many participants was the fear of Canvas being taken away and the frustration with a history of programs being dropped or switched; therefore, I recommend that a cost and return on investment (ROI) analysis be conducted throughout districts to identify how much teachers are utilizing Canvas and whether they believe the LMS provides adequate justification for the cost. At the very least, a committee of individuals who are actively using Canvas in their classroom should be formed and discussion conducted concerning the impact that Canvas truly has on district goals and initiatives. The results of the ROI analysis and discussion conclusions could identify whether Canvas is worth the costs associated with its use and also address the concerns that teachers have with a program that is meeting current needs being discontinued.

DLS Support and Further Training Needs

Just as financial considerations for keeping Canvas need to be addressed, the financial burden of a DLS at every school should be evaluated as well. While the DLS has other responsibilities besides addressing Canvas concerns, it is definitely an important part of her job responsibility. While it is unknown if a DLS receives additional pay or has less course teaching responsibilities, an added cost is most likely associated with additional training and substitute requirements; however, based on the research conducted and the analysis provided in this study,

there is significant evidence that the DLS plays a critical role in Canvas implementation. Furthermore, all participants felt that the required technology training sessions they were required to attend were beneficial and provided additional opportunities for growth.

An area of concern was identified relating to the inexperience of some DLSs in using Canvas and that there was a lack of training not only on the technical side of Canvas but also the pedagogical implications of using Canvas. Additionally, training during the technology sessions was not tiered and therefore caused undue frustration from the teachers and also strain on the trainer due to the pace of training that was conducted. Lastly, during the individual participant interviews, it was noticed that many of the participants were not familiar with several helpful features in Canvas although they were interested in receiving more training about those features. In fact, many of the participant interviews conducted involved showing teachers how to use various features in Canvas and providing them additional resources after the interview was completed.

It is my recommendation that training programs be established in which a DLS will be provided additional training on how to use Canvas within a TPACK framework in a classroom setting. This particular distinction is vitally important because it allows the DLS to utilize pedagogical strategies instead of merely a technical-based knowledge, i.e., how, and helps to identify specific ways Canvas can be used as a pedagogical instrument, i.e., why. As referenced in Chapter Four by Denise, a current DLS, the district's decision to use teachers and put them in the DLS role was a very smart move and I personally believe this is one of the reasons the DLS program has been so beneficial to the district. It is important though that the DLS be provided additional opportunities to utilize Canvas, both as a student and a teacher. For example, the North Carolina Center for the Advancement of Teaching (NCCAT; 2014a) provides several

online and face-to-face training programs for Canvas with NCCAT Online (2014b) offering

Canvas challenge training courses: novice, intermediate, and advanced, which allows teachers to

earn continuing education units (CEUs). In my opinion, the more a DLS is trained on the

specifics of teaching with Canvas and not simply learning the technical aspects, the better

prepared they will be to train classroom teachers.

Two final recommendations concerning Canvas training is to provide a tiered training

environment where various technology ability levels are considered, such as novice,

intermediate, and advanced, and establish peer training opportunities for teachers. Professional

development is an important part of the educational journey although everyone develops at

different levels and one person cannot meet an individual teacher's specific needs; furthermore,

involvement in leadership is a part of a teacher's evaluation process and becoming a peer trainer

allows younger teachers the opportunity to grow in these crucial leadership skills. Providing

tiered training sessions allow novice Canvas teachers to work at a slower pace and ask more

technology related questions, while more advanced Canvas teachers can use the opportunity to

go more in-depth with their course creation strategies and pedagogical structure. Additionally,

training teachers to use various aspects of Canvas and then encouraging them to become peer

trainers by providing leadership incentives during the evaluation process creates a culture of

training that extends far beyond merely utilizing Canvas; it allows other technology resources to

be implemented in a similar format.

iPad Issues

During the research study it was discovered that there were mixed emotions about using

iPads with Canvas. While Instructure (2017), the creator of Canvas, has been very deliberate in

making sure the software works on a multitude of technology platforms, the pedagogical

concerns of using Canvas on an iPad were discussed frequently by participants. As a 1:1 initiative, the district chose to use iPads and supply those devices to all students for the year; however, the frustration with uploading assignments, using the various writing features, e.g., discussion boards, and even damage to iPads limiting student use were major concerns that participants mentioned. Personal bias concerning this issue was discovered because I teach in an environment that has 1:1 Chromebooks and I cannot fathom having to use iPads as a technology tool; therefore, I was very deliberate in making sure my personal biases did not impact participant responses.

Mobile devices have some very positive benefits, especially at the elementary level, but participants did have a general consensus that iPads can be tougher to utilize with Canvas as opposed to a laptop type of device such as a Chromebook. Several participants expressed that students "hated" using iPads and often would not even use them during class. There were two participants who liked the mobile ability of the iPad versus a laptop device; however, there was some discussion that another device might make it easier for students to complete work. Several participants utilized Google Drive, which has LTI application within Canvas, and those participants found it easier to have students upload their assignment to Google Drive and link their assignments instead of uploading them directly into Canvas; however, the iPad has some limitation for doing this quickly. Another issue mentioned by participants was the inability of Adobe Flash Player to be supported on an iPad and not load various videos or programs desired for training purposes, which caused frustration for both students and teachers. An often-mentioned benefit of using iPads was the recent implementation of Apple Classroom, in which teachers would be able to see the screens of all students, thereby making sure their students were staying on task.

Additionally, since the study was conducted before and after the holiday season, prior to the end of the semester, the teachers participating in the focus group made me aware of a significant issue with using Canvas. During the Christmas break and prior to the start of the second semester, all iPads were collected to prevent loss or damage, but more importantly because they are used during standardized testing, i.e. state final exams, end of course (EOC), or end of grade (EOG). The theory is that any issues can be addressed, or damage fixed prior to the tests, and then the iPad can be redistributed at the beginning of the next semester. Unfortunately, this collection process can be lengthy and often students are without a device for several weeks prior to testing prohibiting teachers from using Canvas for assignments and even review. As a teacher who uses Canvas on a daily basis, I found myself emotionally responding to this issue and sharing the frustration expressed by the participants.

The recommendations concerning these issues pose several other dilemmas as well. As a teacher whose students currently use Chromebooks, I feel this type of device works better within my personal teaching style, but the costs associated with purchasing Chromebooks and the technology department maintaining both a supply of iPads and Chromebooks is problematic. Ultimately, based on my own experience and after conducting research analysis, I believe Chromebooks offer benefits that iPads cannot provide, especially when using Canvas; however, the significant costs and IT concerns place heavy restrictions on the ability to provide this particular hardware resource. Therefore, my recommendation is to provide a small sample of classroom teachers with a classroom set of Chromebooks and evaluate at the end of the semester which device was more conducive to the learning environment.

My recommendation for the issue of iPad devices being collect prior to testing is to stagger the collection of devices, if possible, and first collect devices from students who

currently do not have a class that utilizes Canvas. While a short-term fix, it could provide the teacher who utilizes Canvas more time to engage students with lesson materials already located within Canvas. Additionally, schools could possibly utilize iPads collected early from middle and elementary schools for testing purposes, thereby allowing secondary students the opportunity to retain their devices for classroom use. While these recommendations are valid in theory, it should be noted that I acknowledge that there are a myriad of issues and considerations at stake and simple solutions aren't always feasible.

Pre-service Training using an LMS

A final implication for this research study involves the college and universities who train teachers and send them into the teaching field. During the focus group interview, a follow-up question was posed concerning the importance of pre-service teachers being trained on how to use an LMS in their classroom. Denise gently suggested that "it definitely should be part of the curriculum for a pre-service teacher," but Kathy was more direct in her reply, stating "Yeah, they should be learning how to set up modules and whatever… of course they need to be trained in it." Additionally, most of the participants being interviewed had never taken a class in online course design and several had never even taken an online course using an LMS and their only experience with an LMS was using Canvas in their own classroom. These responses provided an opportunity to evaluate the importance of pre-service teachers being provided with all of the tools necessary to succeed in their classroom, and address concerns that teachers have of not being prepared technology-wise to teach their students.

According to the research, most teachers will have had at least one or more online classes; therefore, they will be familiar with using some type of LMS. Unfortunately, unless these pre-service teachers are required to take a course that develop these skills, many will never

receive hands on practical experience in the logistical fundamentals of designing a course using an LMS. A recommendation is being made that colleges and universities with a secondary education pre-service teacher training program implement at least one course where students learn how to use an LMS specifically within an instructional framework. This training could be combined within another educational technology course to create the same emphasis, but it is my personal opinion based on the research conducted in this study that there is a lack of pedagogical training for how to teach a course using LMS instructional techniques.

Delimitations and Limitations

Both delimitations and limitations were used in the development of this study. Delimitations are "characteristics that limit the scope and define the boundaries of your study [and] are in your control;" conversely, "limitations are potential weaknesses in your study [that] are out of your control" (Korrapati, 2016, p. 37). Both delimitations and limitations of the research study will be addressed in order to evaluate both the boundaries and possible weaknesses found within the study.

Delimitations

The primary delimitation of the research study is that Canvas is chosen as the LMS to identify and research. There are other systems which are used in a secondary school setting, but I chose to use Canvas because I was the most familiar with that particular LMS and I knew that the district I lived in had a recent emphasis on teachers using Canvas. Additionally, I chose a secondary school setting instead of an elementary school setting even though both can utilize an LMS to engage student learning. Another delimitation was choosing study participants based on the proximity of where I live and not in the larger school district where I work; therefore, due to

the narrowness of the sample population and geographic region, the ability to generalize results will be difficult.

Although there are many theories concerning technology acceptance, I chose to use the UTAUT and TPACK theoretical models because they most closely align with the research study goals. As a phenomenological research study approach, I chose teachers from a variety of experience levels, grade levels, subject matter areas, and secondary schools to gain a broader understanding of Canvas use, instead of focusing on a particular criterion of selection that would be more prevalent with a case study approach. Finally, I only chose to interview secondary teachers who currently use Canvas in their classroom, even though there were some teachers that had used Canvas previously or had been trained in its use. This delimitation was purposeful in order to gain insight from those that had extant data to draw from during interview participation.

Limitations

Several limitations of the study were evident, most notably the ability to generalize research results. Based on the demographics of site location, limited diversity of research participants, and theoretical constructs used to develop the research, results cannot be generalized accurately to reflect the experiences of other teachers who use Canvas. For example, only one male teacher was interviewed for the study and whether this meant there was only one male teacher who uses Canvas in the district, or he was the only male teacher who was willing to be interviewed is a limitation that can be identified. Similarly, there was only one teacher who was not Caucasian; therefore, assumptions based on diversity of teachers who use Canvas cannot be made and limit the generalizability of the study.

Additionally, the district initiative and willingness or ability to implement Canvas and pay for a trained DLS in every school limits the ability of the study to be generalized to other

districts. Another limitation is the amount of time teachers have used Canvas and the training they have received. The inexperience could be a limitation with teachers unable to fully articulate a comprehensive experience based on the finite amount of involvement with the program. The use of iPads in the district is also a significant limitation to the study because it restricts the ability of the study to be generalized for all types of hardware devices. Although this limitation would be the same if teachers and students used Chromebooks or other laptop devices instead of iPads, it is important to note that there might be a tremendous amount of discrepancy between experiences.

Finally, a limitation is the researcher's own bias and subjectivity in the study. Although great effort was made to bracket personal experience, there is always the possibility that bias was involved during the interview questioning or analysis procedures. For example, as a secondary teacher I use Canvas on a daily basis; however, instead of students using iPads, my students use Chromebooks. During participant interviews, I found myself asking follow-up questions focused on how participants structured their course for iPad use, which has limited ability to utilize certain word processing features such as typing long responses for discussion boards or papers. These biases could place limitations on objectivity and allow for personal application in research analysis.

Recommendations for Future Research

After completing this study, there were several areas where future research is needed. As noted in Chapter Two, specifically within the LMS implementation concerns heading, the use of technology hardware plays a tremendous role in the use of an LMS, primarily within 1:1 device initiatives. While there is a significant amount of research conducted on 1:1 initiatives, there is very little quantitative or qualitative research on which devices are more suited for LMS use.

The issue was addressed by every participant and more research should be conducted not only on teacher perceptions but student perceptions using certain devices with an LMS. The implications of this research could be extremely important to various districts who are deciding on which devices to purchase for their schools and how teachers and students will engage with established LMS software. One possibility of research could be to provide a sample of classroom teachers with two classroom sets of particular devices, e.g., iPads and Chromebooks, and evaluate at the end of the semester which device was more conducive to the learning environment. A version of the study could be conducted at the elementary school level as well.

Another recommendation for research is a longitudinal quantitative study identifying the state final exams, EOC, or EOG standardized testing results and whether use of an LMS plays a significant role in helping students learn the material as opposed to the non-use of an LMS. State data could be obtained and compared within a period of time and student scores extrapolated and assigned based on whether that teacher used an LMS. Additionally, both a quantitative and qualitative study could be conducted on first-year college students concerning their experience with an LMS in a high school setting and their preparation level for courses using an LMS. Similarly, a qualitative-based study could be conducted on rising 9th graders and their preparation and experience with using an LMS.

A third recommendation for future research is determining the impact of pre-service training using an LMS and the likelihood that a new teacher in a secondary school environment will utilize an LMS in their first-year teaching experience. Statistics hold that first-year teachers are susceptible to high levels of frustration and burn-out due to the tremendous amount of pressure to create lesson material and employ basic pedagogical structure to their classroom. Research suggests that if these first-year teachers were already trained in the use of an LMS and

were provided sandbox course information to supplement their content knowledge and help with pedagogical concerns, the rate of frustration and burn-out might significantly decrease?

Finally, a recommendation for future research involves the full impact of a technology support specialist, similar to the role a DLS played in this study, on technology integration. The social influence (SI) and facilitating conditions (FC) found within the UTAUT framework played a tremendous role in participants' use of Canvas in their classroom. Cost-analysis could be conducted concerning the ROI of technology support specialists and their impact, not only on teacher development and student learning, but also on the fulfillment of district and state initiative markers.

Summary

In this final chapter, I discussed the results of the research conducted on teachers' experiences integrating the LMS Canvas within a blended-learning course in a rural high school district located in the Southeastern United States. A brief summary of findings was provided describing the developed themes and the essence of the phenomenon being studied followed by a discussion concerning both the empirical and theoretical applications of the study. This discussion reflected on the theoretical frameworks of the UTAUT and TPACK along with previous theoretical considerations. Additionally, I addressed observable behaviors and ideas concerning the use of Canvas in light of relevant literature considered in Chapter Two. Implications for study results were considered along with identifying specific recommendations geared towards stakeholders. Both delimitations and limitations were reviewed and recommendations for future research provided.

Throughout this study, gaps in the literature concerning the use of an LMS were addressed and significant effort was made to evaluate teacher experiences using Canvas. A

central phenomenon of adaptability was discovered in response to the central research question; furthermore, noteworthy knowledge was gained concerning how using an LMS, specifically Canvas, can enhance teaching effectiveness and create student engagement within the learning process. It was the goal of this research study to provide stakeholders with both theoretical and empirical knowledge concerning the impact of an LMS within a secondary learning environment and hopefully provide sufficient evidence that the use of an LMS can significantly enhance the educational setting.

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APPENDIX A: IRB APPLICATION

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

November 15, 2017

Travis Towne
IRB Approval 3032.111517: Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course

Dear Travis Towne,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

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

Sincerely,

Administrative Chair of Institutional Research
The Graduate School

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

APPENDIX B: TEACHER CONSENT FORM

Exploring the Phenomenon of Secondary Teachers Integrating
the LMS Canvas in a Blended-Learning Course
Travis Towne
Liberty University
School of Education

You are invited to be in a research study exploring the phenomenon of teachers integrating a Learning Management System (LMS) within their course. You were selected as a possible participant because you currently use Canvas in your classroom. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Travis Towne, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this phenomenological study is to describe teachers' experiences integrating the Learning Management System (LMS) Canvas within a blended-learning course in a rural high school district located in the Southeastern United States.

Procedures: If you agree to be in this study, I would ask you to do the following things:
1. Complete a confidential questionnaire about using Canvas in your classroom using Google Forms and lasting approximately 15 minutes.
2. Participate in a confidential interview lasting approximately one hour, which will be recorded using both audio and video capabilities.
3. Participate in a focus group interview using YouTube Hangouts lasting approximately 45 minutes, which will be recorded using both audio and video capabilities.
4. Show the researcher their LMS course(s) and allow screenshots of home screen and various pages. The subsequent screenshots will be confidential and no student data will be requested.

Risks and Benefits of being in the Study: The risks involved in this study are minimal, which are no more than you would encounter in everyday life.

There are no direct personal benefits to participating in this study; however, the intent of the study is to provide educators and school systems accessible research on LMS integration and use, which will benefit future implementation training.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report that might be published, no information that will make it possible to identify a subject will be included. Pseudonyms will be used to protect participant confidentiality. Research records will be stored securely and only the researcher will have access to the records. The participant contact information, audio and video recordings, and all other data will be stored in a locked filing cabinet as well as on a password-protected computer. A certified transcription service, whose

security policies are governed by state law, will be utilized to transcribe individual interviews and focus group interviews. All the materials related to the data collection will be destroyed three years after the completion of the study. We may share the data we collect from you for use in future research studies or with other researchers; if we share the data that we collect about you, we will remove any information that could identify you before we share it. In reference to the focus group, I cannot assure that other participants will maintain your confidentiality and privacy.

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

How to Withdraw from the Study: If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, **apart from focus group data**, will be destroyed immediately and will not be included in this study. **Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.**

Contacts and Questions: The researcher conducting this study is Travis Towne. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at ██████████████████████████████ You may also contact the researcher's faculty advisor, Dr. James Swezey, at ██████████████.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

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

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

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

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

_____

Signature of Participant   Date

_____

Signature of Investigator   Date

APPENDIX C: DISTRICT SUPERINTENDENT CONTACT LETTER

Date:

[School District Superintendent]
[School District]
[School District Street Address]
[School District City/State/Zip Code]

Dear [School District Superintendent]:

As a graduate student at Liberty University in the School of Education, I am conducting research as part of the requirements for a doctorate degree in curriculum and instruction. The title of my research study is *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course*. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. The significance of the study will be to provide stakeholders (e.g., teachers and administration) qualitative data analysis that could encourage more teachers to utilize an LMS in their blended-learning classroom environment. Additionally, the data research could be used as a resource in a technology department to determine technology best practices, provide current technology integration statistics, and establish data evidence that the district is meeting and exceeding state and federal technology goals in the use of an LMS.

I am writing to request permission to conduct my research in the [School District], utilizing a list provided by your staff concerning teachers who currently use Canvas in their classroom. Potential participants will receive a brief introductory email from me and be asked to complete an initial online demographic questionnaire. The information from the questionnaire will be used to determine a pool of teachers who meet the criteria for the study. Participants will then be asked to participate in an individual interview, explain their individual Canvas course design, and invited to participate in a focus group. Participants will sign an informed consent prior to participating. Taking part in this study is completely voluntary, and participants are welcome to withdraw at any time. In addition, pseudonyms will be used for both participants and schools, thus the potential risk to those involved in the study is considered extremely low. If desired, results of the final study will be made available to you and can also be shared with participants.

At your earliest convenience, could you please provide me with information on how to attain approval for research specifically in [School District]? I would appreciate the opportunity to further discuss my research proposal with you and to answer any questions you may have. You can contact me via email at ███████████████████████████ I look forward to hearing from you and thank you in advance for your consideration.

Sincerely,

Travis Towne
Doctoral Candidate, Liberty University

Connecting Your Child to a Prosperous Future

September 12, 2017

Travis Towne
Doctoral Candidate, Liberty University

Mr. Towne,

I have received your request for permission to conduct research in ███████ Public Schools on *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course.* You have my approval to conduct this research study within the ███████ Public School district.

If you have questions or need additional assistance, please contact our office.
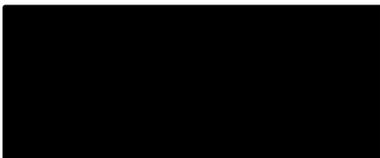
Superintendent

APPENDIX D: PRINCIPAL CONTACT LETTER

Date:

[School Principal]
[School Name]
[School Street Address]
[School City/State/Zip Code]

Dear [School Principal]:

As a graduate student at Liberty University in the School of Education, I am conducting research as part of the requirements for a doctorate degree in curriculum and instruction. The title of my research study is *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course*. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. The significance of the study will be to provide stakeholders (e.g., teachers and administration) qualitative data analysis that could encourage more teachers to utilize an LMS in their blended-learning classroom environment. Additionally, the data research could be used as a resource in a technology department to determine technology best practices, provide current technology integration statistics, and establish data evidence that the district is meeting and exceeding state and federal technology goals in the use of an LMS.

I am writing to request permission to conduct my research at [School Name] with teachers who currently use Canvas in their classroom. Potential participants will receive a brief introductory email from me and be asked to complete an initial online demographic questionnaire. The information from the questionnaire will be used to determine a pool of teachers who meet the criteria for the study. Participants will then be asked to participate in an individual interview, explain their individual Canvas course design, and be invited to participate in a focus group. Participants will sign an informed consent prior to participating. Taking part in this study is completely voluntary, and participants are welcome to withdraw at any time. In addition, pseudonyms will be used for both participants and schools, thus the potential risk to those involved in the study is considered extremely low. If desired, results of the final study will be made available to you and can also be shared with participants.

I have been in contact with [School District Superintendent] and have received authorization to conduct research within the [School District]. I would appreciate the opportunity to further discuss my research proposal with you and to answer any questions you may have. You can contact me via email at ███████████████████████████████ I look forward to hearing from you and thank you in advance for your consideration.

Sincerely,

Travis Towne
Doctoral Candidate, Liberty University

APPENDIX E: PERMISSION TO USE UTAUT MODEL IMAGE CORRESPONDANCE

Request to Use UTAUT Model Image

Tues 6/20, 4:20 PM

███████████████████████

Dr. Venkatesh, I am a doctoral candidate at Liberty University in Lynchburg, Virginia. I am currently working on my dissertation and the title of my research study is *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course*. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. The amount of literature that you have written on this topic is truly amazing and I am thankful that you have conducted so much quantitative analysis within this field of study. I would like to utilize your UTAUT model as one of my theoretical frameworks of my study and would like permission to use your image in my dissertation document.

May I have your permission to utilize the UTAUT model image for my research? Thank you for your time in this matter.

Travis Towne
████████████████

Doctoral Candidate, Liberty University

Sun 6/25, 10:55 PM

███████████████████████████

Hello Travis,

My name is Ruba and I assist Prof. Venkatesh with his work.
I am contacting on behalf of Prof. Venkatesh regarding your request to reprint a figure in your work.

Thank you for your interest. Your permission to use content from the paper is granted. Please cite the work appropriately. Please note that this permission does not exempt you from seeking the necessary permission from the copyright owner (typically, the publisher of the journal) for any reproduction of any materials contained in the paper.

You may also find Prof. Venkatesh's book to be of use: https://www.amazon.com/Road-Success-Doctoral-Students-Behavioral/dp/1457504057

Sincerely,
Viswanath Venkatesh

Distinguished Professor and George and Boyce Billingsley Chair in Information Systems
Email: ███████████████████████
Website: http://vvenkatesh.com

Mon 6/26, 2:50 PM

██

Ruba, thank you so much for your email and Dr. Venkatesh's permission to use the content. I will make sure that the figure is cited properly in my dissertation and obtain permission from MIS Quarterly (the copyright owner) to use the figure as well.

Travis Towne

Mon 7/10, 4:50 PM

████████████████████

To Whom It May Concern:

I am a doctoral candidate at Liberty University in Lynchburg, Virginia. I am currently working on my dissertation and the title of my research study is Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. I would like to utilize the UTAUT model figure from the MIS Quarterly Vol. 27 No. 3, pp. 425-478/September 2003 as an example in my dissertation document.

I requested and received the author's permission to use the figure, but was told that I needed to obtain publisher permission as well. May I have the publisher's permission to utilize the UTAUT model image from this article for my dissertation? Thank you for your time in this matter.

Travis Towne
██████████████████████
Doctoral Candidate, Liberty University

Mon 7/10, 7:54 PM

████████████████████

Dear Travis Towne,

Thank you for contacting Copyright Clearance Center (CCC). Please follow these instructions to

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Do you still need help placing your request? We would be happy to enter this order for you over the phone. To do so, just call us at any time Monday-Friday +1.855.239.3415.

Regards,

[redacted]

Copyright Clearance Center
222 Rosewood Drive
Danvers, MA 01923

[redacted]

Tues 7/11, 10:48 AM

[redacted]

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View or print complete details of your request.

Sincerely,

Copyright Clearance Center

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Jul 21, 2017

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License Number	4152680364961
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Type of Use	Thesis/Dissertation
Requestor type	Academic institution
Format	Print
Portion	chart/graph/table/figure
Number of charts/graphs/tables/figures	1
Title or numeric reference of the portion(s)	I would like to utilize the UTAUT model figure from the MIS Quarterly Vol. 27 No. 3, pp. 425-478/September 2003 as an example in my dissertation document.
Title of the article or chapter the portion is from	User Acceptance of Information Technology: Toward a Unified View

Editor of portion(s)	N/A
Author of portion(s)	Viswanath Venkatesh
Volume of serial or monograph.	N/A
Page range of the portion	447
Publication date of portion	September 2003
Rights for	Main product
Duration of use	Life of current and all future editions
Creation of copies for the disabled	no
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For distribution to	United States
In the following language(s)	Original language of publication
With incidental promotional use	no
The lifetime unit quantity of new product	Up to 499
Made available in the following markets	Education
The requesting person/organization is:	Travis Towne
Order reference number	
Author/Editor	Travis Towne
The standard identifier of New Work	Dissertation
Title of New Work	Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course
Publisher of New Work	Liberty University
Expected publication date	Jul 2018
Estimated size (pages)	200
Total (may include CCC user fee)	0.00 USD

MIS Quarterly

August 3, 2017

Travis Towne
Liberty University
Lynchburg, Virginia

Permission to use material from
MIS Quarterly in doctoral dissertation

Permission is hereby granted for Travis Towne to use the material from "User Acceptance of Information Technology: Toward a Unified View," V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, *MIS Quarterly* (27:3), September 2003, pp. 424-478, specifically Figure 3 (or an adaptation of Figure 3), and supporting material as necessary, in his dissertation titled *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course*, being completed at Liberty University.

In addition to the citation information for the work, the legend should include

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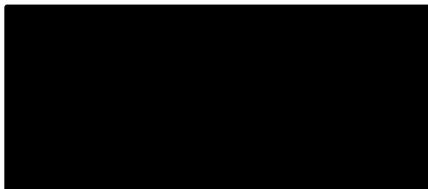
APPENDIX F: PERMISSION TO USE TPACK MODEL IMAGE

Using the TPACK Image

Published on May 11, 2011 by mkoehler

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APPENDIX G: PERMISSION FOR QUESTIONNAIRE USE CORRESPONDANCE

Request to Use Construct List Questionnaire for Research

Thur 6/22, 3:14 PM

███████████████████

Dr. Teo, thank you for your permission to use the questionnaire from your article. I look forward to reading more of your work on this topic.

Travis Towne

Thur 6/22, 4:39 AM

███████████████████

Dear Travis,

Thank you for your interest in my work. You have my permission to use the said article for your doctoral research.

Here's wishing you all the best in your studies.

Regards,
Timothy

Tues 6/20, 2:42 PM

███████████████████

Dr. Teo, I am a doctoral candidate at Liberty University in Lynchburg, Virginia (USA). I am currently working on my dissertation and the title of my research study is *Exploring the Phenomenon of Secondary Teachers Integrating the LMS Canvas in a Blended-Learning Course*. The intent of this research study is to investigate teachers' experiences integrating Canvas within a blended-learning course using a phenomenological research approach. The amount of literature that you have written on this topic is truly amazing and I am thankful that you have conducted so much quantitative analysis within this field of study. Although I want to conduct a qualitative research study, I would like to utilize one of your questionnaires from the following document for descriptive purposes from my participants:

Teo, T., & Noyes, J. (2011). An assessment of the influence of perceived enjoyment and attitude on the intention to use technology among pre-service teachers: A structural equation modeling approach. *Computers & Education, 57*(2), 1645-1653. doi:DOI: 10.1016/j.compedu.2011.03.002

May I have your permission to utilize this questionnaire for my research? Thank you for your time in this matter.

Travis Towne

Doctoral Candidate, Liberty University

APPENDIX H: QUESTIONNAIRE QUESTIONS

The following questionnaire is adapted from Teo (2011), which is based on the UTAUT theoretical framework. It will use a seven-point Likert scale, ranging from 1 – strongly disagree to 7 – strongly agree, and utilize a Google Forms format. Below is a printed version of the Google Form questionnaire.

1. *Participant Name*

_____

2. *Participant School*

_____

3. *Courses taught that use Canvas*

_____

4. *Using Canvas enables me to accomplish tasks more quickly.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

5. *Using Canvas improves my performance.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

6. *Using Canvas increases my productivity.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

7. *Using Canvas enhances my effectiveness.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

8. *Learning to use Canvas is easy for me.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

9. *I find it easy to use Canvas to do what I want to do.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

10. *My interaction with Canvas does not require much effort.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

11. *It is easy for me to become skillful at using Canvas.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

12. *I find Canvas easy to use.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

13. *People who influence my behavior think that I should use Canvas.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

14. *People who are important to me think that I should use Canvas.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

15. *When I encounter difficulties in using Canvas, a specific person is available to provide assistance.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

16. *When I encounter difficulties in using Canvas, I know where to seek assistance.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

17. *When I encounter difficulties in using Canvas, I am given timely assistance.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

18. *Once I start using Canvas, I find it hard to stop.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

19. *I look forward to those aspects of my job that require the use of Canvas.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

20. *I like working with Canvas.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

21. *I intend to continue to use Canvas in the future.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

22. *I expect that I would use Canvas in the future.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

23. *I plan to use Canvas in the future.*
Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

Powered by

Google Forms

The following table identifies which factors within the UTAUT framework each of the questions are assigned.

Perceived usefulness (PU)

1. PU1: Using Canvas enables me to accomplish tasks more quickly.

2. PU2: Using Canvas improves my performance.

3. PU3: Using Canvas increases my productivity.

4. PU4: Using Canvas enhances my effectiveness.

Perceived ease of use (PEU)

5. PEU1: Learning to use Canvas is easy for me.

6. PEU2: I find it easy to use Canvas to do what I want to do.

7. PEU3: My interaction with Canvas does not require much effort.

8. PEU4: It is easy for me to become skillful at using Canvas.

9. PEU5: I find Canvas easy to use.

Subjective norm (SN)

10. SN1: People who influence my behavior think that I should use Canvas.

11. SN2: People who are important to me think that I should use Canvas.

Facilitating conditions (FC)

12. FC1: When I encounter difficulties in using Canvas, a specific person is available to provide assistance.

13. FC2: When I encounter difficulties in using Canvas, I know where to seek assistance.

14. FC3: When I encounter difficulties in using Canvas, I am given timely assistance.

Attitude towards use (ATU)

15. ATU1: Once I start using Canvas, I find it hard to stop.

16. ATU2: I look forward to those aspects of my job that require the use of Canvas.

17. ATU3: I like working with Canvas.

Behavioural intention to use (BIU)

18. BIU1: I intend to continue to use Canvas in the future.

19. BIU2: I expect that I would use Canvas in the future.

20. BIU3: I plan to use Canvas in the future.

APPENDIX I: INDIVIDUAL INTERVIEW PROTOCOL

Individual Interview Protocol: LMS Usage

Time of Interview:

Date:

Place:

Interviewer:

Interviewee:

Position of Interviewee:

Interview Questions:

1. How long have you been teaching, and what do you consider the most rewarding part of education?

2. What are your personal experiences using an LMS within an online and blended-learning format?

3. How do you perceive the impact of online and blended-learning regarding the current educational experience for students?

4. What were your experiences in your teacher training at a college or university concerning the use of an LMS, and do you feel those experiences have impacted your use of Canvas?

5. What do you consider is your personal teaching style, e.g., teacher-centered or student-centered, and how does Canvas support that style?

6. What are some personal attributes, teaching philosophies, or experiences that you feel led to you using Canvas in your classroom?

7. What are some motivational factors and attitudes that lead you to utilize Canvas in your classroom?

8. What are some valuable features, benefits, or strengths with Canvas?

9. What are some positive experiences you have had with implementing or using Canvas in your classroom?

10. What are some missing features, drawbacks, or weaknesses with Canvas?

11. What are some negative experiences you have had with implementing or using Canvas in your classroom?

12. How much did your peers influence you to utilize Canvas in your teaching environment?

13. How much influence do you feel that you have made on your peers to utilize Canvas in their classroom environments?

14. What are your perceptions for why teachers choose not to use Canvas in their classroom environment?

15. What are some experiences with administration support regarding Canvas implementation and training?

16. What are some experiences with technical support regarding Canvas implementation and training?

17. What are your experiences and perceptions about using Canvas within cross-curricular or interdisciplinary learning?

18. What are your experiences with using Canvas within a Universal Design for Learning (UDL) approach as an adaptive technology to meet specific needs of your students?

19. What are your perceptions regarding your own teaching effectiveness and impact when using Canvas?

20. How do you perceive student results and possible benefits for students from utilizing Canvas?

21. If I was a student who was in your course, what are some things that you feel Canvas should allow me to do and learn that would have been different if Canvas was not available?

22. What influence on your teaching has Canvas had and would you choose to use it or a similar LMS in future courses?

23. What are your final thoughts regarding your personal use of Canvas in a classroom setting, or areas that you feel should be specifically identified as important for me to consider within this research study?

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

APPENDIX J: FOCUS GROUP DISCUSSION PROTOCOL

Focus Group Discussion Protocol: LMS Usage

Time of Focus Group Discussion:

Date:

Place:

Interviewer:

Interviewees:

Position and School of Interviewees:

Focus Group Discussion Prompts:

1. Introduction Prompt – Please introduce yourself to the focus group and tell the group what school you teach at and what courses you currently teach using Canvas.

2. Discussion Prompt 1 – What were the motivational factors and attitudes that lead you to utilize an LMS, specifically Canvas, in your classroom?

3. Discussion Prompt 2 – How do you perceive the impact of online and blended learning regarding the current educational experience for students?

4. Discussion Prompt 3 – What were your experiences in your teacher training at a college or university using an LMS, and do you feel the experience has impacted your use of an LMS?

5. Discussion Prompt 4 – What are your perceptions for why teachers choose not to use an LMS, specifically Canvas, in their classroom environment?

6. Discussion Prompt 5 – What are some experiences you would share with teachers if you were asked to conduct a training session on integrating Canvas in a course?

** Each discussion prompt provides a starting point for further probing questions.

APPENDIX K: IN VIVO CODES

In Vivo Results (Alphabetical)

In Vivo Codes	# Times Mentioned	In Vivo Codes	# Times Mentioned	In Vivo Codes	# Times Mentioned
Absent; Absence; Absences	10	Effect; Effective	7	Paper; Papers	68
Access; Accessed; Accessible; Accessibility	59	Engage; Engaged; Engaging; Engagement	14	Parent; Parents	11
Accountable; Accountability	14	Expect; Expected; Expectation; Expectations	13	Plan; Plans; Planned; Planning	26
Adapt; Adapted; Adapting; Adaptive; Adaption; Adaptability	21	Facilitate; Facilitator; Facilitators	16	Post; Posts; Posted; Posting	24
Administration; Admin	11	Figure; Figures; Figured; Figuring	65	Powerschool	15
Allow; Allows; Allowed; Allowing	36	Grade; Grades; Graded; Grading	103	Prepare; Prepares; Prepared; Preparing; Preparation	24
Assign; Assigns; Assigned; Assignment; Assignments	111	Help; Helps; Helped; Helpful; Helping	156	Resource; Resources	23
Benefit; Benefits; Benefited; Benefiting; Beneficial	29	Home	39	Responsible; Responsibility	12
Better	47	Internet	22	Student; Students	202
Blackboard	20	iPad; iPads	91	Submit; Submits; Submitted; Submitting	24
Blended	15	Know; Knows; Knowing	268	Support; Supports; Supported; Supportive	23
Collaborate; Collaborative; Collaboratively; Collaboration	13	Learn; Learned; Learning	117	Teacher; Teachers	171
College; Colleges	57	Link; Links; Linked	18	Tech; Technology; Technological; Technologically	82
Different; Difference; Differently	77	Love; Loves; Loved	49	Test; Tests; Tested; Testing	35
Differentiate; Differentiation	8	Make; Makes; Making	120	Tool; Tools	20
Digital; Digitally	25	Material; Materials	29	Train; Trained; Training; Trainings	34
Digital Learning Specialist; DLS	47	Note; Notes	48	Upload; Uploading	29
Discuss; Discussed, Discussion; Discussions	40	Online	79	Video; Videos	43
Easy; Easier	66	Organize; Organized; Organizer; Organizers; Organization	38	Work; Works; Worked; Working	172

APPENDIX L: CONCEPT CODES AND SUB-CODES

Concept Codes and Sub-Codes (Alphabetical) – Bold # Includes Aggregation of Sub-Codes

Codes and Sub-Codes	#	Codes and Sub-Codes	#
Administration Views of Canvas	**25**	**Student Benefits Using Canvas**	**100**
Apple Classroom	**5**	● Student Absences	21
Canvas Course Structure	**35**	● Student Academic Benefits	4
● Flipped Classroom	5	● Student Accountability and Responsibility	18
● Interactive	1	● Student Communication	3
● Notes	8	● Student Engagement	8
● Repository	9	● Student Individualized Learning	19
● Supplemental	5	● Student Learning and Review	10
● Videos	3	● Student Organization	11
Canvas vs. Google Classroom	**3**	● Student Reduction of Stress	4
Collaboration Between Teachers	**24**	**Teaching Effectiveness Using Canvas**	**74**
College and Life Preparation	**20**	● Teacher Absences	12
Continued Use of Canvas	**10**	● Teacher Adaptability	10
Fear of Taking Canvas Away	**20**	● Teacher as Facilitators	8
Interdisciplinary Use	**8**	● Teacher Classroom Flow	4
iPad vs. Chromebook	**18**	● Teacher Communication	4
Missing Features, Drawbacks, or Weaknesses of Canvas	**55**	● Teacher Engagement with Learning	7
● Canvas to Powerschool Passback	6	● Teacher Expectations	4
● Cheating	8	● Teacher Organization	22
● Connectivity Issues	10	* Flexibility	6
● Discussion Board Formatting and Structure	2	* Makes Life Easier	13
● Formatting Issues	1	**Tech Support**	**49**
● Preventing Students from Going Outside of Canvas	2	● Canvas Training and Support	27
● Split Class Sections	1	**Training Students to Use Canvas**	**8**
● Students Prefer Paper Copies	3	**Universal Design for Learning - Adaptive**	**19**
● Time Required for Set-up	8	**Valuable Features, Benefits, or Strengths of Canvas**	**86**
● Trouble Using Certain Canvas Features	7	● Ability to Quickly Locate Information	5
● Uploading to Canvas	7	● Additional Course Offerings	2
Motivational and Attitude Factors Using Canvas	**57**	● Assignment and Test Creation	5
● Access to Technology	9	● Data-Driven Teaching	2
● Enjoyment of Learning Something New	3	● Discussion Boards	12
● Parent Access	7	● Lack of Textbooks	3
● Professional Development	6	● Links to External Resources	12
● Removes Excuses	2	● Planning	5
● Resource and Tool	8	● Powerschool Integration	3
● Reusability	5	● Read-aloud Features	3
● Student Buy-in	6	● Saves on Paper	10
● Student Engagement	9	● Speedgrader	19
Perceptions About Using Canvas	**4**	* Grading Feedback and Rubrics	9
Pre-Service Training Using an LMS	**20**	● Works with Google Drive	3
Standard Students vs. Honor Students	**2**	**Why Teachers Don't Use Canvas**	**27**
Standardization	**2**	● Initial Reluctance to Use Canvas	9

APPENDIX M: CATEGORIES

Categories (Alphabetical)

#	Categories	Codes (In Vivo and Concept)
1.	Absences	Absent; Student Absences; Teacher Absences
2.	Accountability and Responsibility	Accountable; Expectations; Removes Excuses; Responsible
3.	Adaptability and Flexibility	Adapt; Flexibility; Read-aloud Features; Supplemental; Teacher Adaptability; Universal Design for Learning – Adaptive; Standard Students vs. Honors Students
4.	Administration	Admin; Administration Views of Canvas; Canvas vs. Google Classroom; Fear of Taking Canvas Away; Professional Development; Standardization
5.	Issues	Apple Classroom; Cheating; Connectivity; Formatting; iPad vs. Chromebook; Missing Features, Drawbacks, or Weaknesses of Canvas; Training Students to Use Canvas; Trouble Using Certain Canvas Features; Uploading Assignments
6.	Organization	Ability to Quickly Locate Information; Organize; Planning; Student Organization; Teacher Organization
7.	Perceptions	Continued Use of Canvas; Help; Initial Reluctance to Use Canvas; Know; Technology; Time Required for Set-up; Why Teachers Don't Use Canvas; Work
8.	Resources	Assignment and Test Creation; Discussion Boards; External Resources; Lack of Textbooks; Link to External Resources; Notes; Resource; Repository; Videos
9.	Student Benefits	Benefit; College and Life Preparation; Communication; Engage; Individualized Learning; Learning and Review; Reduction of Stress
10.	Teaching Effectiveness	Classroom Flow; Data-driven Teaching; Facilitator; Grading; Makes Life Easier; Less Paper; Reusability; Saves Time; Valuable Features, Benefits, or Strengths of Canvas
11.	Training and Technology Support	Collaboration; Canvas Training and Support; Peer Influence; Pre-Service Training Using an LMS; Tech Support

APPENDIX N: THEME DEVELOPMENT

Theme Development

Theme	Supporting Categories (Alphabetical)
Motivation and Attitude Towards Use	Absences; Accountability and Responsibility; Administration; Issues; Perceptions
Training and Technology Support	Training and Technology Support
Teaching Effectiveness	Adaptability and Flexibility; Organization; Resources; Teaching Effectiveness
Student Benefits	Student Benefits