ONLINE EDUCATION EXPERIENCES AMONG TEACHERS WITHIN TECHNICAL

COLLEGE SYSTEM OF GEORGIA INSTITUTIONS: A MULTIPLE CASE STUDY

by

John Robert Edalgo

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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Abstract

The purpose of this case study was to explore technical education teachers' perceptions on the use of e-learning within the Technical College System of Georgia (TCSG) institutions. This central research question provides the lens needed to explore forces that promote or discourage the use of online instruction administered by teachers. The theory guiding this study was the diffusion of innovation (DOI) theory, developed by E.M. Rogers approximately 60 years ago. The DOI theory provides the theoretical framework needed to assess the adopter, the innovation, and the type of communication (evaluation) needed to facilitate sustained adoption in the future. Increased adoption of e-learning instruction is a key assumption of DOI research. Two technical colleges provided the setting for data collection. The methodological approach utilized qualitative data collection methods (face-to-face interviews, document analysis, and a focus group session) to establish the context and mechanisms associated with barriers and benefits of online instruction within technical education. Data analysis continued throughout the study, until a point of saturation was reached. Semi-structured interviews combined with a focus group related to technical education online education experiences will produced codes. Data analysis consisted of a process called cyclical coding, further identifying recurring codes and ultimately themes within the data. Findings in this research highlight the degree of innovation adoption among instructors as well as identify factors that contribute to or discourage adoption of online instruction within the selected cases.

Keywords: technical education, online education, crisis, diffusion of innovation.

Dedication

I dedicate this research to all those who are called to change lives through skills-based education

(Matthew 19:26). In addition, I dedicate this research to my wife and children.

Acknowledgments

I hereby acknowledge the longsuffering acts of kindness of my wife and children throughout the dissertation process. In addition, I will be forever grateful to the instructors at Liberty University for growing my knowledge through this process. I also acknowledge the much-needed assistance of my dissertation chair for timely guidance through the process. In addition, I will be forever thankful to the dissertation committee as well as the research participants included in this study.

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List of Abbreviations

Career and Technical Education (CTE)

Georgia Virtual Technical Connection (GVTC)

Internal Review Board (IRB)

South Georgia Technical College (SGTC)

Technical College System of Georgia (TCSG)

Vocational Education and Training (VET)

Diffusion of Innovation (DOI)

Shortleaf Pine Technical College (SPTC)

Longleaf Pine Technical College (LPTC)

CHAPTER ONE: INTRODUCTION

Overview

Few historical events are so significant that they have changed the course of history forever. For example, the crucifixion of Jesus Christ, the 1776 adoption of the Declaration of Independence, the passage of the 13th, 14th, and 15th amendments in 1865, the 1929 stock market crash, and the deployment of the atomic bomb in 1945 each had lasting impact on the world. Another 'phenomenon' of equal significance in education is the 2020 COVID-19 pandemic (Laplante, 2020). It is commonly held that the demand for Career and Technical Education (CTE) increases during periods of poor economic growth like those caused by crisis (Belaya, 2018; Neal, 2020; Raji, 2019). For example, the pandemic eliminated approximately 400 million jobs in the global job market (Neal, 2020). The stakes are high for administrators/decision-makers as they prepare for the next pandemic or crisis. Data-driven professional development related to technologies utilized in mandatory school closures is considered helpful (Shdaifat, et al., 2020; Syauqi et al., 2020). In addition, a tremendous amount of pressure is now being placed on online education due to the closing of physical campuses across America during COVID-19 pandemic (Bhattarai, 2020). Nevertheless, there are still many stakeholders within CTE that resist high levels of distance education within technical education colleges (Ohanu & Chukwuone, 2018). Luongo (2018) called for more research dealing with exploring online faculty experiences concerning perceived barriers and overall satisfaction. This chapter will contain a summary of the literature related to the historical, social, and theoretical aspects of the research problem. In addition, concise problem and purpose statements will be linked to the overall significance of the study. Finally, research questions will also be aligned with problem and purpose statements in a way that is consistent with the qualitative research

design. The chapter will conclude with research terminology.

Background

The issue of online education has been evolving for approximately 25 years (Belaya, 2018). Today, the need for robust and relevant technical education has increased in importance due to the practical need to quickly accommodate social distancing mandates in the event of another pandemic (Bhattarai, 2020). COVID-19 drastically changed the technical educational landscape, creating a need to understand institutional readiness for e-learning in order to prepare educational institutions for future pandemics (ACTE, 2020; Neal, 2020; Shdaifat et al., 2020). Technical education decision-makers should not assume that the adoption of e-learning instruction will be sustained post-pandemic. As stated before the pandemic of 2020, perceptions in favor of the feasibility of adopting e-learning were waning and being debated among stakeholders (Belaya, 2018). It stands to reason, however, that mandatory school closures will be a part of future pandemic responses and therefore create a need for technical institutions to understand the teacher experiences and the level of diffusion of online instruction that they have (ACTE, 2020; Neal, 2020).

Historical Context

The history of distance learning goes back approximately 25 years in most vocational and education training (VET) institutions (Belaya, 2018). It should be noted that the debate of whether or not to encourage distance learning within CTE existed before the pandemic and remains an unresolved issue for many educators (Belaya, 2018). This debate regarding the practicality of teaching technical education skills online has been questioned in the literature (Dinc, 2019; Ramsbottom et al., 2018; Shdaifat et al., 2020; Wang & Han., 2017). Technical college stakeholders need to understand the perceptions that practitioners have regarding

distance education (ACTE, 2020; Neal, 2020; Shdaifat et al., 2020). The need for clarity is especially important when the increased demand for technical education is considered. This in large part is due to the increase in unemployment due to the effects of the recent pandemic (Shdaifat et al., 2020). In addition, a greater emphasis has been placed on online education due to the decrease in access to technical education during COVID-19's social distancing requirements. Ironically, VET/CTE institutions offer mainly hands-on learning environments to students and therefore have unique challenges when responding to social distancing mandates in a pandemic crisis.

Due to social distancing mandates from state and local governments, much of the Technical College System of Georgia's (TCSG) delivery system was reshaped to accommodate a 100% shift away from face-to-face education to some form of distance learning. The existing research simply does little to address American CTE online experiences during COVID-19 (Bhattarai, 2020; Chukwuone & Ohanu, 2018; Shadaifat et al., 2020; Syauqi et al., 2020; UNESCO, 2020).

Vocational education got its start in America in the early part of the 20th century through the Smith-Hughes Act of 1917. Under this law, vocational education was seen as academic studies with more of a focus on hands-on skill development (Hyslop, 2018). Today, VET is still in the business of expanding a student's knowledge with job-specific skills (Shdaifat et al., 2020). The Carl D. Perkins Career and Technical Education Act of 2006 directed the focus of CTE programs by highlighting "relevant technical knowledge and skills related to preparing for further education and careers in current or emerging professions" as well as technical skill capability and industry-recognized certifications were upheld in the most recent version of this legislation passed in 2018 (Hyslop, 2018, p. 19). Shdaifat et al. (2020) stated that the

improvement of VTE programs is directly related to the use of e-learning platforms at technical colleges. That being said, "there is a debate among scholars about the advantages and disadvantages of e-learning in such schools" (Shdaifat et al., 2020, p. 106).

Social Context

During COVID-19, communities' technical educational delivery systems were forever altered (Laplante, 2020; Tanik Önal, 2021). Access to CTE, due to mandatory school closures, was significantly reduced starting in March of 2020, the month of the first executive order mandating school shutdowns. The closures were part of the state-wide pandemic response in Georgia (Office of Governor, 2020). Unemployment in the United States skyrocketed as a result of the pandemic (NASFAA, 2020).

Research has shown that, as a result, the demand for job training increases as individuals search for ways to make themselves more marketable. In turn, the societal need for CTE classes and programs in local communities historically increases during times of poor economies (NASFAA, 2020). Technical and Vocational Education and Training (TVET) helps families around the world as it prepares individuals for an ever-changing job market, which will ultimately overcome the socio-economic challenges faced by so many (Bhattarai, 2020).

Unfortunately, during the pandemic, the TVET educational system was unable to address this increase in demand with its normal delivery system (Bhattarai, 2020). E-learning capabilities, however, made it possible to continue to grow students' skills and certifications during the pandemic. This issue of a global pandemic response through online education has been addressed by associations seeking to increase the community's pandemic response capabilities (ACTE, 2020; Neal, 2020; UNESCO, 2020). In addition, the amount of research dealing with the shift towards online education during the pandemic has been done within

specific communities on an international level (Gouëdard, et al., 2020; Laplante, 2020; Syauqi et al., 2020; Tanik Önal, 2021). It remains extremely important to assess what educational delivery systems work within VET and CTE institutions on national as well as international levels (Shdaifat et al., 2020). When institutions understand how VET/CTE organizations utilized distance learning during the significant changes to their educational delivery systems, technical colleges will be better able to develop employees for the job market, increase pandemic response readiness for future events, and provide academia with an in-depth analysis of how distance learning is being experienced within TCSG (ACTE, 2020; Neal, 2020).

Theoretical Context

Much of the research addressing technical education takes place under one of the following three titles: career and technical education, technical vocational educational training, and technical colleges. CTE is the most modern term, being enacted when 'vocational' was eliminated under the Carl D. Perkins Act of 1998 (Brainerd, 2020). Some studies dealing with teacher perceptions and experiences followed Goodwyn's (2010) recommendation that future CTE research use grounded theory methodology. Many of these studies stopped short of using an existing theory, however. Some studies exploring technical education stakeholder perceptions related to education innovation adhered to an inductive qualitative inquiry which developed a conceptual framework instead of grand theory (Brainerd, 2020; Martino, 2017; Spindler, 2011). Spindler (2011) and Martino (2017) both used grounded theory to identify factors associated with innovation. This approach places the phenomena of interest as the primary issue to be conceptualized (Spindler, 2011).

Other theories that have addressed factors that impact innovation include adult learning theory (Ferguson, 2021), feminist theory (Lenig-Zerby, 2021), institutional theory, (Obuchon-

Putnam, 2021), self-efficacy theory (Largent-Necessary, 2021), expectancy-value theory (Key,

2018), evaluation theory (Kabongo, et al., 2020), realist theory (King et al., 2017) and

experiential learning theory (Lindsley, 2020). Ferguson (2021), for example, utilized the adult

learning theory of andragogy in a case study that explored a new program that places industry

professionals into CTE instructor roles without the usual certifications. This theoretical

framework focused on the learning experiences of the new CTE healthcare teachers regarding a

new innovation/program by using the six adult learning assumptions of andragogy. While this

study identified teachers' prior experience as being the most compelling theme contributing to

success in the program, it did not provide a framework to evaluate the innovation itself

(Ferguson, 2021). In the same manner, Largent-Necessary's (2021) study using Bandura's self-

efficacy theory focused entirely on the perceptions of the teachers without adequately addressing

the innovation in question. In addition, the technology acceptance model (TAM) that many self-

efficacy studies utilize focuses heavily on the use of surveys that have had some contradicting

results in their ability to predict adoption of an innovation based on the perceived usefulness

(Corry & Stella, 2018). Abdullah and Ward (2016) produced a comprehensive meta-analysis of

105 qualitative studies that incorporated TAM to assess technology adoption and integration.

The expectancy-value theory utilized by Key (2018) emphasized the influence of the

organization on the self-efficacy of teachers in relation to curriculum development. This study

did not focus on innovation evaluation within the context of CTE and teacher perception (Key,

2018). The feminist theory and institutional theory frameworks utilized in Lenig-Zerby, (2021)

and Obuchon-Putnam (2021), respectively, both emphasize data collection targets that the

current study did not adhere to. Other studies addressing teacher experiences have utilized

theory-driven evaluation (Kabongo et al., 2020). Theory-driven evaluation also focuses on

participants' experiences and subsequently their perceptions dictate outcomes within the case. At a basic level, evaluation-based research is an overarching framework that identifies input and output correlations that have the potential to formulate anticipated outcomes. Evaluation literature has been utilized to identify program weaknesses as perceived by stakeholders to strengthen institutions (Magadzire et al., 2017; Peer, 2017; Phillips et al., 2012). While theory-driven evaluation has a well-established presence in the existing literature, it does not lend itself to the case study methodology because it seeks to make absolute statements about program outcomes. Two examples of this are found in health sciences research that evaluated the effectiveness of a South African MomConnect program as well as South African medical dispensing units (Kabongo et al., 2020; Magadzire, et al., 2017).

A specific type of evaluation theory is realist evaluation. At the core of this theoretical framework is to explore why a given program (phenomenon) is working or struggling (Kabongo et al., 2020). Realist evaluation approaches a specific phenomenon like e-learning with the assumption "that nothing works everywhere for everyone" (King et al., 2017, p. 24). While this theory does provide a basis for understanding the issue of e-learning with greater clarity, it cannot describe teacher experiences with the context of the innovation and the characteristics associated with it (Rogers, 2003). For example, the realist evaluation framework often takes a backseat to create and implement various technologies associated with the phenomenon (Phillips et al., 2012). Furthermore, realist theory often places a large amount of emphasis on desired outcomes that may be too far-reaching for most qualitative case studies (Pawson, 2013).

Problem Statement

The problem is that technical education teachers' experiences developing and implementing online education during the pandemic is not yet understood (Darling-Hammond &

Hyler, 2020). Online education improves CTE courses through increased convenience (Barnes et al., 2018; Shdaifat et al.). A recent publication by UNESCO highlighted several ways that e-learning may be used to increase the flexibility of curriculum delivery (UNESCO, 2020). In addition, online education also helps CTE institutions address accessibility deliverables mandated by Perkins V legislation, which oversees technical education on a national level (Belaya, 2018; Brainerd, 2020; Syauqi, et al., 2020). Attempting to protect students, higher education underwent an unprecedented shift towards online education during the 2020 COVID-19 mandatory school closures (Sahu, 2020; Shdaifat et al., 2020; Tanik Önal, 2021). Unfortunately, many institutions within higher education were unable to offer students educational goods and services at the pre-pandemic levels (Alarcón López et al., 2021; Darling-Hammond & Hyler, 2020; Kaden, 2020). Research administered by the National Research Center for CTE found that approximately half of the community colleges provide credit-based occupational programs utilizing e-learning for 50% of the courses (Imperatore, 2016). Eom and Ashill (2016) highlight the 50% of the CTE institutions that appear to be lagging in relation to online learning and suggest that the adaptability of distance education continues to be largely unresolved within CTE (Eom & Ashill, 2016). Higher education, in contrast, reported as far back as 2012 that 70% of administrators believe that online education is a part of their institution's future (Busay, 2018). Technical education instructors experienced unprecedented adoption rates due to mandatory school closures, but little is known about the sustained use of online instruction, post closures (Tanik Önal, 2021).

Purpose Statement

The purpose of this multiple case study was to understand technical education teachers' perceptions of online education for 18 instructors within TCSG institutions. E-learning is

generally defined as instruction that is facilitated through the use of a computer and the internet (Belaya, 2018; Johnson, 2018). The central theory guiding this research is Diffusion of Innovation (DOI) (Rogers, 1962). Under the guidance of this broad framework, this research sees the instructors as falling under one of the five categories for innovation adoption first introduced by Ryan and Gross (1943). These categories directly correlated to the instructor's perception of the innovation (e-learning). Participants' experiences were further analyzed as to how their experiences correspond to the five innovation characteristics indicative of DOI theory (Kaminski, 2011).

Significance of the Study

The phenomenon of campus closures and a complete shift to online education answered the age-old question of "Will online education replace physical campuses?" (Selingo, 2012, p. 175). The timing of this study meets a practical need for technical education decision-makers seeking to navigate the tension between hands-on education and e-learning. The need to explore stakeholders' experiences associated with e-learning combined with the likelihood of physical campus closures in future pandemics may extend DOI theory pertaining to rate of adoption into pandemic/emergency response research. The pressure that COVID-19 has put on administrators/teachers to make safe decisions is enormous (Shdaifat et al., 2020). In this season, education professionals at every level are wondering if they are adequately resourced to prevent a digital divide during future mandatory shutdowns. Staff development related to online education readiness is one of the most important priorities facing higher education institutions today (Hanna, 2020). Research has shown that exploring teacher perceptions within the technical education context increases programmatic success as well as the effectiveness of professional development offerings (Largent-Necessary, 2021; Syauqi et al., 2020). McCaffery (2019)

defined staff development in its most simplified form as "a tailored program of activities aimed at remedying a specific skills deficit" (p. 260). Higher education administrators seeking to lead their institutions through economic pressures, changing political climates, pandemics, and technological advances cannot afford to be ignorant regarding the growth edges of employees and the institutions in which they work (Syauqi et al., 2020).

Empirical

Despite the clear benefit of exploring the level of readiness and planning accordingly, scant research exists related to the level of diffusion that distance education has achieved across degree programs within the technical college system (Gouëdard, et al., 2020). For instance, there is a gap in the literature related to what higher education institutions intend to learn from a crisis. Schomaker and Bauer (2020) recommended that the lessons already learned be "stored and kept accessible to inform subsequent emergency responses" (p. 849). Furthermore, the literature supports the fact that experience is the one key ingredient needed to increase crisis management (Holzweiss et al., 2020). The chosen research design facilitates a more in-depth understanding of the focus of this research. The focus of this research is to see how instructors at TCSG institutions perceive e-learning to better understand the level of adoption and the factors pertaining to it. DOI studies often deal with new technologies that have recently been introduced. That being said, innovation like online education may be considered new if the participants themselves see it as such (Al-Razgan et al., 2021). Exploring the lived experiences of students (Brockman, 2018; Dunagan, 2017; Goins, 2015), administrators (Nixon, 2016; Treadwell, 2017), educators (Jowers, 2020; Schone, 2015; Shdaifat, et al., 2020), and faculty (Waite, 2016) is a research practice that is well documented in the field of online education. However, a good understanding of technical education teachers' online instruction experiences is

not (ACTE, 2020; Neal, 2020). Furthermore, the literature identifies many challenges associated with online education that may or may not be present within the bounded case targeted for this study. Understanding these barriers and facilitating factors serve to strengthen technical education in the future (Jowers, 2020; Syauqi et al., 2020).

Practical

Existing research documents a lack of clarity related to state mandates and institutional direction, which can diminish a college's ability to implement building closures and complete online educational delivery systems. High levels of cooperation with other administrations and other stakeholders were considered factors that increased performance. Furthermore, institutions that were able to achieve successful responses to natural disasters were also shown to have engaged in preplanning preparations before the crisis (Olinger Steeves et al., 2017; Ramsbottom et al., 2018; Schomaker & Bauer, 2020). Decision-makers will be able to better prepare for future crisis responses by exploring the level of diffusion and adoption of e-learning instruction. This research explores practitioners' e-learning experiences within the technical education context concerning the DOI theoretical framework. The proposed practical programmatic outcome is the increased understanding of the perceived pros and cons of e-learning within TCSG institutions. International technical education literature suggests the need to develop workaround strategies to solve problems quickly during a crisis (Syauqi et al., 2020; Thelen & Robinson, 2019). Establishing policies intended to increase communication and address e-learning implementation strategy during a crisis are among the potential benefits that could come from evaluating specific institutions for their current online education perceptions (Thelen & Robinson, 2019). For example, Schomaker and Bauer (2020) sought to identify potential drivers behind administrator performance and success during COVID-19.

Theoretical

The theoretical framework leveraged in this study is DOI. This theory is largely attributed to Rogers (1995). This theory is the perfect framework for a case study methodology because it is typically used to explore the 'how" and "why" related to the diffusion of new technologies. This research adds to the existing theory by expanding the literature into the technical education context. Furthermore, most industry experts do not understand the factors that promote the adoption of their chosen technologies, a phenomenon that this framework brings to the surface (Daouk & Aldalaien, 2019). The DOI framework has been used to study instructional technologies through case studies (Szabo & Sobon, 2003), ePortfolio use, and more broadly, several studies dealing with various aspects of e-learning (Daouk & Aldalaien, 2019; Pinho et al., 2021). This study utilizes DOI's four influencers of innovation diffusion to assess how e-learning is perceived by technical education teachers. The perceived attributes of innovation are relative advantage, compatibility, complexity, trialability, and observability (Daouk & Aldalaien, 2019; Rogers, 2003). The participants' experiences may provide insight into how the innovation of e-learning is perceived through this theoretical framework. Each participant (teacher) was evaluated in relation to the following five categories of adopters: innovator, early adopter, early majority, late majority, and laggards (Dearing & Cox, 2018). This conceptual lens provides a lens to guide the research through every stage. The primary variables used to determine the level of adoption serve as the perceived attributes of innovation and the dependent variable explained in the research relates to the degree of sustained adoption, post-school closures (Daouk & Aldalaien, 2019).

It is critical that the distance learning experiences of educators, be explored within the TCSG. The theoretical framework (Figure 1) utilized to achieve this end seeks to accurately

identify participant perception to explain the degree of sustained adoption. In addition, this theoretical framework enabled the study to explore forces that promote or discourage the use of e-learning in their instruction (Scruggs, 2019). This method was also used by Alhawiti, (2011) to "reveal which attributes of innovation are perceived to be important in the innovation-decision process by faculty members as they decide to adopt or reject online education" (p. 5).

Figure 1

Diffusion of Innovation Theoretical Framework

Variables Determining the Rate of Adoption	Dependent Variables that is Explained

• Perceived Attributes of Innovation
  • Relative advantage
  • Compatibility
  • Complexity
  • Trialibility
  • Observability
	• The degree of sustained adoption
	• Factors that permote or hinder adoption
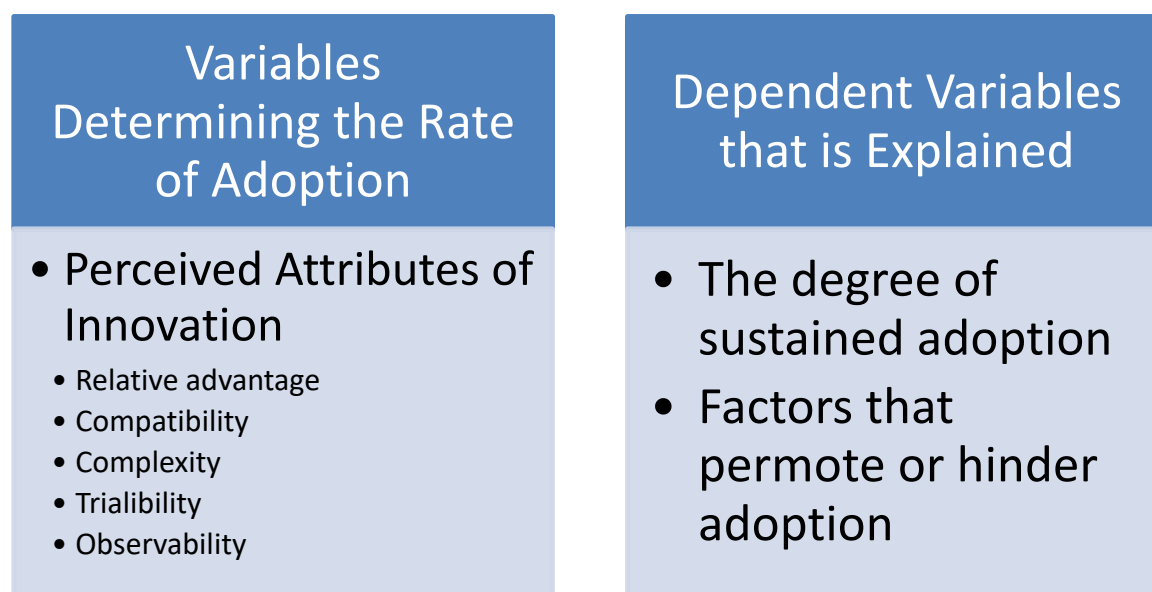
Note. Modified from Rogers's (2003) diffusion of innovation theoretical model.

Research Questions

This research explored the lived experiences related to online classroom instruction of technical education teachers within TCSG institutions related to online classroom instruction. Research questions were open-ended and different points-of-views were included regarding teachers' successful experiences as well as those of individuals who have struggled to implement

online instruction (Luka, 2018). The following foundational questions were used to build a better understanding of the situational use of online education within the selected cases:

Central Question (CQ): How do technical education teachers at TSCG institutions describe their individual experiences utilizing online education?

Teachers' experiences "play a key role in distance education therefore, their views of distance education…have great value" (Tharpe, 2017, p.35). Extensive research has been done at the postsecondary level regarding the experiences related to online education of students, faculty, and administrators (Brockman, 2018; Dunagan, 2017; Goins, 2015; Jowers, 2020; Nixon, 2016; Schone, 2015; Treadwell, 2017; Waite, 2016). The majority of research related to the use of online learning in vocational education has been done at the international level (Shdaifat et al., 2020; Syauqi et al., 2020). The TCSG needs research with findings that correlate directly to its specific context, especially in light of the increased likelihood that future pandemic closures may occur (Laplante, 2020). Semi-structured interviews were designed to identify themes using the previously mentioned theoretical framework.

Sub-Question (SQ1): How do technical education teachers at TCSG institutions evolve as e-learning adopters?

Professional development opportunities help new technical education teachers overcome challenges in a proactive manner (Hanna, 2020). In addition, quality professional development is documented by Lange (2020) to positively impact teacher attrition. Furthermore, professional development opportunities that are linked to industry-driven issues are likely to produce productive teachers/CTE programs. Teacher autonomy and voice in relation to curriculum development are also seen as major contributors to student success (Dibenedetto, 2015). In addition, teacher autonomy in regard to the curriculum is also seen as an organizational practice

that positively influences educational objectives (Key, 2018). The influence of mentorship through teacher evaluations also positively contributes to the successful adoption of online instruction (Dibenedetto, 2015; Motte, 2013).

Sub-Question (SQ2): How do technical education teachers at TCSG institutions describe the perceived attributes of the innovation?

DOI theory was developed by Rogers (1995) to identify influencers for innovation adoption using three broad categories: complexity, relative advantage, and compatibility (Selim et al., 2020). Specifically, the theoretical lens utilized in this research provided the following five innovation characteristics that help bring clarity to respondents' online instructional experiences: observability, relative advantage, compatibility, trialability, and complexity (Dearing & Cox, 2018; Kaminski, 2011; Selim et al., 2020). Of particular interest are the responses to the perceived relative advantages of online instruction within the technical educational context. If the 'relative advantage' is perceived to be high by participants, the likelihood of sustained adoption is more likely (Dearing & Cox, 2018; Kaminski, 2011). This approach provides the needed insight for technical education decision-makers when planning for future pandemics, as well as for e-learning initiatives.

Sub-Question (SQ3): How do technical education teachers at TCSG institutions foster student success in their e-learning classrooms?

This study also seeks to explore forces that promote the use of e-learning in their instruction (Scruggs, 2019). Actual online instruction success and a teacher's view of their ability to be effective in online instruction could be two very different things (Dibenedetto, 2015). This information could be used to develop data-driven professional development training. Forces contributing to online successes at the technical education level often center around

professional development. The need for instructors to be competent in developing knowledge, as well as skills, in their students is paramount. Current research suggests that CTE programs that link learning with industry-relevant projects are the most successful (Key, 2018). The international literature in Indonesia suggests that this training may be related to teaching methods, materials, and student feedback facilitation (Ohanu & Chukwuone, 2018; Syauqi, et al., 2020). This research explored how well these mechanisms hold in technical college stakeholder experiences. In addition, the literature suggests that those practitioners that are early in their career may have innovative ideas more frequently than their peers (Ohanu & Chukwuone, 2018).

Sub-Question (SQ4): Why do some technical education teachers at TCSG institutions express resistance to e-learning instruction?

DOI framework was used in this research to explore any hindrances that teachers see as prohibiting adoption (Parks, 2018). Existing literature documents that many teachers have varying degrees of experience related to online education (Laplante, 2020) and personal use of technology in their individual lives that correspond directly to their perceptions related to online education (Ohanu & Chukwuone, 2018). Stakeholders identified the following barriers when providing or attempting to provide online instruction: poor attitude, lack of training, low confidence, technical problems, inability to manage workload, inadequate support, concerns about intellectual property, as well as institutional barriers (Ohanu & Chukwuone, 2018). The learning curve for teachers becoming proficient in the integration of new distance learning technologies is usually steep and they are in need of guidance through standards and trainings (ISTE Releases, 2017, p. 10).

Definitions

The terms utilized in this research are primarily education-based terms. Due to the unique timing of this study, some medical terms are also included in this section of the dissertation.

1. *Blended learning*: Technical education that utilizes face-to-face in components with technology-assisted learning experiences to develop student's practical knowledge and soft skills (Neal, 2020).

2. *Carrier and Technical Education* (CTE) – Programs that include non-degree certification or employer-based training that develop into degree credentials and are usually short-term in nature (NASFAA, 2020).

3. *COVID-19* – The coronavirus disease (2019 novel coronavirus, or 2019- nCoV) is related to the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov) and is transmitted through the air into or through the upper respiratory system (Toquero, 2020).

4. *Diffusion of Innovation* – The process that people (adopters) go through when adopting a practice, product, or new idea (Kaminski, 2011).

5. *E-learning* – Used in the narrow sense of the letter "e" to insinuate all learning utilizing internet-based applications (Belaya, 2018; McGill et al., 2014).

6. *Innovation* – A practice, idea, or project that an individual perceives as new (Al-Razgan et al., 2021).

7. *Learning Management Systems (LMS) – Educational* software packages that are used in online instruction. Examples of LMS include Blackboard, Canvas, and Moodle (Pinho et al., 2021).

8. *Mechanisms* – Tools used to introduce participants to the program/phenomenon being studied (Onyura et al., 2017).

9. *Technical College System of Georgia* (TCSG) – A statewide agency that provides

   oversight and leadership for technical education to laborers as well as industry through 22

   technical colleges and 85 satellite campuses in Georgia (West, 2017).

10. *Technical education* – Educational institutions that focus on trades, applied disciplines,

    relevant technologies, and vocation preparation (Ohanu & Chukwuone, 2018).

11. *Technology adoption* – An individual's decision to use a specific innovation for a

    particular outcome (Jones, 2011).

12. *Vocational Education and Training* (VET) – Educational training for future laborers that

    is directly related to meeting the demands of the labor market per societal demands

    (Belaya, 2018; Shdaifat et al., 2020).

Summary

CTE institutions are faced with the task of creating and delivering industry-based content that has historically been provided in traditional classrooms in a virtual context during emergencies. The problem facing decision-makers is the need to better understand recent experiences that technical education teachers have had as they developed and implemented online education during drastic shifts toward virtual classrooms like those that took place during the pandemic. The various aspects of this phenomenon are not yet understood (Darling-Hammond & Hyler, 2020). The degree to which the TCSG achieved adequate content design to accommodate a 100% shift to online education is still relatively unknown. As more states increase funding to technical education programs, it is increasingly critical that decision-makers understand what will define future successes (ACTE, 2020; Neal, 2020; Thessin, et al., 2017). This multiple-case study provides an in-depth analysis of the challenges and successes experienced by stakeholders during a mandatory adoption of distance learning technology

(Syauqi, et al., 2020). Recent literature has called for the evaluation of online learning at the technical college level. For example, Syauqi et al., (2020) stated in their research of students' perceptions of online learning during COVID-19 that "evaluation of improvement and careful preparation of both teachers and institutions for online learning is needed to be truly effective" (p. 885).

CHAPTER TWO: LITERATURE REVIEW

Overview

The 2020 global pandemic demanded a sudden response from the educational community (Shdaifat et al., 2020; Syauqi et al., 2020; Tanik Önal, 2021). Unfortunately, some teachers faced this emergency with no prior e-learning experience (Laplante, 2020). The problem being addressed in this research is the lack of in-depth knowledge of instructor perceptions and experiences regarding the use of e-learning within technical education in Georgia. This chapter includes a theoretical framework that utilizes DOI to capture the teachers' experiences. The DOI theoretical framework drills down into the influences on the decision to adopt or reject the phenomenon being studied. DOI theory (Rogers, 2003) brings greater clarity to the level of adoption that currently exists within the selected cases among teachers (Parks, 2018). Furthermore, the related literature in this chapter includes adopter characteristics and decision processes common to DOI. In addition, the historical context of technical education includes a comprehensive look into funding as well as the evolution of the concept through the years in the United States. Literature related to COVID-19 and pandemic responses by higher education concludes with an in-depth analysis of online education. Finally, the self-efficacy of teachers and barriers/enablers related to online education are included in this chapter.

Theoretical Framework

The field of diffusion research began in rural sociology looking at the agricultural innovation of the diffusion of hybrid seeds (Ryan & Gross, 1943). The educational sector began to research the diffusion of new innovations within schools around this same time (Mort & Cornell, 1941). There was a tremendous amount of innovation diversity included in education research dealing with DOI during the 1950s and 60s (Watson, 1977). Going back over the past

81 years, DOI research goes back over 81 years in the literature has related to many different disciplines, all of which share a basic diffusion of innovation theoretical framework (Rogers, 2003). Everett Rogers took the field of DOI to new levels with his book, *Diffusion of Innovations*, first published in 1962 (Parks, 2018). Rogers (2003) published six additional editions of this book, all of which centered around a theory intended to capture change and the processes surrounding it (Rogers, 2003). DOI research differs from standard communication research in the area of the newness of the innovation as well as the degree of differences between adopters (Rogers, 1971). The communication aspect of the DOI framework is illustrated through the impact of opinion leaders' influence on adoption, which was first studied in education using math curriculum diffusion in a specific school district (Carlson & Oregon, 1965). This theoretical framework provides a conceptual framework in which to capture the experiences of technical education teachers concerning online education.

Diffusion of Innovation

This study explored the e-learning experiences of technical education teachers. The DOI theory provides a theoretical framework that assess the adopter, the innovation, and the type of communication needed to facilitate sustained adoption in the future. Increased adoption of e-learning instruction is a key assumption of DOI research. DOI has a well-established precedent in the existing literature dealing with the 'how' and 'why' of the research phenomenon related to the diffusion of e-learning within TCSG institutions (Daouk & Aldalaien, 2019). These types of questions lend themselves well to the case study approach used in this research (Yin, 2018). Diffusion often takes place slowly over time (Rogers, 2003). Educational change has also historically taken place at a slow pace (Ross, 1958). Online education, for example, has been gradually diffusing into educational systems over the past 25 years (Belaya, 2018). Furthermore,

the rate of adoption has increased through the years of DOI research (Rogers, 1971). The theory has advanced to offer five innovation characteristics that are used in this research to bring clarity to respondents' online instructional experiences. These categories are observability, relative advantage, and compatibility, trialability, complexity (Kaminski, 2011; Selim et al., 2020). Rogers (2003) states that participants' "perceived attributes of an innovation, such as its relative advantage, compatibility, and so on, affect its rate of adoption," a fact that correlates to the specific research questions in this research (p. 22).

Related Literature

It was apparent during the COVID-19 crisis that pandemic response and distance learning were inseparable. Higher education was just entering the COVID-19 battle during March and April of 2020 (Bhattarai, 2020). The damage and containment cycle during COVID-19 has produced a significant number of responses within higher education. For example, many higher education institutions closed their physical campuses and began serving students online due to the potential for COVID-19 transmission (Bhattarai, 2020).

Existing literature confirms the need to develop workaround strategies to solve problems quickly during a crisis (Coombs, 2007; Gigliotti, 2020; Thelen & Robinson, 2019). The research to meet this need within the United States technical college system simply does not exist. Establishing preventative policies intended to increase communication and address crisis response e-learning training needs for faculty are potential benefits that could come from exploring the experiences of stakeholders at technical institutions (Thelen & Robinson, 2019). For example, this could be done in much the same way that the school shootings motivated schools to implement best practices strategies related to school security and safety (Robertson, 2017).

This research identifies themes related to successes and failures related to distance learning, including those that occurred during the 2020-21 COVID-19 response within Georgia technical colleges. In much the same way, the Delphi study approach sought to identify themes in a collective way that included expert faculty and staff at several European institutions (Käpplinger & Lichte, 2020). While Käpplinger & Lichte's Delphi study addressed adult education issues that often occur within the technical college context, it did so by excluding practitioners ($N = 54$). In addition, Käpplinger & Lichte overlooked the positionality of a specific institution's context and took a global approach.

Innovations Research and Participant Perceptions

Jason Neben (2014), Director of Technology at Concordia University Irvine, studied the attributes and barriers impacting the diffusion of online education. Pinho et al. (2021) explored e-learning through student perceptions of a learning management system while adhering to the DOI theoretical framework. Modern DOI research has expanded into uncommon innovations, like the use of outdoor learning spaces and the corresponding teacher perceptions (Dring et al., 2020). Health sciences researchers often utilize DOI to explore the success of new care facilities and the acceptance of new practice (Kaminski, 2011).

Teachers had unique experiences related to the perceived relative advantage due to the overwhelming saturation of e-learning during the 2021 COVID-19 response (Laplante, 2020). The three characteristics of innovation that pertain to the phenomenon being researched are relative advantage, compatibility, and complexity. Selim et al. (2020) utilized these three innovation characteristics to better understand the use of instructional technology in the classroom. Relative advantage is defined as the extent to which the technology is perceived to be better than the alternative in the following areas: financial, prestige factors, convenience, and

satisfaction. Compatibility deals with the values, needs, and past experiences of the teacher. Adopter experiences are based on the perceived complexity of e-learning (Rogers, 2003).

Adopter Categories

Rogers (2003) strongly suggests that innovation must be compatible with the adopter's values and past experiences. Kassim et al. (2012) also confirmed the importance of these adopter attributes when examining the implementation of new technology. The DOI theoretical framework provides the clarity needed to explore the degree of teachers' adoption regarding e-learning. In addition, decision-makers are better able to understand the hurdles that exist in regards to diffusion (ACTE, 2020; Neal, 2020). The literature supports the fact that "teachers are a crucial component of any…intervention strategy" (Lenart, 2016, p. 9). The DOI framework provides a rationale by which actors (teachers) approach online education. For example, the adopter categories within DOI theory allow the researcher to evaluate where a participant is in terms of innovation adoption. Technology is not adopted at the same rate by all individuals. Furthermore, the adopter categories with the DOI framework are based on an individual's innovativeness and often follow an S-shaped curve (Rogers, 2003). The five adopter categories were established in the early part of the 1960s and are: innovator, early adopter, early majority, late majority, and laggards (Rogers, 1962). These categories are shown in Figure 2.

Figure 2

Roger's Five Adopter Categories
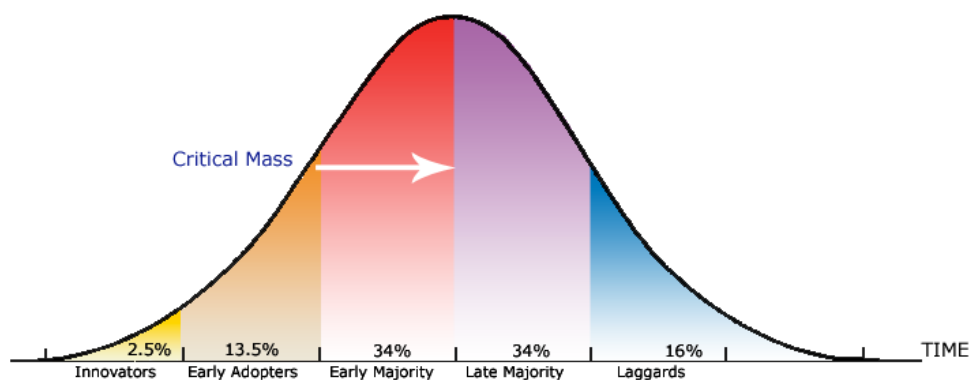
Note. Adopter categories with critical mass percentages (Kaminski, 2011; Rogers, 2003).

  The primary goal of this research is to identify the categories that technical college teachers are currently in and correlate professional development content to address their characteristics and needs. In many ways, these characteristics correlate to the personalities of the adopters. Innovators, for example, typically adopt innovation quickly and do not mind taking risks. These innovators are usually the first 2.5% of the system (Kaminski, 2011). This type of teacher would normally be a trailblazer for others who have yet to reach the decision process (Pinho et al., 2021). Early adopters consist of 13.5% of the system and typically lean towards being out in front of a particular innovation and are often called opinion leaders or role models as a result (Kaminski, 2011; Rogers, 2003). They are usually highly respected by their peers and could be referred to as visionaries. Early majority adopters (34% of the system) also may serve as opinion leaders, but this usually begin participating at a time when risk is minimal. Late majority adopters mimic the early majority percentage (34%) and are usually cautious. Late majority adopters usually make decisions to adopt based purely on need. Finally, laggards comprise the remaining 16% of a system and are far more apprehensive than the two previously mentioned types of early adopters (Kaminski, 2011; Rogers, 2003).

Innovation Characteristics

      The process of adoption is also explained by Rogers' (2003) five innovation characteristics. Relative advantage deals with the degree to which the adopter decides if the innovation in question is better than the preexisting alternative. The second innovation characteristic deals with the values, beliefs, and past experiences associated with an individual. The third innovation of complexity has an inverse relationship with adoption. As innovation complexity increases, the likelihood of adoption decreases. The observability associated with the innovation in an organization may also decrease complexity and increase adoption. Finally, trialability directly correlates to an individual's access to experiment with the innovation. The five innovation characteristics are depicted in Figure 3.

Figure 3

Rogers' Innovation Characteristics
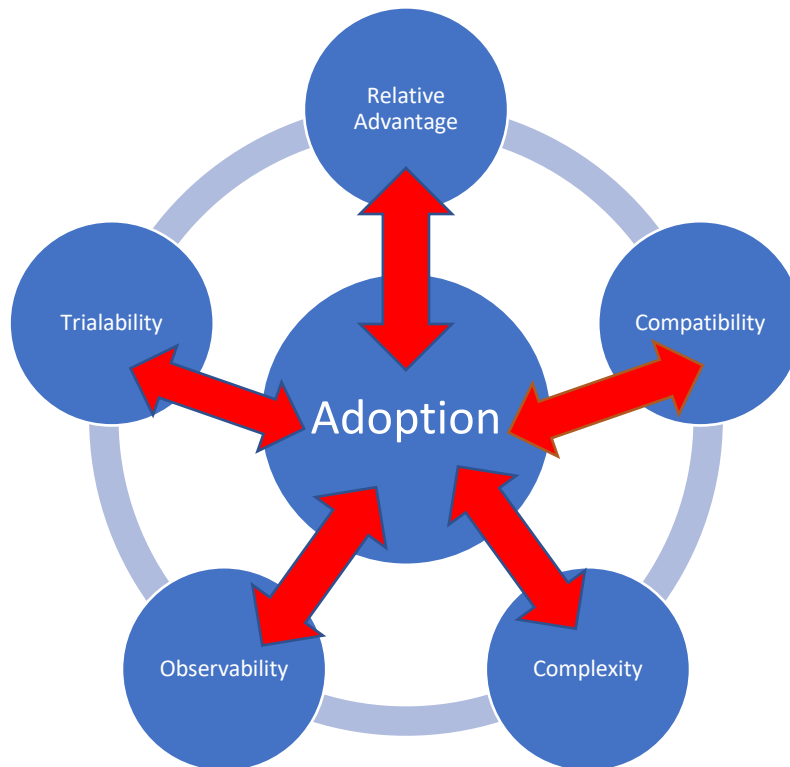
Note. The innovation adoption characteristics (Rogers, 2003).

Research has expounded on this concept through the Technology Acceptance Model (TAM), which also explains why technology is accepted or rejected. Jones (2011) states that the "TAM model includes two elements, perceived ease of use (PEOU) and perceived usefulness (PU)." Rogers' (2003) model has far more response autonomy and allows for greater diversity in teacher experience. This study, however, explores the attributes of innovation that are identified as important by technical education teachers in the innovation-decision process (Alhawiti, 2011).

Innovation Decision Process

The innovation-decision process is a five-stage adoption process that adopters go through when adopting a particular innovation (Rogers, 1995). The innovation-decision process is defined as "the process through which an individual…passes from gaining initial knowledge of an innovation, to forming an attitude toward the innovation, to making a decision to adopt or reject, to implementation of a new idea, and to confirmation of this decision" (Johnson, M.E., 2019, p. 8). The existing literature indicates that by increasing understanding surrounding teachers' innovation decision process, valuable insight into how to meet existing professional development needs for faculty will be gained (Johnson, M.E., 2019). The initial knowledge and awareness stages occur when adopters encounter a particular innovation, online instruction, in this case, and lack adequate knowledge concerning the technology to make an informed decision of whether to adopt or refuse its use (Kaminski, 2011). The persuasion stage captures the adopter's pursuit of additional information related to the innovation. The choice to adopt the innovation is often made in relation to the adopter's present and future context and is called the 'decision stage.' The adopter begins to use the technology during the implementation stage. The fifth and final stage is called 'confirmation.' Woven within this stage is the communication that

occurs related to the innovation within a given system or context (Kaminski, 2011). These five stages are listed in Figure 2 in the Methods section (Jones, 2011; Proctor, 2018).

Innovators

This group actively seeks out information about the innovation (e-learning) and has a communication network that extends well beyond their institution (Rogers, 2003). The desire to be a change agent motivates these teachers beyond any fear of risk or uncertainty (Kaminski, 2011). On the other end of the spectrum is the laggard adopter category. These teachers would have very little interaction with opinion leaders due to their suspicions regarding the innovation and their desire to maintain the status quo (Kaminski, 2011).

The type of DOI research deployed in this qualitative analysis relates to the consequences of adoption. This type of diffusion research has received little scholarship in the literature, despite its clear importance (Rogers, 2003). The fact is the case study approach provides adequate space to account for potential positive and negative effects of adoption, as well as positive. Rogers (2003) states that "in-depth case study…are usually utilized to study consequences when investigating the effects of innovations" (p. 66).

Technical Education Context

CTE began in America through the apprentice model first implemented in England (Gordan & Scholtz, 2020). It later developed into a close partnership with colleges to meet a growing workforce need that colonial higher education was ill-equipped for. American vocational training has, from its conception, depended upon a close working relationship with members of government, academic philosophers, and industry leaders. This section outlines the significant policies that have created, sustained, and changed vocational education through the

years. In addition, the pioneers of vocational education are outlined as to their contributions that have resulted in modern CTE programs and laws.

History of CTE

Career and Technical Education in America originates from the European apprentice educational system for the poor (Gordan & Scholtz, 2020). In fact, 18th century apprenticeship in America was modeled, very closely, to the indentured servant apprentice contracts of England and Germany. The one key difference during the colonial era was that American apprenticeships focused heavily on education. The idea of 'manual training' does come from Europe, specifically from two key thinkers: Jean-Jacques Rousseau and Johann Heinrich Pestalozzi. Rousseau focused on the 'manual arts' and learning through experience. Building on this Pestalozzi focused on the practical application of education that encourages all students to learn by doing (Gordan & Scholtz, 2020). Pestalozzian inspiration is found in normal schools' idea of manual training. These normal schools lacked the overall uniformity needed to replicate large portions of the educational phenomenon (Lucas, 2006). The influence of manual training would last until the American Industrial Revolution of the early 19th century. The new labor demands did not require long apprenticeship experience for workers to meet the production demands of the day (Gordan & Scholtz, 2020). The major influence of a masters in many areas was lost after the changes brought about by large-scale production in America. Today, apprenticeship looks significantly different than it did in the 18th and 19th century models. Apprenticeship programs remained influential through the early years of the 1950s (Gordan & Scholtz, 2020).

The Hampton Institute and, subsequently, the manual training movement was started in the 19th century by General Samuel Chapman Armstrong (Gordan & Scholtz, 2020). The result of Armstrong's manual training movement was a shift from college preparatory high schools to a

curriculum that prepared students for a variety of careers. This shift came very early in public

school education, as the first high school did not come to fruition until 1821. One of the most

famous graduates of Hampton Institute was Booker T. Washington, who would later start the

Tuskegee Institute, also modeled after the manual training movement. Washington wanted his

students to solve problems in society, a revelation that took students well beyond education

based on rote memorization (Gordan & Scholtz, 2020).

The early 20th century gave CTE a boost through the formation and implementation of

the National Society for the Promotion of Industrial Education (NSPIE). David Snedden and

Charles Prosser laid significant groundwork for vocational education. Prosser, for example,

promoted job-specific experiences that should be backed with federal support through legislation

(Lindsley, 2020). Prosser's philosophy of industry-based and directed technical education

(isolated away from general education) has ultimately been circumvented by Dewey's dual

system of academics (vocational training and general education exist together). Furthermore,

Dewey embraced a philosophy that emphasized high academic standards in hopes of producing

real-world training opportunities. In addition, Dewey's strongly held belief that vocational

training was for all people is also clearly seen in technical education today (Lindsley, 2020).

Elements of John Dewey's educational philosophy regarding vocational education would

ultimately evolve into what we know as technical education today. The fundamentals of his

philosophy can be seen in the vocational training laws of today. This "for all people" approach to

technical education would later be championed by Dennis Mobley, the executive secretary of

ACTE from 1951-1965. Mobley believed that CTE should be woven into public education in

practice, as well as into federal aid. This inclusion approach included high schools as well. Dale

Parnell would later develop the Tech Prep 2+2 model that received federal funding in the Carl Perkins Act of 1990 and continued in 2006 (Gordan & Scholtz, 2020).

Funding

The history of technical education funding in America represents the maturation process for CTE through the years. Past and present legislation highlight specific areas of concern that depict the growth of CTE. Technical education's early history laid the foundation that has sustained it through more than 150 years.

Early History. America experienced significant labor shortages from 1820 to 1860. Congress, in an effort to address the labor shortages, revolutionized higher education with an ivory tower mentality and the passing of the Morrill Act of 1862, an action John Dewey would have been proud of. The land-grant system for higher education bridged the gap between expert knowledge in agriculture, mechanics, and domestic home care for the taxpayer and brought about significant changes in CTE (Lindsley, 2020). This moved higher education away from the limited professions of medicine, law, and theology, towards practical occupations in agriculture. The curriculum for each discipline was integrated and retained no elements of separation regarding vocational training. The single greatest legislation in American vocational education was the Smith-Hughes Act of 1917, which allocated $7,161,726.00 over nine years (Barlow, 1976). This legislation was designed to prepare all of America for occupations, trades, agricultural enterprise, and commerce. Two Georgia legislators by the name of Hoke Smith and Dudley Hughes moved the bill through the Senate and House of Representatives, respectively.

Technical education's historical importance in America is well documented through labor shortages and industry demands during wartime (Gordan & Scholtz, 2020). After the passing of the Smith-Hughes Vocational Act in 1917, America experienced a national emergency

concerning the vocational preparedness of the labor force in relation to the country's potential involvement in World War I. This war demanded Americans be highly trained in mechanics as the new war machine developed and workers assembled new technologies for the war (Barlow, 1976; Lindsley, 2020; Gordan & Scholtz, 2020).

Walter F. George worked over his thirty-plus-year legislative career to continue vocational education funding and productivity through the George-Reed Act of 1929 and George-Elzey Act of 1934, both focusing primarily on agriculture and home economics during a nationwide depression (Lindsley, 2020). The George-Deen Act of 1936 expanded vocational training into trades and industry. The George-Barden Act of 1946 increased funding flexibility for vocational education in the nation and, when combined with the Smith-Hughes Act, produced more than $36 million for technical education (Barlow, 1976; Lindsley, 2020).

The Vocational Education Act. Carl D. Perkins of Kentucky championed the Vocational Education Act of 1963, also known as the Perkins-Morse Bill. Perkins ushered vocational education into a new era with the passing of this legislation. The act would not only sustain technical education, but also extend access to virtually all people (young and old) and communities. Allocation of funding was set up based on grade level and age demographics, while vocational category designations were eliminated (Lindsley, 2020). In addition, persons with disabilities were also included in the scope of the act. The Vocational Education Act was updated in 1968. This law brought all funding for technical education under one federal law except for what was covered under the Smith-Hughes Act. The Smith-Hughes Act was retained because it was the first-ever legislation funding vocational education and was equal in significance to the 1963 legislation. The revised law expanded vocational training into higher education, aligning it more with general education, and attempted to normalize the perception of

technical education (Gordan & Scholtz, 2020). Along these same lines, President Nixon attempted to change the name *vocational education* to *career education*, but he was not successful (Martino, 2017).

   The Carl D. Perkins Vocational Education Acts. The 1984 version of this law began an era of reform that would continue into the 21st century. The 1984 law, referred to hereafter as Perk I, increased academic requirements for high school graduates as well as college entrance expectations for incoming students. The nation had recently received an alarming report by the National Commission on Excellence in Education in 1983 entitled *A Nation at Risk* (U.S. Department of Ed., 1983). The reform movement also began the long process of addressing the negative stigma associated with vocational education (Gordan & Scholtz, 2020). The blueprint for the Perkins Act is as follows: CTE programs that are driven by the labor market increased cooperation between higher education, increased industry collaboration, and increased innovative CTE implementation (Jocson, 2018). Funding for the Perkins Acts is based on grants associated with a given area's census data and socioeconomic indicators. A significant portion (50%) of Perkins I was designated for special populations (Lindsley, 2020). The American Vocational Association (AVA), now the Association for Career and Technical Education (ACTE), thwarted an attempt by policymakers to change the name *vocational education* to *Applied Technology Education* in 1989 (Martino, 2017).

   The Perkins II amendment was passed in 1990 and highlighted vocational education curriculum as well as increased the partnership between higher education and vocational institutions. President George H.W. Bush signed this bill into law to bring about greater inclusion of vocational education in regard to all academia. The isolation that had characterized technical education was targeted for elimination through academic integration, linking existing

educational structures together and, in the spirit of Prosser, linking vocational school more closely to industry (Gordan & Scholtz, 2020).

President Bill Clinton signed a five-year vocational and technical education bill into law in 1998, referred to here as Perkins III. This law maintained the previous allocation age categories that existed in the two previous versions. The largest amount of money (50%) was allocated to youth, 15 to 19 years of age. Perkins III defined Tech Prep as a program that awards two-year secondary courses of study that focus on vocational/technical instruction (Gordan & Scholtz, 2020). President George W. Bush continued education reform in his tenure with Perkins IV in 2006. Congress changed the official name of technical education from *vocational education* to *career and technical education* (CTE). This amendment increased accountability through state improvement plans with a focus on program rigor and postsecondary linkages. Funding for this 2006 amendment was continued in 2012 by President Barack Obama, who secured $1.4 billion dollars for skill-based education (Jocson, 2018).

Today, CTE programs that are informative, innovative, and stimulating are slowly replacing the stigma of ill-equipped facilities and subpar career opportunities related to technical education. In addition, these programs are seen as academically challenging and relevant to career development (Gordan & Scholtz, 2020). The most recent legislation related to CTE is the extension of the 2006 Perkins Act. President Donald Trump extended this act for the second time in 2018 and the act referred to here as Perkins V. This law works in conjunction with the Every Student Succeeds Act (ESSA), the Workforce Innovation and Opportunity Act (WIOA), and Individuals with Disabilities Education Act (IDEA) to provide technical education and employment skills to all people. Perkins V also further strengthened accountability within higher education and state departments. For example, each state is required through Perkins V to have a

revised needs assessment every two years. In addition, negative stigmas are addressed early in public school through career guidance and counseling through this law (Lindsley, 2020).

Technical System

In general, technical education at the secondary level is listed in the following three main areas: family and consumer sciences education, occupational education, and general labor markets preparation (Gordan & Scholtz, 2020). There are hundreds of technical education programs across the country. These programs fall into seven broad areas of study: agricultural education, business education, marketing education, family and consumer sciences, trade and industrial education, health science education, and engineering and technology. These skills-based programs are offered in a variety of contexts. For example, CTE programs occur in high schools, secondary schools, career centers, community, and technical colleges, as well as vocational schools.

The TCSG's mission within Georgia is to facilitate workforce development that has a global footprint. The three main areas of focus for the TCSG's 22 technical colleges and 85 satellite campuses are technical education, adult education (high school equivalency), and industry labor development needs (TCSG, n.d). Ultimately, TCSG believes that this mission increases the overall economic well-being of Georgia and subsequently its citizens by putting students in the workforce (Technical College System of Georgia, 2020).

COVID-19

Gouëdard et al. (2020) state in their research that "during the COVID-19 crisis, countries have implemented a range of measures to curb the educational impact of the pandemic. In times of emergency, speed in the implementation of responses is key" (p. 4). The fact is that concrete techniques regarding what works are simply not available, and the resources needed to address

emergencies are often limited (Gouëdard et al., 2020). Existing scholarship on this topic does little to equip technical college stakeholders. Further making this point, Holzweiss et al. (2020) highlighted experience as the one key ingredient needed to increase crisis management. It is for this reason that institutions within the TCSG must capture their experiences dealing with online education during COVID-19 and beyond. Assessment of the COVID-19 impact, if done adequately, could have a tremendous influence on the future health of technical education. Currently, there is no research linking these or any other attributes regarding COVID-19 responses through distance education.

Crisis Management Literature

Perhaps the simplest definition of *educational technology* in the literature is the "use of various sorts of technologies to facilitate educational processes" (Kinshuck et al., 2013, p. 3). This research seeks to explore the use of e-learning by teachers at the technical college level. All learning utilizing the internet to achieve instructional objectives may be considered e-learning (Belaya, 2018). More specifically, this study explores the experiences related to online instruction that takes place away from the brick-and-mortar campus. This type of distance learning was on the increase even before the dramatic shifts of COVID-19 (Motte, 2019; Seaman et al., 2018; Shdaifat et al., 2020). The results produced from this study provide insight into the growth edge that currently exists at the chosen cases (Koeslag-Kreunen et al., 2018).

The disruption to the traditional educational delivery system is unprecedented. The Association of Career and Technical Education (ACTE) states that the dramatic shifts toward online education during COVID-19 could be an opportunity to learn lessons that strengthen technical education initiatives in the future (ACTE, 2020). Inequalities within education are expected to skyrocket for the most disadvantaged demographics, and the digital divide is

expected to be more severe as a result of the sudden shift towards distance learning during school shutdowns. Teachers are being asked to do more with new innovations, yet with less training and shorter implementation windows. Technical education decision-makers must identify what works in relation to online education to further prepare for future pandemics. Mitroff's (1994) approach vigorously tries to prevent future crisis events by acknowledging recovery and learning stages. There are many lessons to be learned from the pandemic that could be utilized within strategic crisis planning going forward (Mitroff, 1994). Research suggests that the learning/recovery stage begins with the onset of a COVID-19 vaccines (Burki, 2020, p. 758). America was one of the first countries to secure a vaccine, starting the process early in 2021 (Finkenstadt & Handfield, 2021). A degree of uncertainty still exists, however, due to the variants of COVID-19 and the lockdowns that they could bring (Quach & Chen, 2021).

Higher Education Response

The COVID-19 literature that does exist within the Unites States almost exclusively excludes technical education in favor of higher education. Issues that have moved to the forefront during the pandemic and remain areas of focus are "budgeting, enrollment and recruiting, research, course delivery, and accountability and assessment" (Benito, et al., 2021, p. 54). Holzweiss et al., (2020), for example, highlighted delayed start dates for the fall semester and saw significant success as a result. In addition, one school in this study took their normal 15-week term to 7 weeks. These response techniques resulted in normal retention and completion rates for the semester, approximately the same as the previous two non-crisis semesters (Holzweiss et al., 2020, p. 29). Similarly, decision-makers can take similar measures when they better understand the teacher experiences related to e-learning. Administrators' experiences within technical education are just as important. Schomaker and Bauer (2020), for example,

sought to identify potential drivers behind administrator success during COVID-19. High levels of cooperation of other stakeholders were considered factors that increased performance. This research seeks to explore these attributes at the technical college level. Furthermore, the previously mentioned study identified institutions that were able to achieve successful crisis responses due to a preexisting crisis plan established before the emergency (Schomaker & Bauer, 2020). The previously mentioned research confirmed similar results done two years prior, further establishing the trend in the literature (Ramsbottom et al., 2018). Existing research also suggests that "confusion over mandates, staff roles, and responsibilities in an outbreak can hamper a timely crisis response by inhibiting information flow, collaboration, and coordination" (Salajan et al., 2020, p. 467).

Technical Education Response

Syauqi et al. (2020) studied technical college student perceptions related to online learning during the COVID-19 pandemic. Students felt strongly that online learning was less effective than face-to-face instruction. On March 16, 2020, the Technical College System of Georgia (TCSG) sent out the first advisory that all face-to-face instruction would be discontinued until further notice. The spring semester was just past the midpoint. Georgia later entered into a statewide budget reduction of 14% for all state agencies, including TCSG technical colleges. These COVID-19 changes "had an unprecedented effect on higher education, forcing professors to turn classes geared towards face-to-face instruction into online courses in a matter of days" (Blankenship, 2020, p. 2). Existing literature states that the COVID-19 crisis demanded a fast response from higher education (Shadaifat et al., 2020; Syauqi et al., 2020; Tanik Önal, 2021). The fast transition from physical campuses towards distance learning created an environment for colleges and teachers to create a bottom-up approach for technological solutions within technical

colleges. Teachers found out what it means to say that necessity is the mother of invention (Gouëdard et al., 2020). For example, teachers were expected to shift their face-to-face instructional approaches towards an online delivery system that did not exist in some cases (Bhattarai, 2020; Chiamaka, 2018; Shadaifat et al., 2020; Syauqi et al., 2020; UNESCO, 2020). The administrators and instructors who experienced success during this fast transition should be evaluated and imitated, if possible. The pace at which marketplace changes are taking place is ever increasing. The literature suggests that 65% of today's youth will be employed in positions that have yet to be thought of and the International Labor Organization (ILO) suggests that new occupations are continually being created (Kanwar, et al., 2019). If the industry that technical education supports is changing fast, then administrators, staff, and faculty will be expected to change quickly as well. It is for this reason that innovation adoption should be studied, when possible. There is no question that technical education teacher experiences with distance learning amid the crisis should be considered for further studies (Tanik Önal, 2021). Those instructors who experienced minimum success or who would be considered as laggards concerning e-learning adoption should also be explored (Laplante, 2020).

Multiple international and national technical education associations offer guidance as to distance learning within the skills development context. While these international trends in favor of blended learning are firmly established, there again remains a gap in the literature as it relates to the United States. The Association for Career and Technical Education (ACTE) is one such association that consistently develops best management practices associated with COVID-19 and subsequently online education. In ACTE's (2020) recommendations, they do not advocate any one system of education over another. Instead, they look to the state, local, and institutional leaders within the context of laws and health regulations of a given state. This study seeks to

assess experiences on a local level to better understand the aforementioned dynamics. That being said, ACTE sees career and technical education (CTE) as being context specific (ACTE, 2020). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has done extensive work globally regarding COVID-19 responses, as well as online education benefits and challenges. Again, just as in the case of ACTE, UNESCO compiles extensive data on key issues but lacks a clear case-specific analysis applicable on a local level (UNESCO, 2020).

Online Education

The evolution of distance education started with print-based technology in the 18th century. The land grant system and cooperative extension expanded distance education across America. Modern distance education has been functioning within education for approximately 25 years (Belaya, 2018). The technical definition of distance education applied in this study is any virtual platform that is utilized by a technical education program at least 51% of the time (Distance Education Accrediting Commission, 2019; Motte, 2019). The multi-media revolution started taking shape in the 1960s. These technological advances included print material and TV and radio broadcasts. These materials were placed on VHS and cassettes in the correspondence education movement of the 1980s. Online education started in the 1990s with the onset of the World Wide Web. Today, fiberoptic cable technology has increased access of distance education through video streaming and information banks (Brainerd, 2020). It is critical for administrators seeking to implement online education courses to have keen insight into faculty perceptions surrounding the innovation (Simon, 2018; Surry et al., 2009).

CTE continues to be encouraged by federal legislation and funding to adopt and incorporate technology that increases access and academic rigor. President Trump, for example, signed the Strengthening Career and Technical Education for the 21st Century Act of 2018

(Perkins V) that addresses technology through STEM programs (Brainerd, 2020). A significant amount of postsecondary research concerning internet-based courses has focused on English, Science, and Math, rather than CTE courses (Parks, 2018). This research views online education through the lens of technical education teachers' experiences in implementing e-learning instruction at primarily the practitioner level (McGill et al., 2014).

The field of higher education, in general, continues to develop and change with each passing year due to the influence of the internet (Parks, 2018). A comprehensive view of the literature suggests that teachers are a significant part of any technology implementation plan (Surry et al., 2009). Brainerd (2020) stated that "it is up to institutional leaders to find solutions on how to respond to faculty's perceptions on what institutional barriers are preventing development and facilitation of distance learning courses" (p. 3). In addition, Luongo (2018) called for more research related to online teachers' experiences and satisfaction levels. It has been said that knowledge obtainment could leave formal schooling behind (Gomez, 2016). E-learning initiatives are often characterized by swift change rates. A significant work dealing with the diffusion of e-learning was completed by McGill et al. (2014), in which they looked at approximately 64 research articles dealing with the diffusion of e-learning within higher education. They espoused those teachers are critical in the diffusion of innovation process regarding e-learning technologies. E-learning is growing in popularity within higher education throughout the world (Ross & Gage, 2006). Distance learning has been studied at length in academic research since Ross and Gage's (2006) proclamation of growth, approximately 15 years ago (Daouk & Aldalaien, 2019). In this review, the idea of e-learning is dated, going back over 30 years ago. This research places the challenges associated with e-learning into the following three previously mentioned categories: adopter nomenclature, innovation

characteristics, and the decision process stage (Rogers, 2003). This study seeks to assess distance learning from an individual teacher standpoint within the selected TCSG cases. Technical education teachers were interviewed in respect to their distance learning experiences and perceptions.

Self-efficacy Related to Online Education

Technology self-efficacy is defined as "the belief in one's potential to use any emerging technology" (Baker, 2019, p. 17). For example, the research draws a very clear correlation between the type of choice an individual makes and the level of self-efficacy experienced by an individual (Dibenedetto, 2015). It is important to note that the level of self-efficacy felt by a particular teacher is context-specific. For example, teachers who have a high levels of confidence in their abilities in face-to-face instruction may not feel particularly efficacious when delivering an online class (Lenart, 2016). Self-efficacy research further documents the importance of confidence regarding the retention of faculty at a variety of educational institutions (Hanna, 2020; Johnson, R.L., 2019). Higher education decision-makers could benefit from understanding internal factors as well as external (institutional) factors that impact teacher self-efficacy. By gaining a deeper insight into how teachers feel about their ability to achieve student success in online education, other teachers will have the opportunity to make better-informed and hopefully more effective decisions (Hana, 2020). Self-efficacy assessments may be used as indicators of how much adversity an individual teacher can endure (Nowikowski, 2017).

Self-efficacy Online CTE programs

CTE teachers face many challenges. As previously stated, Perkins IV increased the expectations of increasing academic rigor within technical education (Spindler, 2011). It has been said that the single greatest documented hurdle that technical colleges face is associated

with "teacher behavior and attitude towards e-learning" (Belaya, 2018, p. 93). Self-efficacy

relates to CTE teachers' confidence to perform a specific task (Dibenedetto, 2015). Specifically,

existing research makes a strong case for how various experiences impact the level of self-

efficacy achieved by a teacher (Largent-Necessary, 2021; Schunk, 2012). For the purposes of my

research, the task being explored is online CTE instruction. Professional development, CTE

mentoring programs, and training remain key contributors to the type of confidence needed for

faculty retention (Largent-Necessary, 2021). The retention issue is especially important in the

CTE context. This issue of faculty retention is one the Carl D. Perkins law attempts to address

within technical education (Gordan & Scholtz, 2020; Martino, 2017). In addition, research has

identified professional development as a factor that directly correlates to healthy teacher self-

efficacy and subsequently greater teacher retention within technical education institutions

(Hanna, 2020; Yoo, 2016).

Self-efficacy in *Conventional Online Programs*

Teacher confidence is often an indicator in relation to adoption and integration of new

technology. Research shows that in higher education, much like technical education, professional

development is used to increase self-efficacy (Brown, 2018). It has been documented that some

college teachers struggle with anxiety and fear when using technology (Scruggs, 2019). Research

shows that college teachers' attitudes concerning technology have a direct correlation to the level

of technology integration achieved by educators within higher education (Ertmer et al., 2012).

Conventional thought holds that a teacher's experiences related to producing student success

vary significantly from face-to-face classes to that of online classes. Albert Bandura first

developed the idea of self-efficacy as a psychological term (Davis, 1989). The degree to which

teachers believe that they can affect positive outcomes for students is self-efficacy (Cory &

Stella, 2018). A strong correlation has been shown between classroom technology integration and high levels of teacher self-efficacy. Cory and Stella (2018) suggest that this correlation is especially important in the online instruction context. A model that was eventually used to measure this correlation was developed by Davis (1989) and called the technology acceptance model (TAM). The perceived ease of usefulness (PU) of a specific innovation loomed large in relation to the degree of integration obtained. The TAM assessment is often used to assess teacher behavior concerning online instruction through the use of surveys and other quantitative methodologies (Baker, 2019). Finally, the type of professional development identified in a meta-analysis on the topic of online education and self-efficacy directly addresses the transition that teachers experience when moving into areas of new technology (Abdullah & Ward, 2016).

Online Education Challenges

As the demand for online education increases, so do the barriers and problems associated with its implementation (Dinc, 2019; Hellrigel, 2016). Literature suggests that the rate of adoption and subsequently the effectiveness of the technology oftentimes do not keep pace with the rate of acquisition and implementation of innovation within education (Simon, 2018). Teacher and student success may be negatively impacted when decision-makers overlook critical aspects of technology integration (Brainerd, 2020). It is extremely important to identify factors that promote or hinder e-learning if teachers are to successfully integrate new technology into their instruction (Abdullah & Ward, 2016). Barriers to technology integration may be classified into external and internal factors (Dinc, 2019; Dunagan, 2017; Ertmer, 1999; Tanik Önal, 2021). Brainerd (2020) identifies the changing experiences of online teachers and the institutional barriers that they face as a gap in the literature. Ignoring these factors within a given context could increase the likelihood of issues like teacher retention in the future (Hanna, 2020).

Conventional Online Program Challenges. In 2018, higher education documented that 29.7% of its students took at least one online class (Luongo, 2018). In contrast, current higher education data indicates that 27% of the largest colleges in the United States had more than 75% of their student body online during the pandemic reopening period of October to November 2020 (Freeman et al., 2021). While only 22% of these large universities mandated COVID testing during October through November 2020, 51% of the colleges included in the study attempted some version of contact tracing (Freeman et al., 2021). External barriers related to online education may include lack of financial support, inadequate professional development, lack of support from administration, problems with curriculum design, and lack of time to plan for online instruction (Brainerd, 2020; Dinc, 2019; Simonson et al., 2011; Surry et al., 2009). In addition, lack of compensation, added responsibilities, increased workload (time constraints), insufficient training, and poor value towards promotion have also been identified (Luongo, 2018; Surry et al., 2009; Tanik Önal, 2021). Meriem and Youssef (2020) researched acceptance factors and barriers of e-learning within higher education in Morocco. The primary e-learning barriers that they found were a lack of technical and institutional support and a general lack of communication. Two internal barriers were resistance to change and teachers' low computer skills. The study identified six main factors that were grouped under acceptance factors for e-learning. These factors were: institutional incentives, computer self-efficacy, e-learning system, understanding of e-learning, institutional support, and enjoyment and self-efficacy (Meriem & Youssef, 2020).

CTE online instructional challenges. Historical challenges prohibiting e-learning in CTE that are documented in the literature include costs, rural locations, and undertrained faculty (Stone, 2007). A more recent study that addresses e-learning factors that influence adoption

highlighted professional and crisis policy development by exploring teacher perceptions in

Jordan (Shdaifat et al., 2020). New pedagogical approaches that are matched with distance

learning platforms are perhaps more necessary within the skills-dominated vocational context.

The existing literature related to teaching technical education online is primarily done in places

outside the United States. For example, one study focused on technical education student

perceptions of online classes in Indonesia (Syauqi et al., 2020) and another international

technical education study looked into teacher resistance to online education in Nigeria before

COVID-19 (Chukwuone & Ohanu, 2018). Similar work was done during the pandemic in Jordan

by Shdaifat et al. (2020) when technical education teacher perceptions regarding e-learning were

quantitatively evaluated. Many national and international associations also have addressed the

issue of online education in a technical workforce context (ACTE, 2020; Neal, 2020; UNESCO,

2020). Perhaps the most comprehensive literature review done regarding this topic was done in

Germany by Belaya (2018). The level of media literacy is also identified as a limiting factor for

some students accessing distance learning platforms for the first time. In addition, decreased

social skills and isolation are also negative effects of e-learning (Belaya, 2018; Ohanu &

Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020).

Enablers in Online Education

Higher education institutions experiencing online education increases and the changes

associated with them have a tremendous need to explore instructor experiences. Research

suggests that administrators should consider their specific context when developing

implementation strategies for integrating technology into education (Surry et al., 2009). Research

focusing on factors that facilitate technology implementation could aid in this process. While the

technical difficulty associated with online education is often high for teachers, there are certain

aspects of the technology and adopters that serve to facilitate successful online instruction (Dunagan, 2017; McGill et al., 2014; Surry et al., 2009).

Enablers for conventional online programs. Fish and Snodgrass (2019) identified a knowledge gap in the research related to instructor perspectives regarding online education. Current research has identified six main factors that were grouped under acceptance factors for e-learning. These factors were institutional incentives, computer self-efficacy, e-learning system, understanding of e-learning, institutional support, and enjoyment and self-efficacy (Meriem & Youssef, 2020). In addition, online education experiences were shown by Surry et al. (2009) to be a factor that reduced the amount of time needed to implement an online class and can therefore be seen as an enabler. This same study (N=236) found that inexperienced teachers ($n = 94$) viewed flexibility as an enabler to technology adoption. Experienced ($n = 93$), as well as inexperienced teachers ($n = 94$), saw professional development as a factor that positively contributes to online education (Surry et al., 2009). In the same fashion, Batholmeus and Pop (2019) viewed quality professional development as a significant enabler to innovation adoption. A fully functioning infrastructure (server space) and adequate financial resources associated with technology adoption should not be overlooked. Finally, a clear promotional track for teachers actively engaged in online education has also been shown to positively impact technology adoption by educators (Surry et al., 2009). This factor is directly related to the leadership in the school and is recognized as an enabler towards success in the literature (Radinger, 2014).

   Online CTE programs enablers. The existing literature is, at best, varied concerning the benefits of distance learning within technical colleges. Advantages listed in the international literature related to e-learning within technical colleges consist of student choice of content, as well as completion pace. Disadvantages related to students using e-learning deal with time

management demands and increased discipline needed to be successful (Belaya, 2018; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020). Blended learning goes back more than 200 years, with 19th century examples of education taking place through correspondence.

The traditional approach of exclusive face-to-face education within technical education has been taken to task through COVID-19. Perhaps the experiences of technical college stakeholders will develop resiliency in TSCG institutions through the findings of this research (ACTE, 2020). As the experiences of technical college stakeholders are gathered, one area of particular interest relates to the use of blended learning techniques by institutions and individuals. The superiority of blended learning within technical colleges is well established in the international literature (Belaya, 2018; Gouëdard et al., 2020; Latchem, 2017; Shdaifat et al., 2020). It should be noted that organizations that offer two forms of learning (face-to-face and distance learning) could be successful in eliminating the negative aspects of e-learning (Belaya, 2018). The "hybrid model has been recognized for offering greater time flexibility, enhanced opportunities for teacher-student interaction, increased student engagement in learning, reduced students' attrition, leading to increased student achievement and satisfaction" (Gouëdard et al., 2020, p. 28).

Educational instruction that utilizes face-to-face, as well as e-learning for instruction to grow students' practical knowledge and soft skills, is known as blended learning within technical education (Neal, 2020). The existing literature overwhelmingly supports the use of the blended learning approach in American online education (Coogle & Floyd, 2015; ACTE, 2020). In addition, international research confirms the hypothesis that blended learning is the best approach to online education within the technical college skills-based context (Belaya, 2018; Gouëdard et al., 2020; Latchem, 2017; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020). The

following issues may be eliminated through the use of blended learning: time restraints of face-to-face learning, lack of student-teacher interaction, increased student attrition, and lack of hands-on training opportunities (Gouëdard et al., 2020).

Perceptions of Administrators

School leaders play a critical role in regard to instruction quality and, subsequently, the level of learning achieved at a given institution (Radinger, 2014). The roles of administrators in relation to online instruction have not always been clearly understood, however. Nixon (2016) identifies several ways that successful educational administrators facilitate online instruction. For example, administrators can champion the needs of students with teachers, hire teachers that have the necessary skills for online education, and provide job description clarity for those instructors. It should be noted that higher education often assumes the best in relation to technology. This mentality is often present among higher education administrators (Nixon, 2016). The "positive project" mentality often present in administrators strongly suggests the need for this study's focus on practitioners. Unfortunately, faculty voices are sometimes not heard during the technology diffusion process (Simon, 2018). Administrators should seek increased communication and understanding of online instruction implementation (Schomaker & Bauer, 2020).

International Studies

America has been a global leader in online education but is less likely to market its CTE programs internationally (Gordan & Scholtz, 2020; Motlik, 2008). That being said, there is no shortage of online education research abroad (Belaya, 2018; Gouëdard et al., 2020; Latchem, 2017; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020). This in large part is due to the constant increase in new technologies, a global shortage of a trained workforce, and

the need for economic advancement in developing countries around the world (Safarmamad, 2005). While the United States lags behind several other countries in online VTE research (Belaya, 2018, Gouëdard et al., 2020; Latchem, 2017; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020), research suggests other countries may be able to relate. Daouk and Aldalaien (2019), for example, in their research identifying factors that affect the adoption of e-learning in the United Arab Emirates, did identify a gap in the research regarding this topic in their country. Online international research has also aggressively addressed the mandatory shift towards online education experienced during COVID-19 (Gouëdard et al., 2020; Laplante, 2020 Syauqi et al., 2020; Tanik Önal, 2021), which has been well documented in the United States as well (Darling-Hammond & Hyler, 2020; Kaden, 2020).

Enablers and barriers to online instruction have been identified at an international level as well. The international literature suggests that institutions should develop strategies to deal with future crises (Syauqi et al., 2020; Thelen & Robinson, 2019). Blended learning (face-to-face and online instruction hybrids) is strongly supported in the literature as a potential enabler to online education in the international technical education context (Belaya, 2018; Gouëdard et al., 2020; Latchem, 2017; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020). Potential barriers identified by Gouëdard et al. (2020) are negative student/teacher interaction and lack of teacher skill or training. In addition, Raman (2019) found that professional development should be specifically related to the local context.

Student Trends

The majority of the workforce is comprised of individuals that were born between 1977 to 2000. This generation is referred to as Generation Y and represents the largest potential target for CTE programs. Those students born from 2000 to the present are known as Generation Z. This

generation is highly skilled in media technology and depends on it heavily. Personal communication ranks very low in relation to their communication needs (Gordan & Scholtz, 2020). It is well documented that most students today enjoy increased curriculum choice and flexibility in course duration when accessing online classes. However, increased time management demands, as well as the increased maturity needed to become a self-directed learner, are seen as potential negatives. In addition, decreased social skills and isolation may begin to surface as the number of online-only majors increase (Belaya, 2018; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020).

Summary

The National Association of Student Financial Aid Administrators states that COVID-19 has caused unemployment levels to reach Great Depression proportions (NASFAA, 2020). For example, it has been said that "more than 20 million Americans lost their jobs in April 2020 alone" (Burki, 2020, p. 758). In addition, trends during the pandemic are showing resignation numbers for teachers in a situation that could be referred to as the "The Great Resignation." Page (2020), for example, highlights that one out of five teachers have serious concerns about physically returning to campus. Lange (2020) highlights a growing shortage of CTE teachers, specifically. Darling-Hammond and Hyler (2020) see the continuation of this trend and the likelihood of budget reductions as an increased justification for supporting and meeting the anticipated needs of educators. Increased enrollment trends during times of poor economies also mimic the previously mentioned trends during the Great Depression. The current economic downturn will cause an increase in the demand for teaching new skills to tomorrow's workforce (NASFAA, 2020). Funding uncertainties have also taken their toll on staff and faculty who are not sure if their current employment will persist into the future (Stanistreet et al., 2021).

Institutional leaders, as well as practitioners, need current, context-specific information that will better equip their institutions and departments for the future (Koeslag-Kreunen et al., 2018). In addition, understanding which distance learning benefits were experienced and leaning into the challenges faced by colleagues will better position practitioners for future technological changes (Simon, 2018; Surry et al., 2009).

This literature review synthesizes the existing research related to technical education teacher experiences with online education within the TCSG. A gap in the existing literature exists because researchers have not adequately addressed factors that contribute to e-learning adoption at the technical education level within the United States (Brainerd, 2020; Fish & Snodgrass, 2019). The theoretical lens reviewed in the literature directly relates to the following aspects of DOI: innovation studies in education, innovation/adopter characteristics, and the decision process related to innovation adoption. Related literature provided in this section is intended to bring contextual clarity to CTE through a discussion of the history, funding, and information related directly to the system in which the research occurs, TCSG. In addition, responses within higher education as well as CTE were included due to the tremendous influence that COVID-19 has had on all levels of education. Finally, an extensive look into online education concerning self-efficacy, barriers, as well as enablers is also included. No research exists on the TCSG technical college-level concerning distance learning post-COVID-19. The theoretical framework provided by DOI increases the clarity regarding technical education experiences related to online education. Finally, online education research within the United States has, for the most part, forsaken the technical education system. Research is desperately needed to meet this need before future pandemics occur or major labor market shifts increased demand for more distance learning capabilities. In addition, it is not advisable to assume that

trends, benefits, and challenges associated within higher education are transferable from other

countries. Furthermore, technical education research from foreign countries related to distance

learning before and after COVID-19 may not be applicable in the United States, or more

specifically, to technical education within Georgia.

CHAPTER THREE: METHODS

Overview

This chapter presents the procedures, research design, and analysis intended for use in this study. Clear insight is provided into research design, questions, setting, participants, and demographics. The researcher positionality is explained in terms of an interpretive framework with philosophical assumptions (ontological, epistemological, and axiological assumptions), as well as the researcher's role. Procedures are included, to the extent that the study could be replicated in terms of permissions, as well as a recruitment plan. The data collection plan includes individual interviews, document analysis, and focus groups. A research journal will also enable critical reflexivity throughout the process. The purpose of this collective case study was to describe teacher experiences related to the use of e-learning within TCSG institutions. E-learning is generally defined as instruction that is facilitated through the use of a computer and the internet (Belaya, 2018; Johnson, 2018). To accomplish this purpose, the chosen methodology will be used to understand the pandemic response and to pave the way for appropriate policy responses for technical colleges in the future (Maria & Serpa, 2020). The data produced by this research comes from studying the experiences of actors that adjusted to drastic shifts towards distance learning instructional models during the pandemic (Bhattarai, 2020; Johnson, 2018; Ohanu & Chukwuone, 2018; Shadaifat et al., 2020; Syauqi et al., 2020; UNESCO, 2020). This chapter concludes by taking all the data from triangulation to synthesize the findings. In addition, trustworthiness, credibility, transferability, dependability, confirmability, and ethical considerations are also be included in this chapter.

Research Design

Yin (2018) refers to research design "as a blueprint for your research" (p. 26). This research utilizes a qualitative analysis to explore distance learning as an experience of technical education teachers within the Technical College System of Georgia (TCSG). This collective case study has a clear precedent in the literature for exploring COVID-19 responses of 2020-2021 (Sumardi & Nugrahani, 2021; Syauqi et al., 2020; Uluöz, 2020). Quantitative methodology, however, seeks to evaluate or assess a given situation through the use of a hypothesis that ultimately will grow into a theory (Gall et al., 2007). The paradigm for this research adheres to a deductive methodology which allows for a deeper understanding of participant experiences (Creswell & Poth, 2018). In addition, issues like validity and reliability are replaced in qualitative research with believability and transferability (Tanik Önal, 2021). Qualitative methodology is warranted for this research because the research aims to holistically explore the complexity of the selected cases within the TCSG as it relates to the following phenomenon: accurately describe technical education teacher experiences regarding online education instruction within the two individual cases as well as a cross-case analysis (Ebneyamini & Sadeghi Moghadam, 2018; Yin, 2018). The qualitative methodology allows open-ended 'how,' 'why,' and 'what' questions in naturalistic settings (Creswell & Poth, 2018).

The design path chosen for this scientific inquiry rests squarely on the multiple case study approach. This research explores the 'real-world' perspectives of teachers related to how they have used online education instruction and why they believe their experiences were successful or unsuccessful (Selim et al., 2020). The case study design was chosen because it allows participant experiences to shape the results and the participants to tell the story as they see it. In addition, the case study design enables the researcher to unpack more complex experiences in cases with more

than one data collection technique where there is not a singular outcome (Lucas et al., 2018; Tanik Önal, 2021). For example, teachers have varying exposure levels in relation to e-learning (Laplante, 2020). Peterson (2019) utilized multiple case studies to research teachers' perceptions regarding online instructional technology that highlighted barriers to adoption. More specifically, the collective case approach provides an in-depth depiction of how institutions, departments, and individuals have utilized distance learning within the institutions.

As previously stated, this research used a collective case approach to explore the experiences of teachers within at least two units of analysis within the TCSG. Each of the two cases was chosen because the 100% online instruction adoption rate of technical education teachers was previously inaccessible to scientific inquiry (Yin, 2018). The two cases are represented by at least two technical colleges from the TCSG, the bounded system. This focused research on the phenomenon being studied in general versus at a specific institution (Creswell & Creswell, 2018). This study is bound by area of place (TCSG), situation (100% adoption of e-learning during pandemic response), and time (January 2021 to present) (Harrell, 2017; Hartley, 2019; Parlier, 2016). Teachers' prior experiences with online education during the previously described bounded case are essential to the chosen research design. In many ways, the findings from this research could serve as an antecedent to a larger exploratory study.

Research Questions

The following research questions were addressed in this research:

Central Question (CQ): How do technical education teachers at TSCG institutions describe their individual experiences utilizing online education?

Sub-Question (SQ1): How do technical education teachers at TCSG institutions evolve as e-learning adopters?

Sub-Question (SQ2): How do technical education teachers at TCSG institutions describe the perceived attributes of the innovation?

Sub-Question (SQ3): How do technical education teachers at TCSG institutions foster student success in their e-learning classrooms?

Sub-Question (SQ4): Why do some technical education teachers at TCSG institutions express resistance to e-learning instruction?

Setting and Participants

The mission of theTCSG focuses on developing a workforce that has global marketability. This is done through technical education, adult education, as well as business and industry-specific training. Distance education, including hybrid models, is strategically targeted by the TCSG. The Georgia Virtual Technical Connection (GVTC) is a department with the TCSG that designates staff for the express purpose of collaborating with faculty to increase online curriculum within departments. Specifically, GVTC utilizes virtual collaborative environments (VCE) as well as alternative content formats (ACF) to further increase instructors' ability to leverage the virtual platforms through accessible content uploads (Technical College System of Georgia, 2020). The TCSG's most recent initiative is the e-Campus consortium. Under e-Campus, students are given access to courses beyond their home campus. This initiative increases options for students, further increasing the demand for distance learning within the system (Selingo, 2012; SCTC, 2020). This study intends to explore experiences within Georgia technical colleges that have incorporated distance education into their instruction. The expectations for vocational education training (VET) to equip the workforce are continuously increasing (Belaya, 2018). Participants were technical school educators that have either chosen to deploy e-learning technologies or lagged in its diffusion.

Site

Technical colleges within the TCSG were specifically chosen due to the extensive research gap related to the use of CTE within Georgia and a larger extent, the United States. For example, e-learning is mainly researched in the international vocational and technical education context (Belaya, 2018; Shdaifat et al., 2020; Syauqi et al., 2020). The issue of the feasibility of distance education, however, continues to be largely unresolved (Eom & Ashill, 2016). The presidents at technical colleges across the state of Georgia serve at the pleasure of the TCSG Commissioner. As the state-wide agency responsible for all technical colleges within the state of Georgia, the TCSG provides oversight and leadership for 22 technical colleges and 85 satellite campuses (West, 2017).

The chain of command for all technical colleges in Georgia begins with the TCSG. The college president serves at the pleasure of the TCSG Commissioner. This research uses pseudonyms for the following units of analysis: Longleaf Pine Technical College (LPTC) and Shortleaf Pine Technical College (SPTC). The TCSG Commissioner begins the top-down approach to leadership at LPTC as well as SPTC. For example, the President of LPTC makes all final hiring decisions at the college for both the main, as well as the satellite campuses. The senior leadership also make all final decisions regarding budget allocations within individual departments and programs.

Participants

Participants were selected using a purposeful sampling technique that enlists criterion sampling (Patton, 2015). This technique requires that teachers be employed from January 2020 to the present and be aware of the e-learning shift that took place during this time (Tanik Önal, 2021). SPTC has approximately 20 to 60 full-time instructors working on two campuses. LPTC

has a total of 250 to 850 full-time instructors working on its three campuses (IPED, 2020). A purposeful sample of a minimum of 12 to 40 instructors were intentionally selected from LPTC and SPTC within the TCSG (West, 2017), which are the specific multiple cases being studied (Creswell & Poth, 2018). Tanik Onal (2021) utilized a similar sample size (n=16) in an embedded single-case study exploring perceptions of science teachers related to technology in six different schools or units of analysis. More specifically, Ertmer et al. (2012) utilized 12 teachers in a purposeful sample when performing a multiple case study regarding teacher perceptions. The sample size of sixteen was not intended to represent a whole, but rather provide a basis by which larger quantitative studies may be achieved (Tanik Onal, 2021). The goal for the research is not to acquire a representative sample, but rather, deeply explore the experiences of teachers to accurately describe individual journeys. Each case is believed to represent the reality of innovation adoption within the TCSG within the two cases. In addition, there may be some direct replication implication that exists in the data from a cross-case analysis (Yin, 2018). This approach was achieved by utilizing a sampling strategy that incorporates saturation (Yin, 2018). This approach also identifies indicators and themes that may be utilized to make inferences about crisis response practices as well as corporate trainings.

The collective case design utilized two different units of analysis (technical institutions) within the TCSG for data collection/analysis replication. Data collection leveraged multiple data collection methods and was completed in a natural education settings occurring within the TCSG (Ebneyamini & Sadeghi Moghadam, 2018). Maximum variation sampling, a type of purposeful sampling, was used to increase diversity within the sample and data analysis. Demographics purposefully targeted for maximum variation were age, ethnicity, and gender (Patton, 2015). The identity of all research participants was protected through the use of pseudonyms. The

institutions targeted for this collective case study were two technical college institutions within the TCSG that previously experienced COVID-19 mandatory shutdowns and subsequent online instructional shifts (ACTE, 2020; Neal, 2020). More specifically, this multiple-case study sought to holistically identify the level of e-learning at these two institutions (Belaya, 2018; Shdaifat et al., 2020; Syauqi et al., 2020). The goal was to obtain a deeper understanding of the selected bounded case. A strength of the case is that this methodology accounts for the 'how' and 'why' as well as the 'what' of the phenomenon being studied (Lucas et al., 2018). The cases being addressed in the study is bounded by TCSG institutions only, as well as by time. The time restraint corresponds with the recent pandemic and its aftermath (January 2020-present), a recent phenomenon that represents an unprecedented level of adoption of online education within technical education (Neal, 2020). It is important to note that individual interviews are kept separate from any findings or positions that deal directly with the institution and not the teacher (Yin, 2018, p. 102).

Researcher Positionality

I experienced the sudden and unexpected change in the mode of educational delivery utilized by my employer (TCSG institution) at the start of the pandemic in March of 2020. All of our efforts to serve our student body virtually were reactionary within my department. We had no proactive crisis management plan in place. Nerveless, I located various learning management systems (LMS) and virtual platforms to accommodate the temporary shelter-in-place mandates. I witnessed the struggles of some colleagues during this transition as well as many personal and corporate successes related to the transition. With the likelihood of future shifts towards distance learning, enablers and barriers should be better understood in an effort to increase crisis management preparedness (ACTE, 2020; Neal, 2020; Shdaifat et al., 2020). The qualitative

research design assisted in keeping technical education teacher experiences within the cases as the objective. This teacher focus was maintained by exploring teacher experiences through broad questioning in face-to-face interviews and focus group settings within the context of the selected institutions. I, the primary researcher, have no authority over participants, and therefore, am better able to remove any influence over responses. The one-on-one, in-depth, and face-to-face interviews comprised the data collection ranging from general information to more specific themes (Creswell & Poth, 2018). This deductive research approach is inherently qualitative and allows the themes to emerge from the bottom up (Creswell & Creswell, 2018). A major assumption of this research is that technical education will be stronger if more teachers are ready to utilize e-learning instruction. That being said, my research is intended to produce practical results from technical education teachers' views regarding online instruction within the TCSG.

Interpretive Framework

A pragmatist approach to research undergirds this scientific inquiry. John Dewey's pragmatist approach to qualitative inquiry focuses on producing useful results that could provide direction for future decisions (Delgaty, 2017; Harrell, 2017). The research intended to produce useful results for technical education practitioners from the inquiry into technical education experiences (Patton, 2015). This research seeks to learn from the technical education teachers' online instruction experiences to produce useful information for decision-makers. The study is designed to capture teacher experiences through the lens of DOI adopter descriptions as well as innovation influencers and characteristics (Kaminski, 2011; Selim et al., 2020). The practical results produced from the deductive approach centers on asking open-ended questions that further capture teacher experiences. This is not to say, however, that I adhere to the rationale that there is no absolute truth or that my approach to pragmatism does not include a constructionist

view to knowledge (Patton, 2015).

Philosophical Assumptions

The motivation behind this research is to strengthen the TCSG's response to future health crises through increased diffusion of online instruction. This is best done by understanding the experiences and perceptions of instructors in relation to online instruction. It is my conviction that Christian leaders have a responsibility to be active participants in the development and dissemination of knowledge as guided and determined by our Christian worldview. For example, academia desperately needs contributions in the literature that adhere to a rigorous scientific method guided by a Christian worldview. When academia sees an increase in the number of Christian scholars who are willing to engage in research that clearly identifies their Christian worldview bias, we will begin to see more research built on the premise that all truth originates from God. My motivation in life, as well as research, is to be used by the Father for His glory and honor. The Bible says that "we are His workmanship, created in Christ Jesus for good works, which God prepared beforehand that we should walk in them" (New King James Version, 1979/1997, Ephesians 2:10).

Ontological Assumption

Ontology focuses on characteristics of reality and the variation among individuals (Creswell & Poth, 2018; Hana, 2020). My realist ontological worldview holds that there is absolute truth, but at the same time, acknowledges that there can be more than one application of valid results. For example, research suggests that there are levels of understanding in a given phenomenon that go deeper than quantifiable data (Jowers, 2020; Kazi, 2001). My ontological philosophy centers on the fact that there is absolute truth, but my pursuit of this truth is less than perfect. This reality is what makes unique perspectives so important. My worldview is based on

my belief in Jesus Christ and the living Word of God that speaks of His return. The Word of God is the one source of infallible truth for the believer. A major ontological assumption in this study is that valuable knowledge could come from the individual's experience represented in the results.

Furthermore, it is through a growing understanding of God and His creation that clarity comes on this side of glory. In many ways, I believe that a clear understanding of truth is constructed in our lives over time through the ministry of the Holy Spirit. It is for this reason that I lean towards a social constructivist perspective in my epistemology (Jowers, 2018). John Dewey, a leading constructivist, suggests that knowledge is developed through experience. Constructivism is a fundamental building block to modern education and is used in this research to give voice to the individual stakeholder (Cartelli et al., 2008). One assumption related to this philosophical worldview is that research participants 'construct' different experiences in relation to e-learning (Ültanir, 2012). In addition, these meaningful experiences provide the building blocks to construct current knowledge associated with the use of e-learning at the technical college level (Creswell & Creswell, 2018). Thankfully, God has given us the Holy Spirit to lead and guide us in the ways of all truth (New King James Version, 1979/1997, John 16:13). Finally, it should be noted that God's truth supersedes the world's influence on reality.

Epistemological Assumptions

Epistemological assumptions deal with how knowledge is identified and subsequently justified. Nestled within this assumption is the juxtaposition of the researcher in respect to the topic being studied (Creswell & Poth, 2018). The realist approach seeks to explore a given phenomenon by identifying a singular reality surrounding it (Patton, 2015). This study takes a subjectivist view of knowledge/reality but not to truth. This study seeks a deeper understanding

of the experiences related to e-learning within the two TCSG institutions targeted for this research. Data was protected against bias through a deductive qualitative research design (Creswell & Poth, 2018). My epistemological approach to this research comes from personal experiences related to the complexity of online classroom instruction.

Axiological Assumptions

Axiological assumptions deal with the influence of values on the research (Creswell & Poth, 2018). The axiological underpinning to this study does not attempt to claim fault for barriers identified by teachers. Rather, the researcher takes a "value-stance" that the teachers' views related to e-learning are important and valuable (Creswell and Poth, 2018). Participants' values, meaning, and interpretations provided a richer understanding of the use of or resistance to distance learning within technical education (Kazi, 2003). A clear assumption to this formative research is that the findings are intended to improve current practice within the TCSG (Patton, 2015). The worldview that this research is grounded in is based on the Biblical value that we should "do nothing out of selfish ambition or vain conceit. Rather, in humility value others above yourselves (Philippians 2:3, New International Version).

Researcher's Role

As the primary researcher for this study, I am the human instrument for this study. The methodological path for this research is inextricably linked to two and a half years of experience working in technical education as well as experiencing the distance learning mandates of COVID-19 within the selected institutions. My past experiences as a technical education instructor have dramatically influenced my role as a qualitative inquirer. In addition, I am currently employed at LPTC as a high school equivalency teacher. My position has no supervisory responsibility associated with it in relation to the research participants. Adequate

reflexivity was required at every stage of research. Creswell and Creswell (2018) encouraged the researcher to critical reflexivity to identify potential influences that could impact how the research is done. My preconceived ideas about the necessity of institution-wide distance learning preparedness have no doubt impacted my interpretation of the research findings and even the direction of the overall inquiry. Although my assumption that blended learning is the absolute best approach to online education is grounded in the literature, it is an assumption just the same. While my assumption influences how I view participants' experiences regarding online instruction at technical colleges, it did not influence how the data was recorded. That being said, teachers were encouraged to express their views regarding the phenomenon being researched.

Procedures

Human subjects were used in this research. Therefore, ethical considerations were seriously considered before the initiation of any element of the proposed research were initiated. The research underwent the following formal approval process: careful reviews of the dissertation chair and committee, institutional approval for data collection, and review by the Institutional Review Board (IRB). In addition, the IRB certification process entitled Social and Behavioral Research was also completed (Yin, 2018). The IRB approval process started with the IRB application and resulted in the approval letter ethics office at Liberty University. After IRB approval was received (See Appendix A), contact with the teachers was initiated at the institutions targeted in this collective case design. Site approval was secured for the two cases prior to IRB approval (Yin, 2018). The procedures for site approvals are discussed in detail below. Interviews were open-ended and orchestrated in such a way to make participants comfortable communicating their views. Documents identified by teachers as being important to make their points were welcomed and solicited during the semi-structured interviews (Lucas et

al., 2018). A focus group was also utilized in conjunction with the previously described sources of data. This data was be synthesized using a technique called triangulation, a strength of collective case study data collection (Yin, 2018). The procedures intended for this research are summarized here as follows:

1. Secure committee approval for research prospectus.

2. Site approval by the institutions/cases within the TCSG.

3. IRB submission and approval for educational research involving human subjects.

4. Solicit administrators at approved institutions to generate a potential participant list of technical education teachers that could be targeted for data collection.

5. Send an initial consent-form email encouraging technical education teachers to complete a brief demographic survey.

6. Schedule and initiate face-to-face interviews scheduled and initiated.

7. Begin data analysis after the first interview.

8. Compile available documents and initiate analysis.

9. Initiate the focus group interview.

10. Perform data analysis for the focus group as well as assess research journal observations.

Permissions

The research did not begin without IRB approval letter (See Appendix A). Consent forms provide an in-depth knowledge of the nature of the research as well as an assurance of confidentiality (See Appendix B). Criterion sampling focuses on participants that can produce content-rich data specific to the research purpose (Spindler, 2011). The president of the SPTC and the Institutional Research Analysis at LPTC were both contacted for institutional approval.

Research participants' identities were protected through the use of pseudonyms in an effort to limit any potential for negative retaliation due to their responses (Kaden, 2020). As previously stated, data collection intentionally focused on participants located within the TCSG system. Data security procedures include lock and key protection of original manuscripts that will be destroyed upon the fulfillment of the Ph.D. requirements. The same technique was used to protect teachers' identities with respect to their perceptions regarding job satisfaction (Bailey, 2018).

Recruitment Plan

The criteria for the purposeful sample used in this study adhered to the following conditions: participants were targeted who self-identify as being aware of online instruction and having an employment history that includes the bounded time constraint of January 2020 to the present (Dring et al., 2020). A range of 12 to 40 instructors who were employed from January 2020 to the present were targeted in this study. Participants were recruited through at least two college representatives in the selected cases. The administrator list included contact information and position title. An email (N=236) was sent to potential participants including a link to SurveyLegend. This link initiated a consent form as well as prompted the teachers to answer some demographic questions (See Appendix C). Completion of these two forms preceded face-to-face interviews (Hanna, 2020). The consent form included the research purpose as well as the importance of their participation. In addition, the data collection methods were also clearly explained in the consent form (Spindler, 2011). Johnson (2018) utilized similar techniques when investigating teacher perceptions of online management systems. Many international studies have also assessed online learning within the vocational context using recordings and face-to-

face interviews as data collection methods (Faltynkova et al., 2020; Ryan, Rabbidge et al., 2019; Wang & Han, 2017).

Instructor inclusion on this list was only limited by the administrators' judgement and the maximum variation sampling strategy that correlated to participant demographics (Patton, 2015). For example, number of years served did not limit a teacher's participation in this research, thereby increasing the likelihood that sample variability will exist. The selection of potential participants was only bound by the time restraint previously mentioned and the administrator's decision to include them on the lists. As previously stated, the sample pool were teachers that were employed by their prospective colleges at some point during March 2021 until the time of data collection. In this way, the research utilizes purposeful sampling (Patton, 2015; Schoch, 2016, Yin, 2018). This is almost certainly all instructors employed at the technical college, minus any new hires.

Data Collection Plan

The data collection strategy used in this research facilitates the collective case study by focusing on the experiences of technical education teachers. Data collection activities were done in such a way as to provide in-depth, rich descriptions. This research systematically approaches the problem of a lack of institutional knowledge of the phenomenon by collecting data through a triangulation approach. Multiple sources of evidence were utilized to increase the quality of the results and thereby increase the usefulness of the study (Yin, 2018). Data collection procedures focused on the following three methods to be implemented in the sequential order in which they appear: face-to-face interviews, documentation, and focus group interviews (Creswell & Creswell, 2018; Creswell & Poth, 2018, Yin, 2018).

After securing IRB approval, instructors were contacted regarding the opportunity to participate in the research. The rationale suggested here strategically deploys these qualitative techniques in such a way that the data collection moves from the general to specific, further making the research approach inherently qualitative or deductive (Creswell & Poth, 2018). It should be noted that the specific data collection strategies listed in this chapter were adjusted over time, as the inductive approach allows the direction of the research to emerge over time (See Appendix D).

Individual Interviews

The interview protocol for this study focuses on exploring technical education teachers' feelings and experiences that directly correlate to the theoretical framework of the study (Hana, 2020). Conversational interview questions were used to explore teacher perceptions concerning the use of distance learning within technical education. These open-ended questions explored the forces for and against the diffusion of this technology at a given institution within the TCSG.

These interviews are intended to be open-ended, and semi-structured. The use of primary data, like open-ended interviews, demands the research be done at the convenience of the participants' schedule in qualitative data collection. In addition, secondary data like that of historical documents and data enable the researcher to access the information at their leisure. The semi-structured nature of the face-to-face interviews more closely mimicked guided conversation rather than highly structured inquiries (Yin, 2018). Virtual interviews, when needed, utilized Blackboard Collaborate to complete the semi-structured interviews. Each participant was asked the same questions over a 30 to 45-minute time period (Hana, 2021). Some questions may have been asked again during an interview in an attempt to probe and go deeper with a participant (Patton, 2015). All interviews were recorded and transcribed verbatim for coding. Instructor

interviews initiated the multi-step data collection process. In addition, interviews were converted to Word documents and analyzed in much the same way that Tanik Önal (2021) did when studying technology integration with case study methodology.

These interview questions were adapted from Johnson's (2018) dissertation research evaluating teacher perception of online learning management systems (LMS) within a technical education case and are listed here as follows:

Individual Interview Questions

1. Please describe your online instructional experiences. CRQ

2. Describe how much autonomy you have regarding online instruction design at your institution. SQ1

3. Whom do you identify as an online-instructor mentor? SQ1

4. How do you currently serve as a mentor for online instructors? SQ1

5. How does the process of instruction evaluation work for your online classes? SQ1

6. Describe how you foster student success in your online education classrooms. SQ3

7. What professional development opportunities have you had that you feel prepared you for online education? SQ3

8. Describe the challenges you experienced when working with e-learning technology for classroom instruction. SQ4

9. What alternatives do you feel are better than e-learning classroom instruction? CRQ

10. Describe how useful you feel distance-learning technology is in accomplishing your institution's mission. CQR

11. How do you perceive that using e-learning instruction has affected students (Johnson, 2018, p 101)? CQR

12. Describe the challenges you've faced while using e-learning to teach hands-on skills.

    CQR

13. What else would you like to add to our discussion of your experiences with online

    education? CQR

Individual Interview Data Analysis Plan

As the primary researcher, I was the primary interpretive instrument during individual

interview data analysis (Webb, 2021). The data analysis occurred simultaneously with data

collection to foster a qualitative deductive approach throughout the study. In addition, data

collection was ongoing throughout the research until a point of saturation was reached (Spindler,

2011). The conceptual framework previously listed also guided the analysis of data. The intent

behind analyzing semi-structured, open-ended interviews was to identify reoccurring themes as

they relate to the DOI theoretical framework. Rogers (2003) identified five stages of the

innovation process with the DOI theoretical framework. The five stages of innovation-decision

are as follows: knowledge, persuasion, decision, and implementation, confirmation. These five

stages are listed in Figure 3 (Proctor, 2018).

Figure 4

Rogers' Innovation Decision Process
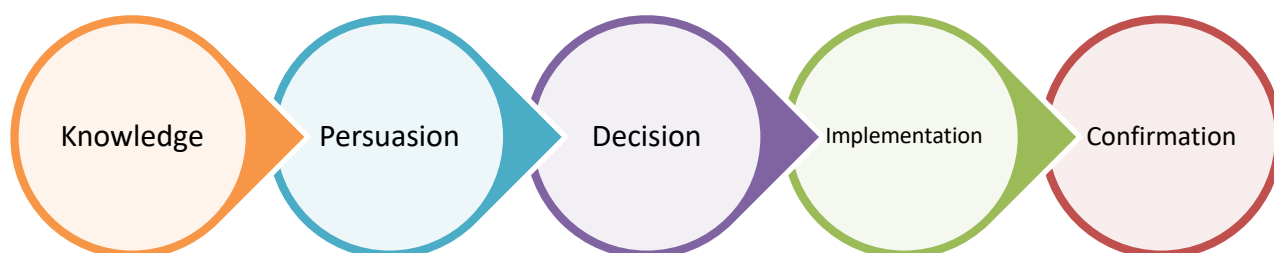
These stages provided a theoretical lens to explore the experiences of technical education teachers in relation to online education. The stages of innovation begin when a participant becomes aware of the technology. The participants' awareness ultimately grows into an opinion regarding the innovation. It is during the persuasion stage that innovation characteristics most influence the acceptance or rejection of the innovation (Rogers, 2003). This opinion dictates the decision to adopt or reject the innovation. If the innovation is perceived positively, the participant typically moves toward implementation and potentially confirmation (Johnson, M.E., 2019).

Transcripts were coded for phrases of particular importance in relation to the research questions. In a foundational work entitled *The Coding Manual for Qualitative Researchers,* Saldaña (2016) defined coding as "a word or short phrase…" that gives comprehensive meaning in the data (p. 3). This research utilized coding to prepare the transcribed data for analysis. Patterns identified through coding were refined throughout the data collection and analysis process. As previously stated, the codes were connected to one of the four research questions. In addition, cyclical coding was used in this research. Each transcript was recoded at various junctures of the process and thereby linear data analysis was avoided in favor of cyclical development of themes. These themes came from reducing previously identified codes (Hana, 2020). Codes were placed into categories by identifying important experiences that occur with regularity (Hana, 2020). The second cycle of coding not only eliminated some codes but also identified categories within the data that adhered to the theoretical framework (Saldaña, 2016). In addition, the codes, themes, and categories were evaluated for replication potential related to the collective case methodology (Yin, 2018). Research journaling was also utilized when coding.

Explanations within these notations could prove valuable during document analysis (Saldaña, 2016).

Document Analysis

Documentation in this research included any records or correspondence offered by technical education teachers that could help communicate their experiences. A total of 11 documents were acquired that came from spending time in the context being studied (Patton, 2015). Document analysis is a proven technique within existing literature for developing overarching themes from transcripts (Rogers, 2018; Yin, 2018). Some examples of document data include, but are not limited to, personal diaries, letters, and written responses (Patton, 2015).

Document Analysis Data Analysis Plan

All documentation that adheres to IRB guidelines, is made accessible by teachers, and that helps tell their story were analyzed as data. Communication with colleagues that help tell their story was also welcomed. The research questions dictate the type of data being collected (Schoch, 2016). The research questions within this research each dealt with instructors' experiences with e-learning. Therefore, more specific examples of anticipated documents that may be given by teachers or produced during the research included intuition-wide communication related to online classes, course syllabus, grading sheet, and field notes from laboratories. Documents have the potential to provide added clarity concerning teacher experiences and the context within the case(s) (Delgaty, 2017). Documents are intended to reinforce themes and categories and are therefore not mandatory for all participants. In addition, a thematic content analysis may also identify information yet to be recognized in cycle one or two coding (Delgaty, 2017).

Focus Groups

A Focus group (virtual) were offered to all 16 research participants who completed face-to-face interviews and the meetings served as a filter to eliminate extreme viewpoints (Largent-Necessary, 2021; Patton, 2015). A WebEx focus group meeting was used to validate codes and themes related to technical education teachers' personal experiences in relation to the phenomenon. In addition, one combined group meeting (LPTC and SPTC) concluded the triangulation data collection strategy in the study. A total of four teachers were encouraged to assess their own experience in a social context (Largent-Necessary, 2021). This session was recorded and shared with each research participant for accuracy and clarification. Onyura et al. (2017) utilized focus groups in conjunction with semi-structured interviews as part of the triangulation data collection strategy. The 'why' and 'how' questions asked during the focus group sessions encouraged teachers to communicate what they have experienced when working with distance learning instruction. Rogers' (2003) DOI theory contends that interpersonal communication about the innovation is essential for adoption. Research suggests that the experiences of peers have a significant impact on an individual decision to adopt a particular innovation (Costa & Walsh, 2018; Proctor, 2018). Patton (2015) also highlighted the social setting component of focus group data collection. This data gave keen insight into the degree of diffusion online learning has reached for technical education teachers.

Focus Group Questions

The focus group sessions are paraphrased from Largent-Necessary's (2021) dissertation research evaluating teacher efficacy in relation to a career and technical education innovation.

Focus Group Questions

The focus group sessions are paraphrased from Largent-Necessary's (2021) dissertation

research evaluating teacher efficacy in relation to career and technical education innovation.

1. Please introduce yourself to the group and describe your area of expertise in Career and Technical Education (CTE).

2. Describe your experiences during mandatory school closures while using online education (CQ).

3. Describe the current system that your institution uses to evaluate online instruction (SQ1).

4. What benefits do you see of mentoring within online education (SQ1)?

5. On a scale from 1 to 10 (10 being the most useful), how useful would you say online education is in technical education? Why do you classify online education within CTE the way that you do (SQ2)?

6. What are some aspects of online instruction that have been particularly challenging and what support have you received when you have faced challenges? (SQ3)?

7. How do your traditional instructional practices change when implementing online instruction (CQ)?

8. What barriers exist in your college in relation to online instruction implementation (SQ4)?

9. What solutions currently exist to meet the previously mentioned barriers (SQ3)?

10. What documentation do you have that helps communicate your experiences related to online education (CQ)?

Focus Group Data Analysis Plan

Data collection activity culminated with focus group interviews. The purpose of the focus group sessions, as previously stated, were to validate the data collected, identify any outliers, and

further investigate existing themes previously identified in semi-structured interviews (Largent-Necessary, 2021). Focus group results are often paired with semi-structured, open-ended face-to-face interviews (Parlier, 2016). Focus group audio recordings and transcripts were evaluated in a social context and thereby reduce the likelihood of the inclusion of extreme viewpoints (Patton, 2015). Manual coding was applied in focus group data analysis in a way that is consistent with an inductive inquiry. This research was cyclical and not linear in its approach. This enabled the coding of categories and themes developed from the data to constantly be reassessed and changed, if needed (Saldaña, 2016). Each transcript was analyzed for themes during the initial reading (cycle one coding) as well as subsequent readings of transcripts (cycle two coding) (Largent-Necessary, 2021; Saldaña, 2016). These results were compared with semi-structured face-to-face interviews as well as document analysis in an effort to triangulate the findings.

Data Synthesis

A qualitative thematic analysis was used to evaluate data with a time series analysis in an effort to maintain flexibility (Largent-Necessary, 2021). A similar approach was deployed by Braun & Clarke (2006). Chronological sequence is often used in case studies due to its ability to make space for time within the analysis (Creswell & Creswell, 2018; Yin, 2018). This is especially important in this study when considering how perceptions may shift for participants post-COVID-19. In addition, the theoretical framework utilized to assess the results and formulate the methodological rationale for this distance learning research focuses heavily on the adopter and innovation characteristics (Rogers, 2003). The rationale for the theoretical framework looks carefully into the 'how' and 'why' attributes of the innovation being studied (Rogers, 2003). The three characteristics of innovations exposed by this research rationale are advantage, compatibility, and complexity. Variations related to teacher experiences are

anticipated and their conviction as to their perceived relative advantage of e-learning should be no different (Laplante, 2020).

Transcripts/recordings from semi-structured interviews and the focus group were coded individually initially. This process of establishing meaning to phrases began the decoding process. Cycle one resulted in attaching initial codes to the data through a process called encoding. Cycle two coding provided the opportunity to synthesize the data by further exploring previously reviewed transcripts at various stages of the analysis process (Saldaña, 2016). Data analysis reconciled the number of participants with the ability to extrapolate findings beyond the cases included in the study. Next, any potential bias regarding the themes produced by teachers at the institutions were identified and intentionally avoided. Finally, the research deployed thematic analysis across respondents, as well as the previously mentioned data collection strategies (Braun and Clarke, 2006; Creswell & Creswell, 2018). Causal visuals were also used to accurately communicate cause and effect phenomenon related to the use of distance learning within technical education at TCSG institutions (Yin, 2018, p. 186). Triangulation occurred by allowing the themes to emerge over time. These findings culminated with individual face-to-face interviews with teachers. Finally, the triangulation nature of this data analysis was finalized with semi-structured interview transcripts, document analysis (inter-department communications, course specific information and college-wide documentation), and the focus group transcript.

Trustworthiness

Trustworthiness is only achieved in qualitative research when credibility, transferability, dependability, and confirmability are intentionally addressed (Hogan, 2021). When the research findings are true and credible, trustworthiness is accomplished by default (Hana, 2020). The issues of trustworthiness in qualitative research also focus on observability, transferability, and

reliability (Tanik Önal, 2021). The section for the researcher's role in this chapter is intended to increase internal validity by inserting transparency in respect to the researcher's role in the study (Tanik Önal, 2021). The scriptures teach us that "whoever walks in integrity, walks securely, but he who makes his way crooked will be found out" (New King James Version, 1979/1997, Proverbs 11:14). The research considers the issues of credibility, dependability, and confirmability to ensure adequate measures have been taken. In an effort to be as transparent as possible, rich detail is provided concerning technical education teachers. Their descriptions regarding online education are provided as they were communicated to increase autonomy for how the reader applies the results (Hana, 2020).

Credibility

The goal of the research findings is to accurately represent reality and thereby achieve credibility (Shenton, 2004). Variation in relation to data collection methods typically increases credibility in qualitative research (Patton, 2015). This variation may be accomplished by using triangulation in data collection (Dintoe, 2018). For example, this research used semi-structured interviews, as well as document analysis to insert variation into the study (Lucas et al., 2018; Tanik Önal, 2021). The research adequately represents the reality of the phenomenon being studied. Member checking was utilized to increase credibility by allowing participants to confirm their experiences on transcripts (Hana, 2020; Hogan, 2021).

The sequence of data collection also contributed to credibility within this research. Face-to-face interview participants were purposefully selected with careful attention towards diversity within the sample. Credibility for this research directly relates to the specific case being studied (Shenton, 2004). Finally, triangulation data collection strategies offset any one weakness associated with a given method. This technique helped ensure validity and accuracy (Creswell &

Poth, 2018; Shenton, 2004). Limitations exist when trying to extrapolate results to other technical college systems. Much of the research that exists in the literature relates to international technical colleges. The findings from this study were assessed in a group context to further increase credibility.

Transferability

Transferability is the ability to extrapolate the results of the study to other situations and contexts (Hogan, 2021). Schoch (2016), for example, strongly suggests that the case study methodology allows the researchs to apply the findings to other situations. Transferability was increased in this research by capturing detailed technical education teachers' experiences as well as including the demographic email sent to participants (Hogan, 2021). The lessons learned from this research provide decision-makers with the opportunity to learn from the themes that emerge within the DOI framework (Schoch, 2016). Transferability to other technical institutions in the United States, for example, are far more likely than the international studies that currently exist. Additionally, higher education administrators could replicate this study to gain a localized understanding of how to lead through future pandemic crises and what professional development needs are regarding innovations (Jowers, 2020; Syauqi et al., 2020). Furthermore, the audience for this research extends beyond the TCSG. Technical education stakeholders in America need to understand teachers' experiences with online distance education. Research has shown that exploring teacher perceptions within the technical education context increases programmatic success as well as the effectiveness of professional development offerings (Largent-Necessary, 2021; Syauqi et al., 2020). Caution was used when attempting to generalize, however (Shenton, 2004).

Dependability

Data dependability is often a challenge in qualitative research due to the variability associated with participants' behavior and experiences (Yin, 2018). That being said, this research takes intentional steps to increase dependability. For example, the fact that this research used a multiple-case study increased the reliability of the data within this study. Consistency in data collection protocol further increased data dependability (Hana, 2020). Having the opportunity to replicate the methodology in multiple institutions could potentially produce similar results and further increase dependability (Shenton, 2004). The depth of understanding provided by the qualitative approach utilized in this study increased dependability (Creswell & Poth, 2018). In addition, the previously mentioned triangulation deployed in data collection confirmed the themes that emerge from in-depth interviews. The rich detail associated with case study research further increased validity and reliability.

Confirmability

The research adhered to a rigorous data collection strategy to maintain confirmability. For example, all research activities were guided by the dissertation chair and committee members. In addition, triangulation was utilized to confirm the themes being produced from interviews, documents, research journals/field notes, and the combined-focus group (Yin, 2018). The reflexivity of the researcher also aided in confirmability within the study. My personal experience over the last three years working within technical education helps bring clarity to my role in data collection and analysis (Hogan, 2021). This section intends to provide enough information to allow the reader to make an autonomous decision regarding the overall trustworthiness of this research (Hadi & Closs, 2016). Research and data collection techniques utilized in the study center around giving the teacher a voice through multiple data collection

procedures. This approach increased confirmability and decreased bias (Hartley et al., 2019). Multiple reviews of each face-to-face interviews and focus group transcript demonstrates a strong conviction to get teacher experiences right. This motivation comes in large part from the value that is essential to the innovation adoption experiences and the factors associated with it. Participant reviews that occur after each complete transcript also ensured trustworthiness.

Ethical Considerations

The Belmont Report provides ethical guidelines that were developed by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research in the late 1970s. Three specific research principles found in the Belmont Report correspond directly to this research are respect for persons, beneficence, and justice (United States, 1978). Ethical issues related to this study were anticipated and communicated before it began. Due to the practical application of the findings, the benefits of the effort are clearly seen for technical college administrators and faculty. My research adhered to the University Institutional Review Board (IRB) in an effort to ensure protection for the research participants. That being said, unintended harm could come from not properly protecting participants' identities. Pseudonyms or codes were provided for institutions and respondents alike to protect the identity of the respondents (Tanik Önal, 2021). In addition, interview transcripts were under lock and key and password protected through the entirety of the research. All data will be retained for three years after the completion of the research and then destroyed. Teachers' identities were not retained when compiling interview transcripts. Virtual lectures and focus group data collection and analysis procedures adhered to the same ethical guidelines established for face-to-face interviews. As Christians, we have a responsibility to demonstrate conduct that is above reproach as we continue in the faith (New King James Version, 1979/1997, Colossians 1:21-23).

Site permission was secured at each of the two locations. Institution consent forms provided the authorization needed to conduct the research at each of the selected cases. Once IRB approval and site permission were received, potential participants were contacted by their site's administrator via email with an invitation to participate or by an email directly from the primary researcher. Technical education teachers were solicited via e-mail to complete a research participant consent form. The participant consent (See Appendix B) form indicated that all participation in relation to this study is voluntary and participants retain the right to withdraw their participation at any time (Tarhini et al., 2017). Teachers were prompted to complete a demographic survey immediately after the completion of the consent form. SurveyLegend was the platform utilized for both.

<div align="center">**Summary**</div>

The alignment of the collective case study and data collection procedures are intended to provide rich data analysis in the results. Face-to-face interviews, related documents, virtual interviews, and the virtual combined-focus group provided an in-depth analysis of technical education teachers' distance learning instructional experiences at two TCSG institutions. The triangulation data collection deployed in this section provided rich categories for thematic development during data analysis. The broad framework guiding this research in data analysis focused first on the individual case(s) (LPTC AND SPTC) and secondly, collectively (Yin, 2018). While basic procedures are highlighted at this stage of the proposal process, it is the intent of the researcher to, when possible, go beyond the minimum qualifications of case study research. The bounded case alone represents an extremely unique opportunity in the heavily studied topic of distance learning due to school closures during COVID-19. Furthermore, the issues surrounding the specific timing of the research impacts every aspect of this chapter. The

methodology listed in this chapter is intended to produce sufficient evidence to provide an in-

depth analysis of administrators, instructors, and faculty related to the use of distance learning

within TCSG institutions. The methods utilized in this research are intended to gain a deeper

understanding of online education within Georgia technical education in relation to mandatory

school closures.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this multiple case study was to better understand technical education teachers' perceptions regarding online education using in-depth interviews of 16 technical education instructors. Chapter four begins with a participant table that categorizes the age, years of teaching experience, as well as ethnicity and individual departments. This chapter also focuses on a detailed look at the themes that emerged from data analysis. In addition, it continues with a look at the study's outliers. It concludes with the study's research question responses.

Participants

This research benefited from a tremendous amount of success in obtaining interview participants. Collectively, 258 instructors were notified of the opportunity to participate in the research through an electronic recruitment letter (See Appendix C). The total number of respondents ($N =16$) was within the 12 to 40 targeted in Chapter three for case study research. Originally, the goal was to conduct two separate focus group meetings, one at each institution. However, because of participant availability and interest, the four willing participants (two from each case) were combined into a single focus group. After the focus group, saturation occurred, so a second focus group was not necessary. Each participant also participated in an individual semi-structured interview and 11 documents were analyzed in the process of collecting data from the study's participants and site.

Table 1

SPTC Teacher Participants

Pseudonym	Age	Program	Ethnicity	Teaching Experience
Amy	51 to 60	Business/Tech.	White	>20

Emeril	24 to 30	Culinary	White	0 to 5
Sam	41 to 50	Media	White	0 to 5
Charlie	Over 60	Electrical	White	>20
Susan	51 to 60	Medical Assisting	White	0 to 5
Scott	41 to 50	Welding	White	6 to 10
Ann	51 to 60	Accounting/Marketing	White	11 to 15
Tammie	41 to 50	Criminal Justice	White	16 to 20

Table 2

LPTC Teacher Participants

Pseudonym	Age	Program	Ethnicity	Teaching Experience
Destiny	21 to 30	Pharmacology	Black	6 to 10
Bob	Over 60	Criminal Justice	Black	16 to 20
Janet	51 to 60	Health Info Mgt	Black	>20
Angel	41 to 50	Medical Coding/Assis	Black	6 to 10
Elsie	31 to 40	Accounting	White	0 to 5
Josh	51 to 60	Marketing	Black	16 to 20
Courtney	41 to 50	Medical Assisting	White	16 to 20
Jo	Over 60	Medical Assisting	Black	6 to 10

Results

Chapter four illustrates the theme development that resulted from data analysis using raw data and direct quotes from research participants. As the themes emerged, sub-themes were used to categorize the information that occurred most frequently from face-to-face interviews (13), virtual interviews (3), document analysis (11), and a combined focus group (1). Subsequently, the results section ends with outliers or findings that were not representative of the majority. The major themes that emerged from data analysis were online instructor experience, factors that promote adoptions, and factors that discourage adoption.

Online Instructional Experience

While participants varied as to their years of teaching experience, ranging from 1 to more than 20 years, all of the instructors interviewed had adopted online instruction innovation to some degree either before or after the pandemic. Approximately 37% of the respondents had 13 years or more of online instructional experience. A total of 63% had less than 13 years of experience, but demonstrated some level of use of online education (see Figure 5).

Figure 5

Years of Online Teaching Experience/Departments at SPTC and LPTC

This theme emerges from instructors' strong feelings that online education is a vibrant
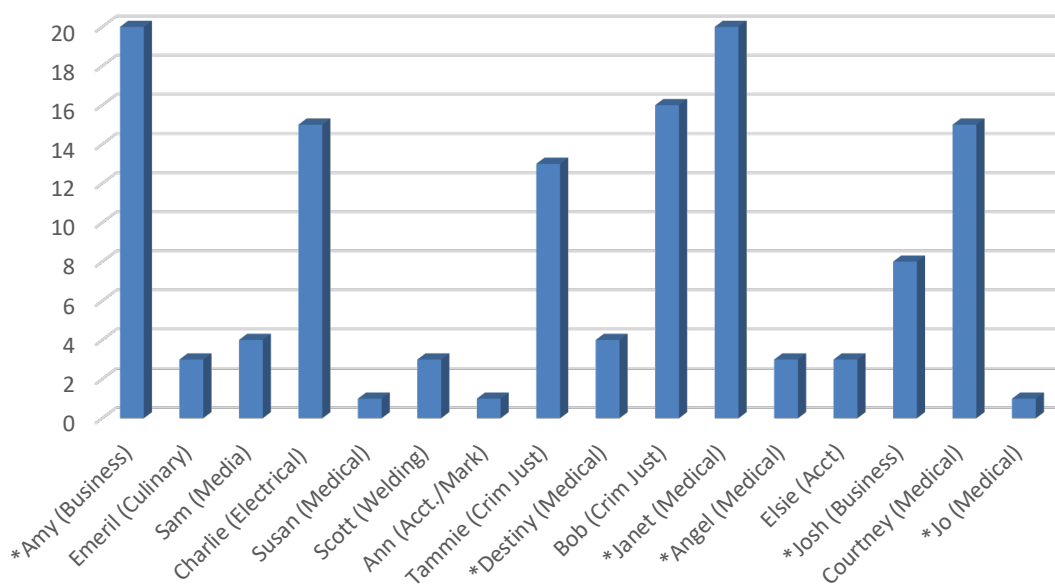
part of technical education's future. Undergirding this theme is a perceived growth of online courses. For example, Josh, at the close of his interview stated that "online learning…it's the

way of the future. When done right, it is very effective." In addition, instructors held a relatively high opinion of e-learning as it relates to the technical education mission further explores the theme. Janet described it as "the writing is on the wall… it's the way we are going." The subthemes that comprised the categorical theme of 'Online Instructor Experience' consisted of student schedules and online instruction, fast transition pushes innovation, COVID influencers as well as work-related stress, and role conflict.

Student Schedules and Online Instruction

Students drive policy and curriculum, and this was no different for the situation facing online instructors in this study. Research participants highlighted an increase in demand for online instruction among technical education students. Tammie, when speaking of enrollment numbers post-COVID, stated, "overall numbers have dropped school-wide but my online is kind of staying steady." Courtney, a Medical Assisting instructor at LPTC, emphatically states, "I feel like it (online instruction) is very beneficial because it allows the students flexibility to take courses online that fit their lifestyle." Ann, a Marketing instructor at SPTC stated, "There is no going back. The students don't want any going back. They like those online classes." Bob, a Criminal Justice instructor at LPTC, began to shift towards online instruction as far back as 2005. Bob "began to enhance and change the structure of the program…to target those students that actually…needed distance education." Bob went on to say that some students need "flexible schedules when they actually can't be seated within a classroom setting." As Bob evaluates students post-COVID, he has noticed that students "are working" and "they have jobs now. We get calls at school all the time from agencies for students to work at their agencies." Student schedules, and as a result, students themselves, demand online education, even when that education is in technical fields.

Amy, an instructor and Blackboard point of contact, stated her students were beginning to move towards online in Business Technology prior to the pandemic. Amy continued, "after 2019, the student bodies just weren't coming and they preferred to do it online. I mean, they would come if they needed help and that was sporadic." Janet, a technical education instructor with considerable experience explained that she "has students who call [her] wanting to come to the program but because it (the Medical Information Management Technology Program) is not offered fully online at this time, they are not able to [enroll]." She continued, "So I think distance education is having the ability for people to work school around…their lives. I think it's going to be more and more important as we progress."

Fast Transition Pushes Innovation

Because of the pandemic, the acceleration towards online learning experienced by instructors, students, and subsequently the technical education institutions is best-described as hastening from a crawl to a sprint. Scott, a Welding instructor at SPTC, likened the experience to "inventing the wheel because… we were here one day and not the next. So there was no preparation whatsoever. I mean, we literally left that Thursday and didn't come back for over a month; we had to implement stuff on the fly, fast." Angel, a focus group participant, stated that the pandemic pushed the Medical Assisting Department "ten years ahead." Angel went on to say, "The pandemic, it pushed us out of our comfort zone." Elsie, also a focus group participant, said that COVID "pushed everyone into a place of being very uncomfortable." But it is in that discomfort that innovation was birthed for online technical education. Amy, a Business Technology instructor at SPTC, also said, "I think it (COVID) pushed us at least five years ahead." Courtney, when speaking about the COVID transition to mandatory school closures

stated that, "what I would share is how COVID affected me as an experienced online instructor. Moving all my classes to fully online in a short amount of time. We were not prepared."

COVID and Work-related Stress

Instructors shared that they experienced a tremendous amount of stress during the COVID transition out of the campus-centered delivery system towards 100% online instruction. Charlie, an Electrical System Technology instructor with over 20 years at SPTC, referred to his online experience building eight classes during COVID shutdowns as "a nightmare." Courtney, a Medical Assisting instructor, said, "I mean, when I say it was awful, I'm not a big drinker, but I swear I felt like I needed a liquor drink almost every day. I didn't because I have a child but I felt like I did because I was so stressed." She went on to describe the tension felt in mandatory dean meetings. She said that "you had to be able to log on at certain times, which for me was stressful because I can't be on with the dean and have my three-year-old girl going, 'Mom, Mom.'"

Charlie went on to say that "it was a total nightmare. I had a lot of hours getting information that we don't have. You got to type most of it in. There was nowhere to find some things…you had to build the whole thing in." Courtney also acknowledged, "There was no time," when describing her experience with mandatory technical college closures during COVID. She went on to say that "we came in on a Monday and they said, your last day will be Friday. We came in Tuesday and they said, 'This is it. You're going home.' So we had two days to get it…we had to take a copy of all the paper tests and type them in." Scott, a Welding instructor at SPTC, noted the dismal reality of COVID employee-forced reductions. He stated, "That was the first thing they did was eliminate my help, immediate." The stress during this time was so severe that Scott said, "at one point it was beyond challenging…I was looking for a job because it was unsustainable." The data across both cases revealed four major stressors

experienced by technical education instructors during COVID: children learning from home, a complete shift to online education, forced staff reductions, and role conflict experienced between the home and the office (See Figure 6).

Figure 6

Stressors Related to Online Technical Instruction During COVID
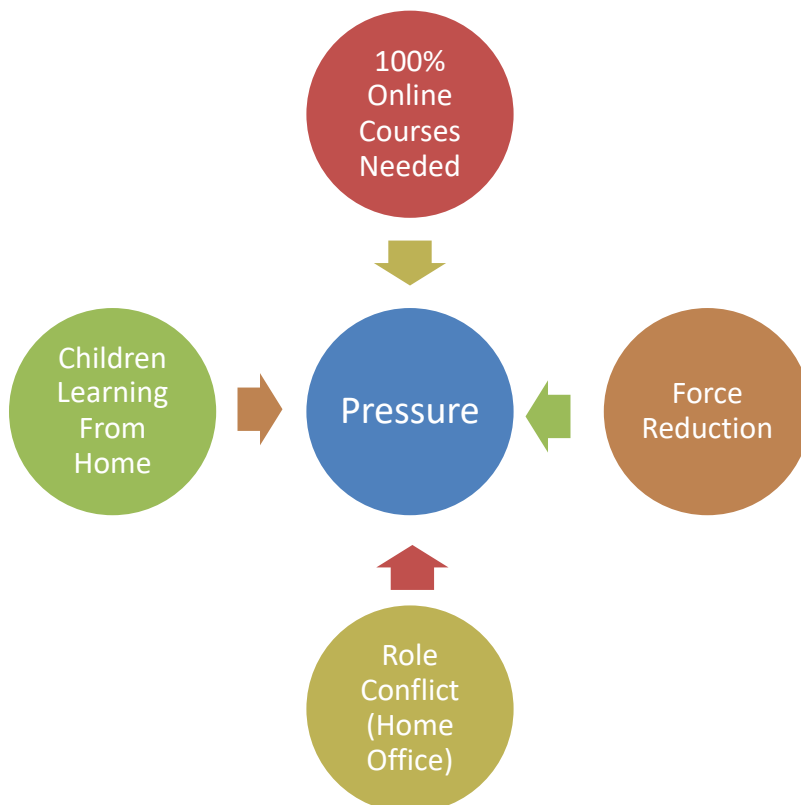
Role Conflict

Instructors overwhelmingly testified to blurred lines in relation to their personal and professional obligations. Angel captured the nature of student and teacher role conflicts related to each transitioning into the home. Many of these conflicts are related to professional responsibilities and parental/family responsibilities during the COVID mandatory school closures. Angel stated, "The stress levels were even higher being completely at home, doing

work at home." One example of parental responsibilities that she encountered occurred after she set up her 'home office.' She described it as,

> I'm there, set up my office but then I see that the laundry needs to be done, food needs to be cooked, dishes need to be… It was just so mind boggling and just so much pressure just for me as an instructor, so I can understand students trying to learn the information, retain the information, and also deal with responsibility at home.

Courtney also experienced role conflict explaining,

> With me, my daughter was only three. She didn't understand why I was there and couldn't do anything with her or for her. She wanted all my attention and I didn't have anything to give her. I would feed her but she really had to self-entertain because I literally was at my table from 7 to 7 just doing course work.

Longer working hours were also experienced by most other instructors as well. These hours were the result of the increased effort required for teacher-student connectivity. For some, the shift to working from home also resulted in blurred lines between home and work as they spent personal finances on improving their work conditions at home. Tammie, a Criminal Justice instructor at SPTC, stated, "I live out in the country…we had to increase our internet. Having kids at home doing virtual schooling was also an issue." This theme captures the instructors' experiences regarding online education in respect to the students taking online courses as well as their transition through the pandemic.

Factors that Promote Adoption

The analysis of data from both cases revealed that there were several key factors that promoted adoption as technical education instructors transitioned to online delivery. These factors included professional development activities from the TCSG and non-profit

organizations, as well as some form of face-to-face or distance mentorship from within the specific technical college. Two additional subthemes also resulted: the learning management system and online assessments, which promoted adoption because instructors found the relative advantage associated with these practices beneficial and affirming. Each factor that promoted adoption for these instructors is explored in greater depth in the sections that follow.

Instructional Support

The experiences of online technical instructors revealed that the instructional support they received played a significant role in promoting their adoption of online education. For instance, instructors at both institutions highlighted a robust Blackboard Collaborate technical assistance department. Primarily, however, instructors received distance learning training from their specific institutions or the GVTC staff virtually. Elsie, an accounting instructor at LPTC, was the one instructor who also highlighted two particularly helpful United Negro College Fund trainings dealing with online instruction. Elsie stated, "They were two-month long trainings that were all about online classes, what to do with them, best practices, and things like that. The idea of doing video announcements or the idea of doing more interactive stuff." Courtney alluded to an online orientation that all instructors had to complete when "we transitioned to Blackboard…it was for three days and everybody had to." She stated, "They gave us Blackboard instructional manuals."

Another form of instructional support came through a formal process of online instruction evaluation. The majority of research respondents indicated that their online classes were assessed by informal self-evaluations. A few instructors, however, communicated an established process of evaluating online content. Josh, a marketing instructor, said,

The way it works here is before every semester, the instructor will go in and evaluate

their class based on criteria that the Distance Education Department makes available, and

then the Distance Education Department will then go in and evaluate as well. And if

there's any [issues], then they're going to work with that instructor to get that class where

it needs to be.

Others expressed more independence in their course design and assessments. Emeril reflected

saying, "I'm not going to say 100 % autonomy. As long as you hit certain industry specific

standards developed by the state then you're doing pretty good." Instructors ranged from

expressing that they had 100% autonomy in online curriculum development to having certain

guidelines. Janet communicated that she experienced autonomy with some guidelines. She

stated, "I think we were definitely provided with autonomy [with] certain guidelines…then our

accrediting body [would] send out information to kind of help us in different areas" this is

intended to ensure "the quality of instruction." Courtney, also in the Medical Department at

LPTC, responded to the amount of content autonomy during COVID by stating that "they just

basically said, "put it [online content] on there." So there was no way the Deans could

micromanage. We know what we are teaching. We know what the students have to have. They

(supervisors) just said do it."

Janet, Healthcare Management Information Management instructor, suggested that her

Distance Education Department (DED) served as a mentor. She quipped, "Our Distance

Education Department is awesome. They're all really good about sending out education tutorials

that you can go in and view." When asked if the training done by DED was face-to-face, she

stated, "Oh, no it was…electronic guidance." Courtney described her lack of mentorship as

follows: "I feel like I did not have a mentor, but we do have support from our Distance

Education Department. They are very helpful." Courtney had, however, served as a mentor with new adjunct faculty. She added, "I have had lecture and online classes where I have been over adjuncts…setting up their shells. I would walk them through how you change dates and setup the course." Tammie refered to a mentorship program at SPTC that ended in 2008. She said, "When I first started teaching distance learning, we had to sign up one semester under a teacher. It was like we were in the class under an instructor to kind of see how they did it and then I could start teaching." While the training, evaluation, and autonomy experiences of the participants varied, it was clear that a void existed at SPTC in relation to online course evaluation. This is especially important, in light of 100% of the respondents indicating that they had very high levels of autonomy regarding online course content.

Learning Management System

Another factor that promoted adoption across the cases was the learning management system. Both cases within this research utilized only two LMS's in the schools' histories. The first LMS was ANGEL, which later gave way to the current system, Blackboard Collaborate. Josh expressed great satisfaction with his institution LMS when he said, "I'm a big fan of Blackboard Collaborate Ultra." Unity within the menu section of Blackboard emerged as beneficial for teachers helping students navigate the online platform. Amy stated,

> Being on the Point of Contact side [in Blackboard], I understand that you want some
> similarity so that when a student calls and says, 'I can't see this, I can't see this.' the help
> desk can say,' If you look over here on your menu on the left hand side of your screen,
> you should see announcements and lessons and stuff like that,' rather than a college
> letting faculty have whatever.

In addition, LPTC operates a Badge program that is mandatory for all online students and focuses on how to navigate Blackboard. Elsie explained by stating that "one of the things that they learn in SHIELD is that the menu set up in Blackboard for the first six or seven choices is set in a very specific way. So there is …some uniformity that helps students understand this is where to go."

One element of the learning management system that seemed to promote adoption but also stir up some frustration for instructors was the flexibility in the LMS to add, change, or remove due dates. Instructors have a considerable amount of variation concerning open or closed grading policies, however. The issue of grading within the LMS depended on the specific approach used by the instructor to motivate students. The level of openness to deadlines an instructor has could make a tremendous difference regarding the discipline needed by the student in the class. During COVID, Elsie "had to release all due dates" and to the students "we said, get them done as you can, especially in that first semester [of the COVID transition]." Instructors like Jo, when referring to grading, said,

> I'm opening up 9, 10, 11 up through 16 to give them a chance during Masters week to catch up. Yes, another chance to catch up. And then after that point, I'm not going back.
>
> If they don't get it by then, it's too late. You don't let it rock to the final, you shut it.

Respondents clearly expressed the need to respond quickly to students with assessment feedback. Amy stated, "I think students need more feedback…that's the key." She went on to say that timely feedback should include "if they (students) made an error, what it was, and how to correct it before they go further, rather than waiting to the end to grade all their stuff at one time." Ann, a Marking instructor at SPTC, stated, "I encourage them to please try to do it again. I'll give them two or three chances up front and then …sometimes several, several times." Destiny when

describing her open grading policy admitted her students "know that if they wait long enough I'll say, 'okay, fine I'll do it.'" The variability in relation to how instructors utilize the LMS implies that there may not be a wrong or a right approach.

The students were able work around hardware and software issues (such as issues with the LMS) with an "On Campus Online" approach to online classes. Technical instruction appears to have settled into a new normal of online education. The formal definition of online instruction with its strict boundaries no longer applies. For example, the number of online classes a particular technical college completed in one year does not necessarily indicate distance learning. Most of the educators included in this study find it commonplace for students to do much of their online work "on-campus." The previously mentioned Accounting/Marketing instructor captured this outlook perfectly when she said, "I think it's a good tool for our students who are busy with their lives and families and work. I think it works well for them because they can come in any time in our labs and do their online classes." The culinary instructor at SPTC, in a semi structured interview, defined on-campus online students as students who "only have used Blackboard in the classroom and not at home."

Online Assessments

Ann, Josh, and Destiny were two instructors who communicated a desire to utilize online testing when assessing students due to the ease in which some publisher offered LMS testing and electronic books and tests. Courtney said, "Blackboard just makes it easy. They (assessments) just go right into the gradebook. They see right away what they made." Bob attested to this when he stated, "Assessments are actually done within the classroom, within the seat. For you to take a test or an examination online, that's a little difficult unless you know the college has a third-party company to do the proctoring." Nevertheless, the majority of instructors saw Blackboard's

assessments as a huge benefit for online instruction LMS platform. Scott, the welding instructor at SPTC, found that "the bookwork went faster…more successful and quicker with…online structured tests. So that was another positive thing about the online process." One negative comment mentioned by Tammie, a criminal justice instructor, was that "so many of them (students) have all the excuses. The power went…I tried to do the timed test and then they say the power went out or they lost internet." Tammie finds the project-based extended responses more advantageous for developing law enforcement employees that possess the ability to do technical writing. She stated, "In my field, you got to know how to write." Regardless of the form of assessment, the ability to assess students in a trusted online format was critical to the online instruction of the study's participants and a factor that promoted adoption.

Factors that Discourage Adoption

While instructional support, LMS and online assessments promoted adoption, there were also many factors that discouraged adoption. The greatest challenges identified by participants included course development, student connectivity, online assessments, student engagement (self-directed learning), technology issues, and the hands-on nature of the programs. Students who enroll in online courses without the necessary hardware, for example, were cited as a factor that discouraged adoption of online learning. The major factors discouraging adoption were student-teacher connectivity, student hardware/software issues, self-directed student skills, course development and online assessment issues.

Student-Teacher Connectivity

Student-teacher connectivity refers to the lack of communication between teachers and students, particularly during COVID. The situation of teacher-student connectivity was negatively impacted by the mid-semester transition during COVID. From participant responses,

it was clear that online instructors suffered from a lack of one clear method of communication that connected students and teachers. Tammie stated, "But of course, I had my office phone number forwarded to my cell phone so they (students) could call me. I would wind up calling them…I've always used that Remind app. I did mail packets…for several of them." Courtney, a medical assisting instructor, stated, "I have six classes that I teach and two of them (Medical Terminology and Human Disease) are fully online. I talk to those students (online) way more often." Charlie said, "Let's put it this way, there was a disconnect between me and the students, in my opinion. My work phone was my cell phone. Every student had access to me on my cell phone or email or computer, mostly email."

Sam described his Introduction to Computers (first semester course) class as being particularly challenging due the fact that it was offered during his students' first semester. He said, "Most of them were just totally lost, and they said so…they told me so." Another reason some are not self-directed is that some students are only "looking for that federal money that's given through the Pell Grant. These students are intermediate before mid-term, they show up and they might miss like one or two days a week every week. And then after midterm, they hit the road," quipped Emeril, SPTC Culinary Arts instructor.

Teacher-student connectivity issues also resulted in an impact on accomplishing learning objectives. For example, communication between the teachers and students represented a significant challenge for students during the pandemic. Josh, a marketing instructor, stated that "one of the biggest challenges with online learning is it's difficult to have that type of connection with them." Josh also noted the difficulty during COVID of "staying on top of the handful of students that [he] had kind of lost track of. They weren't submitting assignments. I couldn't get in contact with them when I was trying to call them." Janet, a departmental leader within Health

Care Management Technology stated, "What I noticed towards the end [of the semester] is students would start logging on less and less." Emeril further made the point concerning the lack of student-teacher connectivity during COVID shutdowns by suggesting that students "were also disappointed in the fact that…they had chaos over here. They couldn't get to their instructor because the brick and mortar was closed." Student communication was accomplished by doing "…everything over the phone or through email, which as you know in our area, students are not set up with the means of success for that kind of learning." Because of these connectivity issues, Destiny explained, "I got more emails and phone calls…we had to be more companionate with people and more patient."

Student Hardware/Software Issues

Another factor that discouraged adoption was that hardware and software issues for students existed long before any pandemic. Emeril made this point when he said, "Whenever COVID started, it did take effect [impact students in a new way] because even before then it was a problem." He went on to say that in his rural area "some people have access to high-speed internet. Some people have access to very low speeds. Some people do not have access to internet…at their house at all." Angel also acknowledged issues with access to internet by stating, "I believe the United Way was the one that helped us out with this."

Destiny listed technology issues as a challenge facing her pharmacology students during the 100% online COVID-transition. Destiny stated, "Well, some students didn't have the technology …they may not have had a laptop or a computer." She went on to highlight "that there are some websites that work better with certain browsers." However, that was not common knowledge or a well-known troubleshooting strategy for many online technical education students or instructors for that matter. Jo, an experienced teacher who is new to online

instruction, described a student's excuse regarding computer access stating, "Ok you're using your mother's computer and she doesn't want you to add the files to her computer…I mean that is the dumbest thing I have ever heard." Some did not have Wi-Fi and some students were not that well-versed in using online platforms. Susan, a medical assisting instructor at SPTC, stated, "I think some of them did (have hardware issues), and that's why, you know, a lot of students didn't come back that summer semester (following COVID). They didn't have a laptop. They would try to use their phone." According to Tammy,

> Well, back two years ago when COVID first hit, the biggest problem was a lot of them weren't prepared for online. They didn't have laptops. They didn't have computers… that was why they wanted in-class. That was my biggest problem was trying to come up with things that didn't have any means.

Student hardware/software issues were often beyond the expertise of the technical instructor or were simply out of their control. Their impact on student learning and instruction time in the online environment made them a factor that discouraged adoption.

Self-directed Learners Skills

Multiple instructors also highlighted the inability of students to become self-directed learners as a major factor prohibiting online instruction. Josh, a leader in his department, stressed the issue of online academic demands for some students when he said,

> Then you have other students that are in an online class, but they may not be completely prepared for an online class. It's not that they can't do the work. It's more of just time management, of staying on top of things and not letting time get away.

Bob furthered this point when he identified the need "to actually get the students to work on their own" as a major struggle. Elie, an accounting instructor, highlighted this in the focus group when she said,

> Students just don't understand what to expect, but they come into an online environment not understanding that it takes a lot more from them to be successful in an online environment. As much as we try to be there and help them as instructors, it really is on them to really put in time and effort in an online course, especially a fully online class.

The demand for students to become self-directed learners increased during the shift to 100% online in Susan's medical assisting courses at SPTC as well. She described the transition from completely face-to-face to 100% online as "a problem. They never had to do that before… Paper tests were used …they didn't even log on to do test prior to COVID. They would come in and we did it all on paper." Susan's students struggled to be self-directed learners in the online environment since she was not present to administer tests to them. Tammie furthered this point by commenting on those most at risk, which she identified as "the younger ones… especially the young boys." She explained that parents "still hold their hand. So then when they're on their own, so many of them do fall behind. You got to be disciplined to log-in and do your work. They got to be disciplined to get in there and get it done." Destiny, however, said, "The high schoolers' transition was automatic." Ann attributed the phenomenon of enrollment decline or poor student retention to poor student performance in every age demographic.

As respondents reflected on a lack of student self-discipline, most teachers agreed that many students developed unrealistic expectations after COVID school closures and the fully online delivery system that followed. Susan, a medical assisting instructor, described enrollment declines in Pharmacology, "One of my classes has four students in it…and before COVID, this

class had 14." Ann went on to say that much of the interest in online learning is coming from unrealistic student expectations. She describes the mentality by recalling the following conversations:

> So don't tell me you don't have access to a computer because you're the one who signed up for it, and I'm giving you all this information. There again, one lady told me, 'Well, I live in Pinehurst.' I said, 'Well, ma'am, you're the one that signed up for the online class. Do you want me to give you an A just because you don't [have a ride]? I'm not going to give you an A. You need to know that up front.'

Course Development

Online instructors described course development as an arduous task and therefore a factor that discouraged adoption. The majority of teachers had courses that were considered 'hands-off.' All but two of the participants within the research possessed prior experience with specific web-enhanced courses. The instructors were able to pick and choose these courses and supplement them with open labs when it came to online instruction. Sam, a Media and Library Specialist at SPTC, stated, "it's difficult to…teach hands-on…through online. I mean, we are a technical school, which is the biggest draw for our school, or any technical school is the hands-on training." Sam, went on to say, "it is difficult when you're trying to teach hands-on and do it through online." Sam said of SPTC, "We are a hands-on school…it's our bread and butter." Courtney, a Medical Assisting instructor, provided the following example: "For some classes, like my skills class, I teach them how to do an EKG. I don't want them learning how to do an EKG online." Jo, a department head in Medical Assisting, quipped, "my web-enhanced classes can automatically be turned over to online classes because my online classes are structured just like my web-enhanced classes. There is no difference." Ann, a Marketing instructor who

promotes hands-on education, stated, "I don't get to know my students here, they're just online." Tammie highlighted skills "like lifting a fingerprint" as hands-on skills within the criminal justice program. She went on to address the highly technical task of course development stating, "That has been one of my difficulties trying to do content in Blackboard…creating content for online has been something that I've struggled with, I mean, trying to see how to do it." Instructors who struggled with online course development for their technical education courses, especially those with 'hands-on' components, struggled with adoption.

Online Assessment Issues

While automatic grading for LMS tests were viewed as an advantage to online instruction, other instructors encountered major struggles regarding in-person proctored assessments during COVID. Angel attested to declining "certification rates [those eligible for jobs] for Medical Assisting students due to the instructor having to present all this information online and then they [students] have to do them in class. We noticed that they were not retaining as much information." The issue of retaining the content was also attributed to the previously-mentioned issue related to students not developing into self-directed online students. The level of 'cheating' or academic dishonesty occurring during online assessments did not produce efficiently proctored exams or clinicals. Courtney explained student behavior regarding online assessments when she stated,

> When they (students) take a course online, we don't really call it cheating when they are taking the test…you would have to be special to be taking a test at home online with nobody watching you and not use book or something.

Removing those resources for proctored exams crippled the online student, revealing gaps in their learning. Courtney went on to describe online assessment solutions that her department has implemented. She quipped,

> We have some stuff in place where we have laptops and webcams. Our Distance Education Department has a way (proctored software) that we can watch them (multiple students) take a test now. The Medical Department at LPTC will implement this software in 2022.

Tammie, at SPTC, said, "I don't do standard tests because they have the book right there in front of them. I do some research type questions or assignments to count them as test grades."

Outliers

While the themes were consistent across all of the data collected from both sites, there were some notable outliers in the data collected. One instructor at SPTC demonstrated outlier characteristics in two distinct ways. Amy, a Business Technology instructor, as well as the Learning Management System Point of Contact, was the only instructor that was identified as a mentor by several research participants. In addition, Amy did not identify any challenges associated with the COVID transition. Amy stated, "I barely had students attending in the classroom before it hit."

One instructor at LPTC indicated that he had observed no change in student expectations post-COVID. Josh stated that students were being more cautious regarding sanitation "but aside from that, as far as the expectations, the behavior in the classroom, how I run the classroom, and for that matter, online, its's pretty much been the same." This stance is in direct contrast to all other research participants.

Jo, a Medical Assisting instructor, was the one instructor that experienced stress related to personal sickness (COVID) as well as her husband dying from COVID very early in the pandemic. Jo discusses the loss of her husband and her journey through mandatory shutdowns as,

> I didn't realize it until later…probably it wouldn't have been so bad had I not been in the process of mourning. It [the transition to 100% online] would have been a little easier but I was still in the process of mourning. There were times when there was absolutely no empathy whatsoever.

Research Question Responses

The research questions identified in this case study were: (a) How do technical education teachers at TCSG institutions describe their individual experiences utilizing online education? (b) How do technical education teachers at TCSG institutions evolve as e-learning adopters? (c) How do technical education teachers at TCSG institutions describe the perceived attributes of the innovation? (d) How do technical education teachers at TCSG institutions foster student success in their e-learning classrooms? (e) Why do some technical education teachers at TCSG institutions express resistance to e-learning instruction? This chapter provides direct answers to the questions on a case (LPTC and SPTC) and the cross-case results using the five previously developed themes.

Central Research Question

The Central Research Question for this study was: How do technical education teachers at TSCG institutions describe their individual experiences utilizing online education? Data was collected from instructors in an attempt to address the knowledge gap that exists in the literature related to teacher online instructional experiences within the technical college context. Teacher

online experiences often varied based on a given instructor's view regarding the skills-based nature of their prospective programs. Overwhelmingly, instructors at SPTC taught specific lab-based courses that they deemed unfit for fully online courses. Participant responses were related to this central question and were organized under one major theme, Online Instruction Experiences. Within this theme were the following four sub-themes: Student Schedules and Online, Crawl to a Sprint, COVID and Work-related Stress, and Role Conflict. The instructors communicated a growing demand for online education prior to COVID in certain programs at both institutions. Amy at SPTC stated that she observed that "after 2019, the student bodies weren't coming and they preferred to do it online." Bob experienced the same trend at LPTC in 2005. Destiny stated, "Pharmacology was, interesting enough, already on its way to being completely online, but it was the laboratory classes and clinical that we still had to figure out." The experiences that instructors related to moving their hands-on course content online dictated how they felt about online instruction's value within the technical college skills-based context. This phenomenon is further illustrated in Sub-Research Question Four under the Factors that Discourage Adoption theme.

Notably, a total of six of the 16 participants struggled with connecting online education with the mission of technical education in their individual disciplines. For example, Scott, a Welding instructor at SPTC, said, "They're in this field to work with their hands. And if they're not able to, then they don't want to do it anymore. So e-learning is just not feasible for the welding field." A total of 63% of participants expressed support for online education and its connection to the mission at their technical institution as critical or important. Figure 7 illustrated the specific program representations of those instructors who see a future with online education within technical education and those who do not. Instructor experiences regarding online seemed
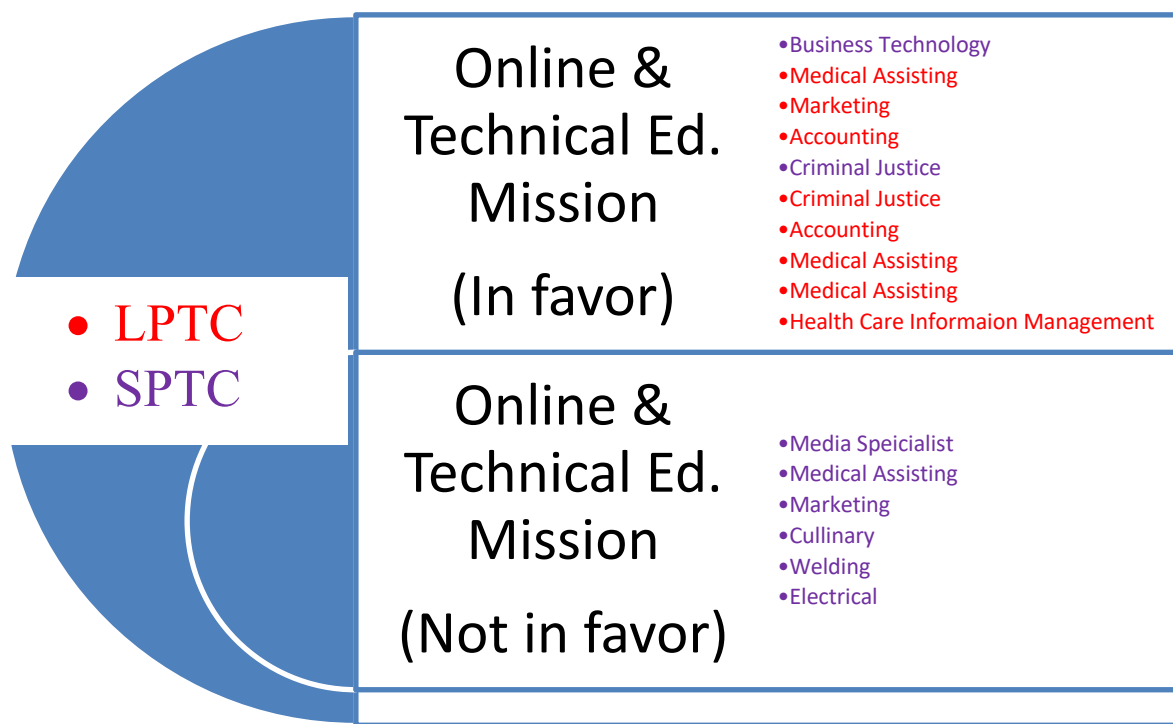
to relate closely to their specific course content and subsequent view of their mission as it relates

to online instruction, more so than their experiences related to mandatory technical college

closures during COVID. Scott furthered the discussion by stating, "I hate to say this but

Blackboard was never intended for this type of program." Angel, a Medical Assisting instructor

at LPTC, described hands-on skills as

> Very important but given the fact that this institution is for working, typically working
>
> adults attend, so nontraditional students are attending the programs here. They're going to
>
> need the option of doing an online because they have other responsibilities besides
>
> school.

The view of online instruction common to LPTC changes drastically at SPTC. Susan, a medical

assistant instructor at SPTC, stated, "Technical education is equipping people to go into the

workforce. How useful is the online platform in accomplishing that mission? I don't really see

that it is very good."

Figure 7

Teachers' View on Whether Online Education Fulfills the Mission of Technical Education

LPTC
SPTC

Online & Technical Ed. Mission (In favor)
- Business Technology
- Medical Assisting
- Marketing
- Accounting
- Criminal Justice
- Criminal Justice
- Accounting
- Medical Assisting
- Medical Assisting
- Health Care Informaion Management

Online & Technical Ed. Mission (Not in favor)
- Media Speicialist
- Medical Assisting
- Marketing
- Cullinary
- Welding
- Electrical

Many instructors at LPTC had horrific COVID experiences, but incredibly 100% of the participants at that institution remain optimistic about the future of online instruction at their technical college. The results suggest that online education has a measure of sustained diffusion within technical education, while still having its limits in the eyes of some instructors with hands-on skills content to teach. For example, Courtney gave a practical example of the tension between what to teach online when she stated, "So it depends on the class. You know, can they teach themselves that this is the humerus? Sure. Can they teach themselves Atrial fibrillation and how you read that on an EKG? No."

Sub-Question One (SQ1)

The first research question was: How do technical education teachers at TCSG institutions evolve as e-learning adopters? The study investigated the instructors' professional development experiences, autonomy in curriculum development, and the quality of online instruction evaluations to understand the evolution of instructors' growth as online educators. Instructors described their online professional development experiences at both SPTC and LPTC as primarily taking place either during the transition from Angel LMS to Blackboard Collaborate LMS or through a new hire orientation. Face-to-face mentoring was a strong part of SPTC online training. The largest majority of instructors interviewed at SPTC named Amy, the Blackboard Pointe of Contact, as their mentor, though not every faculty member could name a mentor who helped them transition to online education (See Figure 8).

Figure 8

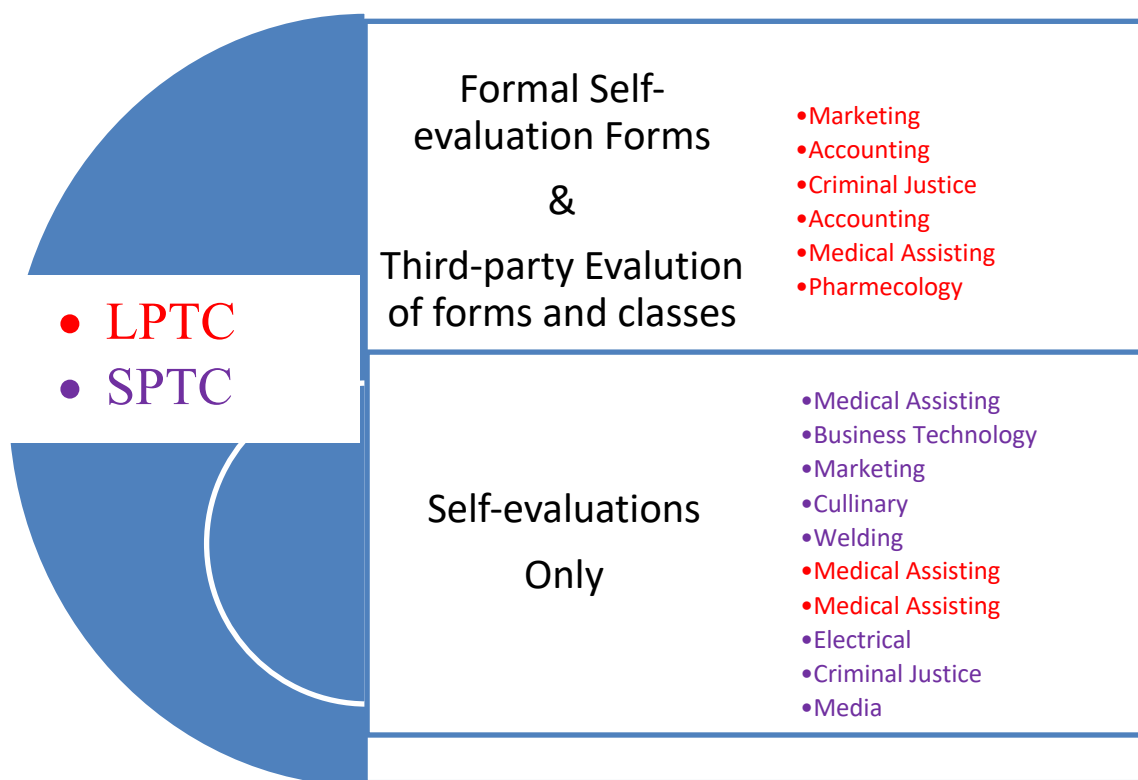*Percentage of SPTC Instructors who Could Identify a Mentor by Name*
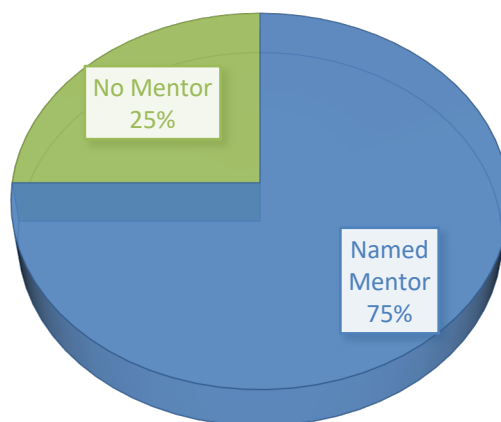
To the contrary, 100% of LPTC faculty could not name a mentor by name but rather pointed to the Distance Education Department. That being said, 100% of respondents had a high view of institution's Distance Education Department's accessibility. The data suggests that the instructor

level of adoption will dictate the type of professional development and mentoring needed. Ann, a Marketing instructor at SPTC, captured this when she said, "I was encouraged to do online to keep my job. Amy knows it more than anybody. It was face-to-face training with me." The autonomy that instructors communicated in course development was 100% freedom within the departments, providing certain accreditation guidelines were adhered to. Evaluation methodology applied at each institution varied on a case-by-case basis, but it was not without trends (See Figure 9). Bob, a Criminal Justice instructor, for example, said of his online course evaluations, "It is a more formal process because the Deans actually are doing that. Its kind of caught us off guard a little bit, because we didn't really know that we were being evaluated." Some of the LPTC instructors may actually may undergo institutional evaluation and not be aware of it. Amy eludes to this process when she states,

> And as a point, contact and run reports for administration when they ask me to and when you see the reports. Of what's been going on in the classroom, I oh, my lord, you know, you're just. And then administration can decide whether they want to allow that person to continue to teach the class or not, especially with that adjunct and same thing with probably full time.

Figure 9

Instructors' Responses Regarding Institutional Methodology for Online Evaluations

- LPTC
- SPTC

Formal Self-evaluation Forms
&
Third-party Evalution of forms and classes

- Marketing
- Accounting
- Criminal Justice
- Accounting
- Medical Assisting
- Pharmecology

Self-evaluations Only

- Medical Assisting
- Business Technology
- Marketing
- Cullinary
- Welding
- Medical Assisting
- Medical Assisting
- Electrical
- Criminal Justice
- Media

Note. Health Care Information Management instructor, is not listed (interview did not address topic) Angel described her online class evaluation process by saying, "They evaluate all. They do. They do. And they send us a grade sheet and say, 'You need to fix this, this, and this.'" All of the teachers at SPTC indicated that they have no formal online instruction evaluation process for their classes. However, approximately 40% of LPTC's faculty indicate that they submit to a formal online evaluation process.

Sub-Question Two (SQ2)

How do technical education teachers at TCSG institutions describe the perceived attributes of the innovation? This study looked at the perceived attributes of online instruction within technical education through the DOI theoretical framework. The four attributes of the

innovation are Relative Advantage, Compatibility, Complexity, Observability, and Trialability. In much the same way that a high view of the relative advantage of the technology promotes adoption, a poor view of the technology will also discourage it (Rogers, 2003). Thirty-eight percent of the respondents communicated that they did not believe that online education could accomplish their institution's mission. To the contrary, Destiny, a pharmacology instructor at LPTC, clearly recognized the relative advantage of online instruction when she says, "we learned that…we don't necessarily have to be here in a physical classroom to get things done." Josh, a marketing instructor, described the current reality within technical education as "a digital transformational age." Josh also stated, "there are going to be fewer careers or jobs where employees are not going to need to be somewhat technically savvy and independent." Research participants expressed support for online education and its connection to the mission at their technical institution. Destiny, when asked if distance learning can be effective, replied, "yes, very effective." It is this type of view that will drive instructors to lean into the research and development aspects of online education. Tammie gave the following example of how online instruction is helping achieve the technical education's mission: "Well, like I said, for my essential workers, mine that are working in the field currently, the online enables them to go back to school. You can actually complete my degree (her program) completely online."

Sub-Question Three (SQ3)

How do technical education teachers at TCSG institutions foster student success in their e-learning classrooms? This study found that technical education instructors have demonstrated an enormous amount of ingenuity within their virtual environments (See Figure 10). Instructors who did not stop with web-enhanced courses but rather developed fully online and/or blended classes often demonstrated higher amounts of innovation. The larger institution of the two cases

(LPTC) demonstrated more innovation in publisher partnerships. LMS partnerships with

publishers were also very important to ease COVID transitions for students as well as increase

teacher/students access to skills-based simulations in the medical programs at LPTC. Depending

upon the publisher, instructors had access to electronic tests, simulations, and the previously-

mentioned automatically graded test. Courtney stated, "So we had to work with the publishers

and get them to actually grant access to our students during COVID. And then after COVID, we

started requiring them to purchase the software." One such publisher is Cengage. This publisher

uses a software called MindTap that enables the teacher to "watch them (students) do the actual

skill," stated Angel. Destiny optimistically stated, "We did find out there are some virtual

options to clinicals. There are some virtual labs that student can do and companies that offer

those services. We have been in contact with those companies."

Figure 10

Innovative Technology Used/Targeted by Online Instructors Within Technical Education

- Blackboard
  - Light Board
  - Document Camera
- Software
  - Microsoft OneNote
  - Adobe Suite
  - coda
- apps
  - Bitmoji
  - Remind app
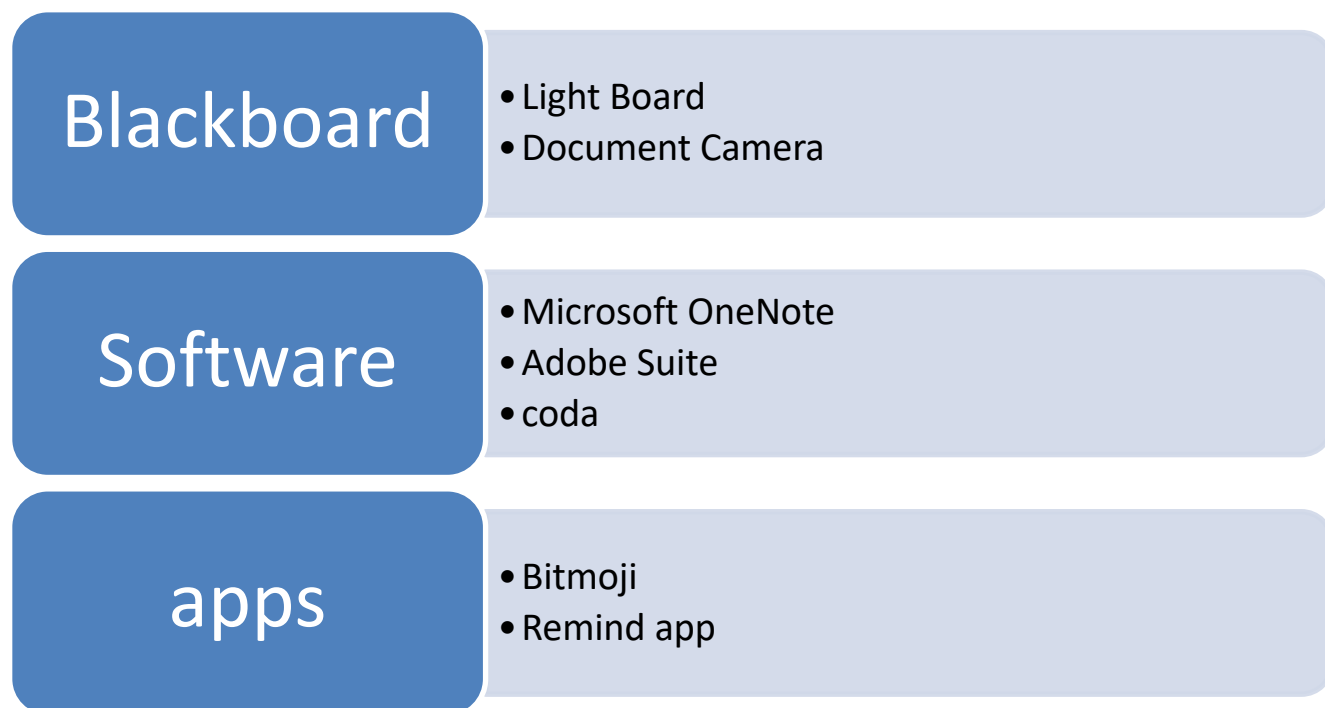
Other technology used by instructors included Google Voice, Blackboard mobile app, and YouTube videos. Instructors achieved student success through open labs as well as publisher partnerships. These significant contributors to student success also impacted the teachers' self-efficacy in this area. It was clear that technical education instructors had depended heavily on on-campus "open labs" at both institutions. These open labs are used by online instructors to get students moving in the right directions and are utilized whenever the student sees a need for it. When Ann, an Accounting and Marketing instructor, was asked about open labs, she replied that students "can come in with any problem related to any module. So that's my job." These labs are not content specific or synchronous in nature.

Sub-Question Four (SQ4)

Why do some technical education teachers at TCSG institutions express resistance to e-learning instruction? The answer to this question emerged when looking closely into the instructors who believed online instruction is unable to teach hands-on skills. There are also many factors identified that classify as forces that hinder the adoption of online education. However, the struggles and issues that occurred for instructors during this time were not necessarily dependent upon online teaching experience. Charlie, electrical systems technology instructor, stated, "You've got to understand in our business, it's a lot of hands-on…there are only three classes that do not have labs [associated] with them. How are you going to teach online labs?"

Some students did not choose online but were forced to transition to such during COVID. In fact, many students signed up for face-to-face and were quickly moved into an online scenario when mandatory technical college closures occurred. The transition was so difficult for Angel's medical assisting students at LPTC that she stated, "it was [so] difficult that the first group's

(March 2020) certification rates dropped 50%." In this extreme case, teachers were faced with trying to communicate with students that would not have chosen virtual interaction if given the choice. Josh described the struggling students as follows:

> I don't know what the number was, but there were some students that just did not come back, did not complete the semester, and the school worked with them, and they were not penalized from a grade standpoint. They did not like online…a certain percentage did not complete.

The majority of instructors also highlighted the need for increased maturity levels for online students. Scott, a Welding instructor at SPTC, when describing students' struggle managing the work stated,

> I feel like the daily interaction with the student wasn't there, obviously. And they seemed to lose interest because of not being able to come into the lab and physically do it. If you're just saying, 'Hey, I want you to do this. You need to watch this video and do that.'

Another hurdle for technical educators utilizing online instruction is online assessments. Janet, with over 20 years of experience, has encountered many students' excuses regarding taking assessments online. Janet describes a typical excuse to have an exam reset when she shared:

> When I get students, who say that 'my computer froze during the test.' you know, if I get that a lot, I say, 'Okay, it seems like you have problems with your system at home, so…we can schedule a time for you to come on campus and take your exam.'

Janet used this approach to eliminate manufacturer issues in an effort to receive more exam attempts by the students.

Summary

This chapter demonstrated the complex workings of instructor online perspectives through their views of technical education, their perceptions regarding the relative advantages and disadvantages of online instruction, and their views of the fit of online instruction and their technical institution's mission. In addition, the ways in which instructors fostered online instruction success were particularly insightful when compared to factors that promote or discourage online education adoption. While not all instructors thought favorably of the fit of online education to their specific discipline, especially if they perceived a non-negotiable 'hands-on' component, the majority of instructors felt that online education is here to stay, even for technical institutions. Their experiences implementing online instruction to cope with the COVID-19 pandemic are beneficial for the future of online technical instruction.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this research was to explore technical education teachers' experiences regarding online education. Chapter Five consists of the following sections: (a) interpretation of findings, (b) implications for policy and practice, (c) theoretical and methodological implications, (d) limitations and delimitations, and (e) recommendations for future research. This chapter seeks to connect the innovation being studied to the research participants and the context of their specific case. In addition, setting specific policies are included in conjunction with insight into the practical application of pertinent policies. Potential weaknesses of the research as well as any intentional boundaries of the study are also included in this chapter. Finally, this chapter will conclude with recommendations for future research.

Discussion

The five major subsections in this chapter are separated into two distinct groups: essential components related to online education adoption and forces that discouraged online instruction during COVID. This section will connect these two broad areas in each of the five previously-mentioned subsections. The inferences drawn from this research are from a culmination of 11 documents, as well as 16 semi-structured interviews, and one virtual focus group session that came to a total of 9.5 hours of transcribed data.

Interpretation of Findings

This research focused on exploring the online instructional experiences of technical educators within the TCSG. Through this study, instructors were assessed on their level of adoption concerning online instruction (adopter categories), their perception of the benefit of distance learning (relative advantage), evolution as online professionals

(mentorships/professional development), existence of quality online course assessments (course evaluation protocol), as well as the benefits of their current LMS (See Figure 11).

Figure 11

The Essential Components of Instructors' Online Experiences Related to Adoption

Many of the issues experienced by technical education instructors participating in this study were either initiated by COVID or exacerbated by the pandemic. My research explored the issues that instructors experienced from January 2020 to present. Significant findings included: attempting to communicate with students during the pandemic (Student/Teacher Connectivity), lack of discipline demonstrated by students (Students not Self-directed), issues related to online content (Course Development), student technology issues (Hardware/Software Issues), and stress experienced by teachers (Stress) (See Figure 12).

Figure 12

Forces that Discourage Online Instructions Exacerbated by COVID
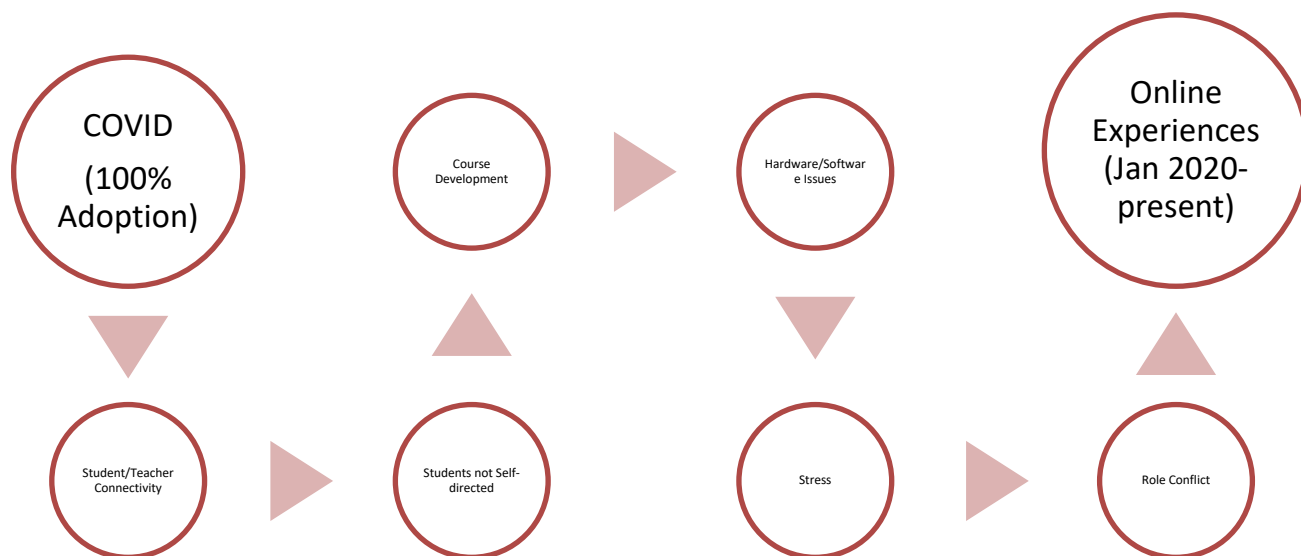
Summary of Thematic Findings

The subsections that follow begin with adopter categories and how the extremes of the adoption characteristic spectrum relate to the participants. Specific examples are provided as hard evidence pointing to how Laggards and Early Adopters (adoption characteristics) were represented in the data and ultimately applied in the conclusion. The importance of mentoring and professional development lay a foundation for strong instructor-perceptions concerning the perceived relative advantage of the innovation. In addition, course evaluations and LMS are also shown to be major contributors to sustained use of online instruction. The remaining subsections related to the thematic findings are included within the COVID experiences that participants communicated. Student-teacher connectivity was explored within the context of the pandemic

and assertions were made for future practices. The students' ability to become self-directed is discussed in respect to the instructors' points-of-view. Finally, this section concludes with the following four sub-themes from chapter four: course development, hardware/software issues, stress, and role conflict experienced by instructors during COVID.

Adopter Categories. Ryan and Gross (1943) first introduced the following five adopter categories in 1960 and they are as follows: innovator, early adopter, early majority, late majority, and laggards (Rogers, 1962). The research respondents were easily classified into either laggards or early adopters. A total of three instructors started their online instructional career during the pandemic, meaning they had never taught an online course before March 2020. These instructors would be considered laggards (Rogers, 1962). The entirety (100%) of LPTC faculty expressed a desire to continue with online instruction post-COVID and thereby demonstrated early adopter characteristics.

The evolution of the Laggards was captured by Ann, the Marketing/Accounting teacher, when she said, "It was more my lack of wanting to do it for myself" that kept her from adopting online instruction prior to the pandemic. She continued to cite upper-level directives and mentorships as two factors that assisted her in taking the leap into online instruction. This type of adoption, based on necessity, was initiated by COVID. Ann expressed a desire to sustain at least web-enhanced courses post-mandatory adoption edicts. Susan, a Medical Assisting instructor at the same technical college (SPTC), also did not teach any online classes prior to COVID. She stated that her "students have returned and are doing [their] classes in the classroom." The one class that remains online is Medical Terminology due to the lack of student interest for a face-to-face class. There was adoption and movement that occurred among the three instructors classified as laggards, however. The difference between Ann's continued use of web-enhanced

courses post-COVID and Susan's refusal to continue with online instruction will be discussed through the lens of mentorship and professional development.

The other extreme of Rogers (2003) adopter categories is that of *Early Adopters.* Instructors who push online course development into the arena of technical education skills training may be described as opinion leaders. These instructors sought to improve their ability to teach hands-on skills and course development remains an issue of focus for these technical educators seeking a larger online instruction footprint within their entire program. Many instructors were given an opportunity to demonstrate early adopter or innovator characteristics when the educational delivery system went to 100% online during mandatory school closures. These teachers are therefore referred to as 'innovators' or 'early adopters' (Rogers, 2003). Destiny states, "pharmacology was already on its way to being completely online, but it was the laboratory classes and clinicals that we had to figure out. It's still a work in progress, even though we are face to face [post-COVID]." Destiny demonstrated early adopter characteristics through course development innovation as shown in Figure 13.

Figure 13

*Hands-on Skills Being Developed for Online Classes*
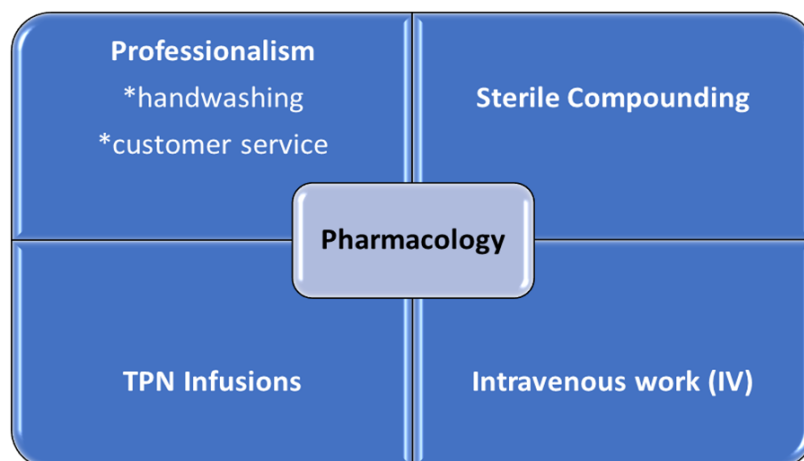
In addition, a tremendous amount of the innovation was shown to come from individuals performing their own research and development in regard to technology and publisher relationships. Early adopters are also called opinion leaders due to their desire to be out in front of the innovation adoption (Kaminski, 2011; Rogers, 2003). Elsie, an Accounting instructor at LPTC, provided an excellent example of an early adopter when she gave the following description of her own personal research and development regarding Blackboard document cameras: "I tried to make my own version of this, just to see. I used my own webcam…and I kind of hung it and it worked. But it did not have as much clarity as I would like." This is just one example where an instructor is thinking innovatively because she had a practical need of reducing the number of electronic forms that she had to share within Blackboard Collaborate during an instructional video. As previously stated in chapter 4, Elsie also demonstrated early adopter characteristics by opening up her communication circle outside of her institution (Rogers, 2003).

Robust Mentoring Program. One area that opinion leaders should be deployed to is in the area of mentorship. As previously highlighted in the theme, Factors That Promote Adoption, Tammie alluded to a bygone distance education mentorship program at SPTC in 2008. This research reasserts the need for this type of mentorship for *Laggards*. Ann was a benefit of one-on-one online technical assistance. Susan, on the other hand, did not receive one-on-one help during her COVID experience. I also observed a potential positive compounding effect when the mentor is selected from peers within the same department. This finding will be discussed in the interpretation of professional development. This study suggests that an increased emphasis by institutions on peer-to-peer mentorship within the TCSG system could eliminate some of the

obstacles preventing the adoption of online instruction, thereby increasing the productivity of online technical education. Such mentorship already exists at SPTC (See Figure 14).

Figure 14

SPTC's Model of One-on-One Mentorship Related to Online Instruction Technical Assistance
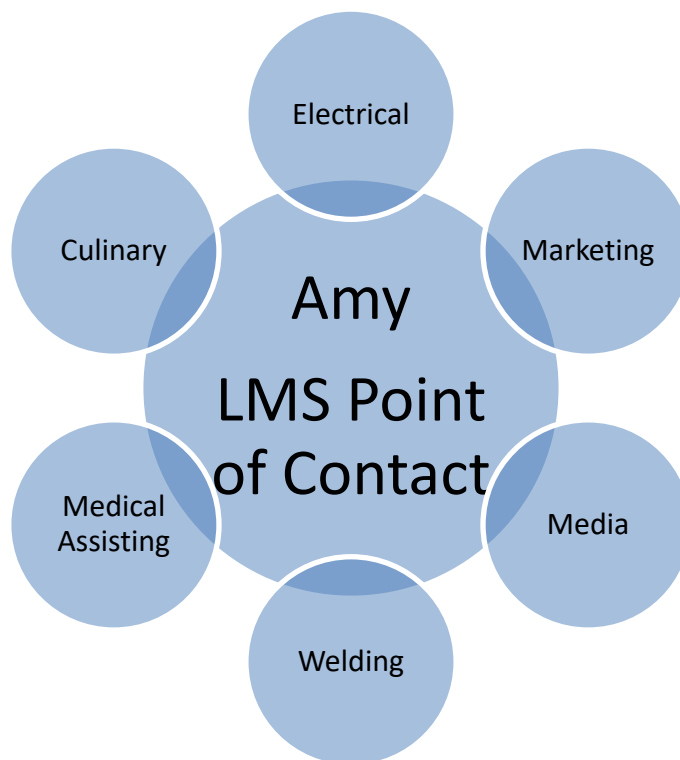
While LPTC instructors did not have identifiable mentors like SPTC instructors did, the online instructors at LPTC had a very high opinion of their Distance Learning Department's accessibility and expertise. However, the Distance Education department delivered their assistance at a distance. Figure 15 illustrates departments that indicated they received technical assistance related to online learning and the way in which it occurred.

Figure 15

LPTC Model of Mentorship Related to Distance Online Instruction Technical Assistance
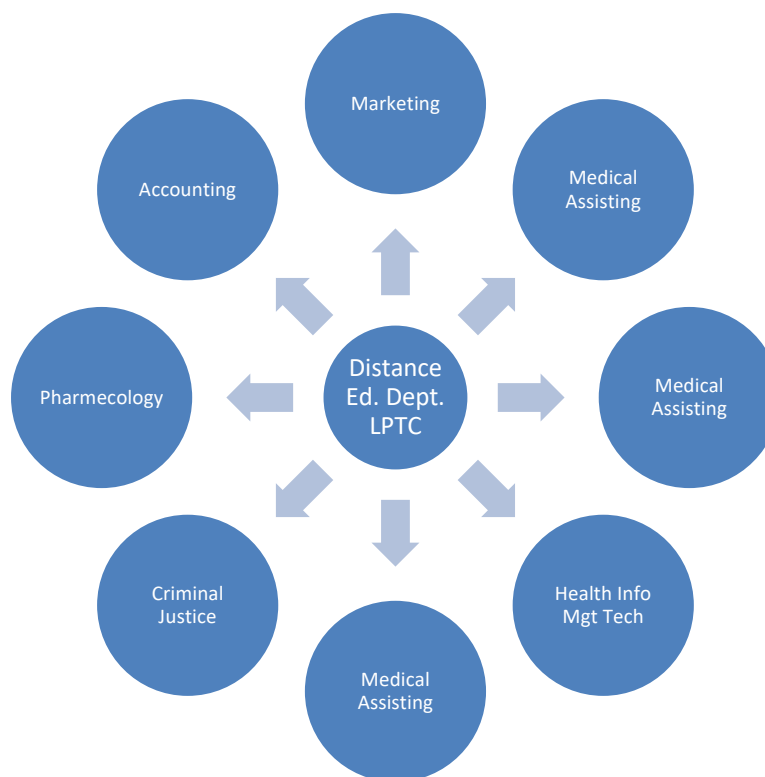
Note. Duplicated programs indicate individual participants in the research

My research did not indicate a problem with this type of technical assistance. The findings do however indicate that there are certain types of instructors that will be lost (will not demonstrate sustained adoption) with this approach (Dibenedetto, 2015; Motte, 2013). For example, Jo, a Medical Assisting instructor at LPTC, also a first-time online Medical Assisting instructor, was asked if she would continue with online post-COVID, she replied, "I would like to be online, but they (her supervisors) seem to prefer me to do lectures."

Professional Development. The findings regarding instructors' professional development exposure have the ability to increase the success in technical education programs (Largent-Necessary, 2021; Syauqi et al., 2020). Unfortunately, the overwhelming majority (87%)

of instructors could not point to a training or specific interaction that they applied directly to their program. Rather, they only recalled the mandatory Blackboard training for new employees. Literature suggests that professional development is most effective when it is directly related to the technologies utilized during mandatory school closures (Shdaifat et al., 2020; Stevenson, 2022; Syauqi et al., 2020). The findings in this research show a benefit to furthering the specificity of professional development content to include specific programs of study and the individuals that work in them. For example, Elsie's knowledge and comfort with online teaching increased from doing her own previously-mentioned research. Her experiences and knowledge would be excellent professional development content for other online instructors. Furthermore, other accounting technical educators within the TCSG would receive added value by knowing which accounting forms and classes the document camera was being used in. It is important that a variety of professional development is offered, and that opinion leaders and early adopters are given a chance to share their knowledge with others as well as help laggards overcome challenges (Hanna, 2020).

  Relative Advantage. Participants' responses were further analyzed as to how their experiences corresponded to the following five innovation characteristics indicative of DOI theory: relative advantage, compatibility, complexity, trialability and observability (Kaminski, 2011). Compatibility and complexity were captured through the mission viewpoints and experiences communicated by individual instructors. For example, the data at LPTC strongly suggested that the instructors' values were compatible with online education (Rogers, 2003). This research assesses the instructors' views of the relative advantage the innovation offers. Instructors assessed the innovation in relation to their satisfaction with it in relation to their view

of technical education's mission. This category directly correlated to the instructor's perception of the innovation (e-learning).

The results of this study clearly show a significant number of participants (62%) who perceived online instruction as critical to accomplishing their technical education mission. This finding suggests that these individuals will be able to sustain some form of online instruction long-term (Dearing & Cox, 2018; Kaminski, 2011). Among these instructors, there was no doubt that they did not consider anything else to be better than online instruction. When considering the future of online instruction, instructors often pointed to the specific class and the number of hands-on skills associated to that specific class as variables dictating how much of an online model would be needed. Variability did exist, however, among instructors at the different cases. Susan, a Medical Assisting instructor, for example, was not counted in the 62% that saw a relative advantage with online instruction at SPTC. However, 100% of the Medical Assisting instructors at LPTC embraced online instruction and perceived the advantage associated with distance learning as very high. Online instruction was seen as compatible and understandable in regard to complexity. These opinion leaders also worked with publishers and colleagues in respect to simulations and figuring out how to teach various skills virtually. This disparity is directly related to the perceived value of online instruction as well as the skepticism of a laggard versus the innovativeness of an early adopter (Rogers, 2003).

Course Evaluation Protocol. Along with professional development, online course evaluations are considered to be beneficial in relation to sustained use of distance learning (Benito et al., 2021, p. 54; Largent-Necessary, 2021; Syauqi et al., 2020). Findings indicate that 100% of the teachers at SPTC have had no formal evaluation process for their online classes. However, instructors at this college did not express a desire for a more formal process. While the

previously mentioned one-on-one mentorship is considered a strength to online instruction

adoption, the lack of a formal evaluation process is not. On the contrary, the majority of LPTC

instructors identified a formal online course evaluation process. These instructors highlighted a

self-evaluation form that was turned into the Distance Education Department and then evaluated

for further technical assistance. The majority of LPTC instructors communicated a formal

process of evaluation and seemed to be satisfied and even proud of the process. Destiny, a

pharmacology instructor pointed out how the process works through the Distance Education

Department when she said, "So there is a self-assessment process, but our distance learning

department does review (online classes). If they see anything weird…they will send nastygrams

that say, 'you're not doing this right.'" From an institutional perspective, it is easy to see how the

quality of online instruction could potentially be variable across the state due to the lack of

standardization in course evaluation that was observed in the research findings.

      Learning Management System. Technical instruction appears to have settled into a new

normal with online education. The formal definition of online instruction with its strict

boundaries or separation of time and space (Moore, 1997) no longer applies. The number of

online classes a particular technical college offers in one year does not necessarily indicate

distance learning. For example, most of the educators included in this study find it commonplace

for students to do much of their online work "on-campus." In addition, those programs with

heavy skills-based curriculum were documented as doing online classes on-campus within the

classroom. Ann, an Accounting/Marketing instructor at SPTC, captured this outlook perfectly

when she said, "I think it's a good tool for our students who are busy with their lives and families

and work. I think it works well for them because they can come in anytime in our labs and do

their online classes." Elsie, the accounting teacher at LPTC, demonstrated a high level of

knowledge concerning online tests and testing. She works with publishers to establish tests within Blackboard and connects their scores directly to Banner. This technique is seen as being extremely helpful by online instructors, as it is often referred to as 'push.' Elsie described this process by stating, "I just know how to do it. Instructors love this because they don't have to log into Banner."

As previously mentioned, LMS grading and testing is seen as a positive by the majority of online instructors. That being said, findings suggest that there are some instructors that are unaware of how to perform online testing with accountability. Bob expressed his need for a third-party proctor for his exams. Bob's ignorance is not uncommon when compared to his colleagues at the larger LPTC, post-COVID. However, there appears to be a tremendous amount of knowledge gained specifically within the Medical Department at LPTC regarding online assessments. The diffusion process is still underway within this department regarding the use of online assessments and the issue of how to manage online proctoring. Determining how to weight grades could be a professional development topic going forward that would benefit individual colleges. Understandably, SPTC lagged far behind concerning online testing and it was basically nonexistent post-COVID, except for the two opinion leaders included in the study.

Student-Teacher Connectivity. More connectivity between the teacher and students has been shown to increase student engagement with the courses and thereby reduce student attrition and increase student satisfaction (Gouëdard et al., 2020, p. 28). Mandatory campus closures due to the pandemic, for example, forced online instructors at SPTC and LPTC to consider how they would communicate with students that were face-to-face but were then forced to move to fully online formats. Decision-makers will be able to better manage student-teacher communication by understanding the hurdles that exist in regard to diffusion (ACTE, 2020; Neal, 2020). For

example, the findings in this research suggest that the typical 'go to' strategy of email was not a beneficial mode of communication for these students. Many of the participants indicated that they had endured increased work hours establishing communication with students during the mandatory college closures of COVID. The findings in the semi-structured interviews and document analysis suggested that the email and phone were the primary modes of communications preferred by the instructors during the COVID transition into mandatory school closures. This assertion was confirmed by synthesis through triangulation. Data from semi-structured interviews, documents, and focus group findings were all used to support the theme of student-teacher connectivity. Charlie, an electrical instructor at SPTC, combines a calendar of deadlines into his grade sheet to increase communication effectiveness. Charlie states,

> I got a schedule… a calendar. And my calendar is a little different because I do mine in my grade sheet because if I don't, I found out they don't look. And this is the one thing they have to send me, a Blackboard email telling me that they have done (confirm they looked at the deadlines).

In the above case, Charlie opted for an email confirmation versus a quiz on the syllabus in Blackboard.

Need for Self-directed Learners. Participants were almost unanimous regarding a need for increased maturity among students in online classes (See Figure 16). The needs for students to understand how to log into Blackboard Collaborate, to manage time well, and to see the importance of weighted grading were consistent in both semi-structed interviews and the focus group interview. Shdaifat et al. (2020), for example, states the following potential disadvantages of e-learning, "first and foremost, learners must have a high degree of self-discipline, time management skills…in order to independently control the learning process." The need for

students to be self-directed and able to manage time is confirmed in many other sources (Belaya, 2018, Ohanu & Chukwuone, 2018; Syauqi et al., 2020). A considerable source of variation in this area was the demographic of age as it related to students. Some instructors, like the Criminal Justice program instructor at SPTC, felt that young students lacked maturity. Other instructors, like Destiny in Pharmacology at LPTC, felt strongly that dual-enrolled students had a more seamless transition during mandatory school closures. Instructors suggested that students' expectations were impacted by their COVID experiences. Students were described as demanding more flexibility in grading, less likely to want hands-on work in face-to-face labs, and as having an overall unrealistic expectation of the requirements of online learning.

Figure 16

Percentage of Online Instructors at Each Case that Identified Self-directed Issues with Students

Course Development. Research has shown that autonomy in course development is a major contributor to achieving learning outcomes (Dibenedetto, 2015). That being said, one of the greatest challenges indicated by instructors from both colleges (SPTC and LPTC) was course development in which they had almost 100% control over. Faculty at both SPTC and LPTC had an extremely short amount of time to convert paper exams to electronic formats in the midst of their facilities closing. Prior to COVID, many instructors indicated that they had to contact publishers to acquire free access to electronic material for their students. Some instructors like

Janet, Josh, and Elsie noticed a decreased in responsiveness in their fully online courses during COVID. This suggests that online instructors had to change their courses during the semester to recapture students.

The majority of instructors at SPTC remain at an entry level concerning online instruction. These instructors primarily utilized the LMS for tests, quizzes, and facilitating student learning objectives through labs. On the flip side, the majority of faculty interviewed at LPTC were operating at higher levels within their programs. The largest part of this variation may be explained by the hands-on nature of the various programs interviewed. There are two exceptions to this rule, however. Approximately 31% of the participants interviewed shared degree program curriculum with another participant. SPTC had two instructors that either wanted to stop with web-enhanced online instruction and not use it no more that (Accounting/Marketing) or wanted to pull back from online entirely (Medical Assisting). Findings indicated that there were instructors doing the same degree courses at LPTC. This suggests that a course development leader needs to exist at SPTC or for there to be an administration-led initiative for course development support. Research suggests that insufficient training and lack of support may be barriers related to online education (Brainerd, 2020; Dinc, 2019; Tanik Önal, 2021).

The Distance Learning Department at LPTC as well as the TCSG were referenced as sources of course shells. The former LMS mentorship at SPTC was also referenced as sharing peer-shells for shared courses. It is the view of the researcher that this is a growth edge not only for individual colleges, but for the system as a whole. The perceived relative advantage will increase dramatically if prefabricated course shells have more depth and are tied to a certain publisher.

Hardware and Software Issues. The research yielded many findings that could be used to address hardware and software issues. For example, students were able work around hardware and software issues with an "On Campus Online" approach to online classes. Both technical colleges highlighted the issues of computer access and appropriate software as being an issue during COVID. SPTC faculty did not produce any strategies to address the issue. Tammie, a Criminal Justice instructor at SPTC, said, "many students come in thinking they can do online by their phone, or the only internet they have is their phone, their hotspot on their phone." Courtney highlighted the laptop loaner program through Student Services, which was developed post-COVID to alleviate hardware and software issues at LPTC. She states, "We used to have a lot of hardware issues with students (COVID)…the laptop program came because of COVID." Another solution mentioned by Courtney was the use of Computers on Wheels (COWS). Courtney went on to say, "we have 40 computers in a COW and they are able to do all their work on their (assigned) laptop." This technique solves browser and software issues for in-class students (See Figure 17).

Figure 17

COW Used in Medical Assisting During On-campus Labs

A limited number of instructors looked favorably on the phone regarding its potential. An exception, Courtney, a Medical Assisting professor at LPTC, actually highlighted the mobile phone as a feasible option for students in her program. Amy also stated, "If my students could do Word and Excel on their phone…Lord they would…It'd be great." Destiny said that her students "usually can use it (mobile phone)… I don't have any problem with it."

Stress. The data clearly showed that the rate of change that teachers experienced getting out of their classrooms and moving their course content into the LMS was substantial. Focus group participants unanimously agreed that the rate of technological adoption experienced by the individual departments resulted in a five to 10-year technological leap. This is seen as particularly demanding when the start of the pandemic was mid-semester and students had questions that could not be immediately answered. The z-score was highlighted with a certain amount of variation from instructors as a way to alleviate the transition for those who could not adapt or navigate the transition. Emeril, culinary instructor at SPTC, defined the z-score as "a state recognized grade, that works like an incomplete but the Z-grade, took the "extreme circumstance out" and students did not have to have documentation."

Teachers were under considerable stress to make decisions during COVID (Shdaifat et al., 2020). The fact that some instructors experienced a force reduction within their department while navigating the COVID transition aggravated the situation and also increased instructor stress (See Figure 12). In addition to reworking the entire technical education delivery system with 100% content-autonomy, teachers were also dealing with COVID infections personally. Some testified to contracting the virus and one Medical Assisting instructor experienced trauma from a spouse contracting COVID and passing away early in the pandemic.

Role Conflict. Data from this research points to how ill-prepared both institutions were to shift faculty to home offices. The overwhelming majority of respondents (Early Adopters included) attested to the increased stress when shifting to working from home. Role conflict was evident for teachers with young children especially. The K-12 school system was also closed by similar executive orders from the governor and therefore placed instructors' children at home learning virtually. Approximately 50% of the focus group participants said that they would adjust their home offices in the future. For example, when asked (during the focus group) what she would do differently upon the advent of another mandatory school closure, Angel said, "I would definitely setup a better work office space for comfort because I was at my dining room table and I would definitely do it differently if we had to go out again."

Implications for Policy or Practice

This research is founded on the premise of helping make technical education more equipped for future emergencies. In such cases as pandemics, for example, administrators lack the time needed to consider past experiences, much less apply them to current situations. The policy implications included in this chapter are localized for a very specific context. Therefore, the practical application of the recommendations listed in this section are best applied to the specific college and, to a lesser degree, the TCSG system overseeing the two institutions included in this research. Existing literature supports the reality that an increased understanding is needed for technical education stakeholders concerning online learning (ACTE, 2020; Neal, 2020; Shdaifat et al., 2020). This is the central purpose of this research, which sought to better understand technical education instructors' online education experiences and thereby develop workaround strategies for future crises as well as day-to-day instruction (Coombs, 2007; Gigliotti, 2020; Thelen & Robinson, 2019). While the strategies that follow will help a future

pandemic response situation, this study found that online technical education should not be reserved solely as a pandemic response strategy. Lenart (2016) stated, however, that "teachers are a crucial component of any…intervention strategy" (p. 9).

Implications for Policy

Both technical education institutions are positioned under the TCSG. The following recommendations should be considered for statewide policy initiatives: online course evaluations, peer-to-peer mentoring, and new student orientation. Research suggests that these recommendations could increase instructor confidence and ultimately improve teacher retention rates within a given institution (Largent-Necessary, 2021). Evaluations of online courses should have a standardized statewide protocol. If this process currently exists, the instructors are not aware of it, which means institutions likely are not using it. Instructors should be made aware of the metrics of evaluation and growth edges should be communicated with resources made available by technical support. The TCSG should utilize more degree program instructors for trainings that target other teachers in similar fields. Professional development opportunities regarding online instruction should be driven at the department level rather than solely provided institution wide. Online staff development is one of the highest priorities within higher education institutions today (Hanna, 2020).

LPTC instructors continuously mentioned their institution's Quality Enhancement Plan (QEP) as being a motivator for increased use of and the effectiveness of online instruction. The QEP was cited as the genesis of the online Blackboard orientation called SHIELD. Josh further highlighted the online instruction emphasis of QEP by stating,

> The time of the QEP, this was around the time the college really started emphasizing
>
> online learning and really having a concerted effort to have solid online classes, not

necessarily 100% online, but a sizable percentage of the classes being offered online

because that's what the students begin to request.

All TCSG technical colleges are required to engage in strategic planning. Successes like

SHIELD should be evaluated by instructors and similar educational practices adopted by

colleges. This study inadvertently identified measures that were deployed post-COVID that

should be considered for statewide policy. For example, LPTC deployed the 'Laptop Loan

Program' through Student Services to alleviate hardware and software issues that students had

during COVID. Obviously, the Laptop Loan Program has its limitations. Therefore, the TCSG

should consider how to improve a new student orientation specifically for online courses.

Finally, a culture of celebration would help online instruction adoption throughout the state if

successful instructors and departments were highlighted in relation to their use of technology and

publisher partnerships.

Implications for Practice

The findings in this research may be useful when putting a formal evaluation program in

place. These findings related directly to the college campuses included in the research and may

only apply to their specific context. The better a college is at allowing the local industry within

their service area to drive policy and training, the more likely it is that the institution will be a

vibrant technical education delivery system (Dibenedetto, 2015; Key, 2018). For example, Janet,

Health Care Information Technology instructor, highlighted the importance of the medical

industry during COVID-course development when she states, "I reached out to doctor's offices,

hospitals, and advisory committee members, you know stakeholders, and they provided feedback

on sample assignments as well as (practical work-based) opportunities." Online course

evaluations in this research ranged from nonformal, student-driven format to a standard protocol.

Online course evaluations primarily run through the Distance Education Department at LPTC. This is not an option for the smaller SPTC. That being said, online course evaluations are no less important at SPTC than they are at LPTC. Bob, Criminal Justice instructor at LPTC, stated that he was unaware if he was being evaluated or that a process existed until he received notification that an evaluation was completed regarding his online instruction. Colleges within the TCSG can learn from LPTC procedures and seek to notify all online instructors of the evaluation procedures. SPTC's Blackboard Point of Contact, Amy, also attested to 'Ghost-evaluations' (complaint driven) when addressing student complaints for administrators. Ghost-evaluations could be potentially counterproductive for institutions. Research suggest that teacher evaluations have set objectives and expectations that are understand by all parties (Radinger, 2014).

The positive impact of teacher evaluations and mentorship has been linked to the adoption of e-learning innovation (Dibenedetto, 2015; Motte, 2013). A peer-to-peer mentoring program for online instructors may also be beneficial for technical colleges to incorporate into individual institution's evaluation protocol. It may be useful for technical colleges to identity early adopters for professional development deployment (Key, 2018). The content rich material that these instructors have is most valuable at a degree program level and could be made accessible to other technical education colleges across the state. This type of activity, when embraced by opinion leaders, may also be celebrated and incentivized monetarily by individual colleges as well as by the TCSG (Radinger, 2014; Surry et al., 2009).

There was complete agreement around the benefit of a new online student orientation policy applied at the technical college level. The variation among instructors centered around what the orientation would include and how it would be given. For example, several instructors were in favor of new-student orientation in an effort to increase student-teacher interaction

before registration in online courses occurred. The majority, however, focused on hardware and software assessments of individual students. The findings suggested that colleges may also want these orientations to be face-to-face and combined with the enrollment process. Online orientations were looked upon with skepticism by instructors. The SHIELD program, an online orientation, was designed to eliminate Blackboard Collaborate issues and remains a requirement for all online students. SHIELD existed before COVID and did not eliminate login issues, nor did it address specific hardware and software needs of a particular degree program during COVID. It remains, however, a critical part of any potential orientation protocol. In the future, students should be assessed by a college representative that has a working knowledge of the courses and degree programs that are targeted by the students. The level of variability regarding course learning objectives and the use of mobile phones, for example, attests to the variation among instructors related to hardware and software requirements. Access to online courses may also need to be decided on an individual basis. In addition, the variability related to grading policy was evident in the semi-structured interviews. Department specific in-person orientations could possibility positively impact student success at technical colleges. Time management and increased discipline are two potential disadvantages to online courses that have been substantiated in the literature (Belaya, 2018; Ohanu & Chukwuone, 2018; Shdaifat et al., 2020; Syauqi et al., 2020)

Theoretical and Empirical Implications

This research utilized DOI to assess online instruction at technical colleges within the TCSG (Rogers, 2003). Under the guidance of this broad framework, the research revealed each instructor as falling under one of the five categories for innovation adoption that were first introduced by Ryan and Gross (1943). These categories directly correlated to the instructor's

perception of the innovation (e-learning). Participants' experiences were further analyzed as to

how their experiences correspond to the five innovation characteristics indicative of DOI theory

(Kaminski, 2011). The theoretical framework provided an excellent strategy for identifying

laggards and early adopters as well as the relative advantages associated with the innovation

(online instruction). The major assumption of the DOI, sustained adoption of the innovation, fell

short in relation to the scope of this research. While some participants communicated continued

use of online instruction, others said they would not do so or that they would only continue with

web-enhanced courses. It is important to note, however, that the web-enhanced form of online

instruction is considered entry level with limited functionality. Angel, Medical Assisting

instructor at LPTC, described the phenomenon of limited distance learning functionality when

she said, "We only used web-enhanced…to have emphasis on information we gave out in class."

Another colleague in the same department, Courtney, described web-enhanced as being part of

"all on-campus courses." She went on to describe the normal function of a web-enhanced course

by highlighting the students' "syllabus and their calendars and email reminders and put their

grades in Blackboard." Only one of the three instructors that started their online journey during

COVID did not express a desire to sustain online instruction adoption. The other two desired to

continue the use of Blackboard for entry-level web-enhanced courses. More time would be

needed to see if these laggards actually sustain a level of adoption or if they ultimately divert

back to pre-COVID instructional models. In hindsight, it would have been interesting to shift the

approach of this research with a theory-driven evaluation. This theory is a footprint in the

literature regarding evaluating teacher experiences. The heavy focus on inputs and outputs could

potentially leave a better roadmap for practitioners to follow. However, previously mentioned

concerns regarding making absolute assertions about the findings in case study research would need to be addressed (Kabongo et al., 2020; Magadzire et al., 2017).

This study's research findings are in line with the existing literature that places a premium on data-driven professional development during school closures (Shdaifat et al., 2020; Syauqi et al., 2020). In addition, the pressure that instructors communicated when going through mandatory school closures was also corroborated (Bhattarai, 2020). Most instructors at SPTC that resisted online education also confirmed that distance learning was not compatible with the skills-based technical education mission (Ohanu & Chukwuone, 2018). The research focused primarily on the factors that influenced the self-efficacy of teachers through their perceptions of the relative advantage of the innovation (online instruction) rather than the individual feelings of self-efficacy within each instructor's online instruction experiences (Hana, 2020).

Limitations and Delimitations

The limitations of this research primarily rest with the inability to extrapolate the findings beyond the case(s) explored. In addition, more uniformity in relation to the degree programs selected could provide for more opportunities to compare Laggards' resistance to the innovation versus a degree program's inability to conform to a virtual skills-based instructional model. While the research attained adequate diversity in experience and ethnicity, it did not hold true in a cross-case analysis. The instructors at SPTC, for example, were entirely white. LPTC's instructors, on the other hand, were 75% black. In addition, this research gives a sufficient view of a small and large technical college, but lacks the opportunity to compare two colleges of similar sizes.

Recommendations for Future Research

There are many approaches that could be taken to expand the existing knowledge of instructors' experiences with online instruction within technical education. One potential change in the methodology used in this research is in relation to sample size. There is a tremendous amount of value to be had in potentially reducing the sample to two instructors. These two instructors would have opposing views of the innovation in relation to technical education's mission. Taking an ethnographer's approach to these two practitioners would be fascinating. In similar fashion, future research should intentionally target colleges of similar sizes in an effort to acquire more uniformity in technical assistance, professional development, and evaluation protocol. Using a grounded theory approach, future research could use multiple sites of a similar nature to create a model of online technical instruction that could potentially be used at technical institutions nationwide. In addition, the frontier of online research within technical education seems to center on quality. Questions remain about the degree of quality associated with various courses in relation to the online platforms and what is best for the students. Courtney, a Medical Assisting instructor stated,

> I have students that say they like it better online. It's not because they learn better that way, its normally time issues. They're working. They have a need to be able to it at their pace and not come in at a set date and time.

Areas that research participants demonstrated significant amounts variability also suggest areas that could be better understood better. Instructors in this research demonstrated a significant amount of variability as to their views on the usefulness of the smartphone within their courses. Future research should deploy a pilot project assessing various courses' potential for being accessed exclusively on the mobile phone. These trials should be cell phone specific,

and courses could one day be offered specifically for a monolithic smartphone virtual classroom. The use of smartphones also represents a significant difference maker for potentially moving marginal students towards becoming self-directed learners due to the convenience. Other variations existed among the Marketing and Accounting departments within this research regarding the levels of adoption and views regarding the innovation.

Conclusion

The purpose of this case study was to explore technical education teachers' perceptions on the use of e-learning within Technical College System of Georgia (TCSG) institutions. The theoretical framework guiding this multi-case study was diffusion of innovation (DOI) theory. Two technical colleges provided the setting for data collection and served as the primary context for the findings as well as the interpretations that followed. One primary takeaway from data analysis provided evidence to support that online education is here to stay in technical education. For example, the characteristics associated with the innovation (online education) entitled, 'Relative Advantage,' was 100% at the larger LPTC. In addition, the smaller college, SPTC, documented first-time users professing sustained use of online instruction due to high degrees of relative advantage. The second major finding that this research produced was that an instructor's view regarding the technical education mission and online instruction was more important than the negative experiences encountered during the COVID transition.

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Appendix A: IRB Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

March 1, 2022

Robbie Edalgo
Kristy Motte

Re: IRB Exemption - IRB-FY21-22-471 ONLINE EDUCATION EXPERIENCES AMONG TEACHERS WITHIN TECHNICAL COLLEGE SYSTEM OF GEORGIA INSTITUTIONS: A MULTIPLE CASE STUDY

Dear Robbie Edalgo, Kristy Motte,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix B: Teacher Consent Form

Title of the Project: Online Education Experiences among Teachers within Technical College System of Georgia Institutions: A Multiple Case Study
Principal Investigator: Robbie Edalgo, Ph.D. Candidate (2022), Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be 18 years of age or older, be aware of online instruction, and have had an active employment status as a teacher within Technical College System of Georgia (TSCG) institutions from January 2020 to the present. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of my research is to understand technical education teachers' perceptions of online education within Technical College System of Georgia (TCSG) institutions.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:
1. Take part in an interview on your experiences with distance learning. The interview will be conducted either in person or virtually through Blackboard. This interview will be audio- and video-recorded (1 hour).
2. Provide documents related to your online education experience either in person or through email (30 minutes).
3. Provide a link to an online class that you taught (10 minutes).
4. Participate in an audio-recorded virtual or face-to-face focus group conversation   (1 hour).

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include a better understanding of the challenges and successes that technical colleges face, in regards to e-learning, as well as an increase in pandemic-readiness due to the intentionality of learning from the past.

What risks might you experience from being in this study?

The risks involved in this study are minimal, and are therefore equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential by replacing names with pseudonyms. Pseudonyms will be given to each teacher participating in the study. Teachers will only comment on the quality of the student data and make recommendations based on their evaluations. No identifiable descriptors will be used to identify teachers in the case study. Interviews will be conducted in a location where others will not easily overhear the conversation.
- All data will be stored on a password-protected desktop computer or in a locked filing cabinet in a locked office at South Georgia Technical College (SGTC). All data will either be deleted or shredded three years after the research.
- The interview and the focus group will be recorded and transcribed. Recordings will be stored on a password-locked computer until 2025 and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group. Confidentiality will be protected by not using the focus group setting to discuss institution-wide issues. The focus group will brainstorm proper responses needed to address themes identified in the interview.

How will you be compensated for being part of the study?

Participants will receive a $10.00 Chick-fil-A gift card after the completion of the interview. The gift card will either be mailed to participants who complete the interview virtually or handed to participants who complete the interview in person.

Does the researcher have any conflicts of interest?

The researcher serves as a teacher at South Georgia Technical College. To limit potential or perceived conflicts, the researcher will identify the preexisting bias that the selected site may or may not have and communicate those in the results. The researcher currently has no department supervisory responsibility that could present a conflict of interest. This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on his or her decision to participate in this study.

Is study participation voluntary?

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

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the 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.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Robbie Edalgo. 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 sponsor, Dr. Kristy Motte, at ███████████.

Whom do you contact if you have questions about your rights as a research participant?

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

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

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

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

_____
Printed Subject Name

_____

Liberty University IRB-FY21-22-471 Approved on 3-1-2022

Signature & Date

Appendix C: Recruitment Letter

January 4, 2022

Jane Doe
Technical Education Instructor
Longleaf Pine Technical College
Future Hwy
Dunnaville, Ga 00000

Dear Ms. Doe

As a Ph.D. student in the School of Education at Liberty University, I am conducting research as part of the requirements for a Ph.D. in Higher Education Administration. The purpose of my research is to understand teachers' perceptions of online education for a maximum of 40 instructors within Technical College System of Georgia (TCSG) institutions and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older, be aware of online instruction, and have had an active employment status as a teacher within TCSG institutions from January 2020 to the present. Participants, if willing, will be asked to participate in a 1-hour interview, share any documents that could aid my research (30 minutes), share a link to the classes they taught (10 minutes), and participate in a focus group (60 minutes). Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please click here: https://www.surveylegend.com/s/3t84.

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please type your name and the date on the form. Then, please click the button to proceed to the survey.

Participants will receive a $10.00 Chick-fil-A gift card in appreciation of taking part in this research.

Sincerely,

Robbie Edalgo
PhD Candidate

Appendix D: Data Collection Procedures

Themes	Sub-themes	Initial Codes
• Aspects of lesson/instruction that positively impacted distance learning	• Presence of institutional related factors contributing to success	• Will emerge through the inductive process in the faculty/teacher interviews