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## Technology Integration Experiences and Perceptions of Southeastern Secondary Teachers

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Concordia University–Portland

College of Education

Doctorate of Education Program

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Technology Integration Experiences and Perceptions of Southeastern Secondary Teachers

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Dissertation submitted to the Faculty of the College of Education  
in partial fulfillment of the requirements for the degree of  
Doctor of Education in  
Transformational Leadership

Heather Miller, Ph.D., Faculty Chair Dissertation Committee

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## **Abstract**

This research examined secondary southeastern teachers' experiences and perceptions of technology integration in the classroom. Two research questions guided this study: What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms? How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons? The study was conducted using the conceptual framework of Bruner (1961), Dewey (1910), Piaget (1970), and Vygotsky (1978). Constructivism suggests that individuals construct their knowledge and meaning through their experiences. Eight purposefully selected secondary teachers who used technology integration in their classrooms more than once participated in the study. These data were collected in two phases: semistructured interviews conducted in person, and member-checking face-to-face interviews. An inductive analysis model was used. Data were coded to identify patterns and themes using initial and pattern coding. Results indicated teachers had positive perceptions and experiences regarding technology integration. Teachers viewed technology integration as beneficial and necessary for students to employ 21st century skills. Teachers also identified the need for technology-focused professional development, online resources, a supportive culture, and an established technology standard to achieve effective technology integration in the classroom.

*Keywords:* technology integration, professional development, teacher experiences, secondary teacher, 21st century skills

## **Dedication**

I want to dedicate this dissertation to my parents, James and Henrietta Murrell. They are not only my parents, but they were the first people to push me outside of my comfort zone. They equipped me with all the skills I needed to achieve my goals. With their continued love and support, I am fearlessly able to accomplish anything I start. By allowing me to be true to myself, I flourish knowing that they will always be there cheering me along.

## **Acknowledgments**

I want to begin by thanking God. Without Him, there would be no accomplishments. I genuinely believe that he guides everything I do. I would like to graciously thank my family. My husband Thomas, who has waited patiently while I completed my program, was there urging and reassuring me that there was nothing too daunting for me to handle. I also thank my three children, Heiress, Amalachi, and Kennedy. I adore each of you. I know this journey has not been easy, but each of you has motivated me beyond measure. To all my extended family and friends, thank you all for reminding me of what is important in life. You all have played an extraordinary role in my life and for that I will never forget.

Lastly, I would like to acknowledge my dissertation chair, Heather Miller. Each step of the way she was always there giving me the raw, uncut truth. For that I am thankful. During our conversations, profound words have been spoken that will lead me in this next phase of life. I thank you for your patience as I figured out the path I wanted to take. You indeed are a rare soul, and I can only aspire to share my knowledge with others as you have with me. I would also like to acknowledge my other committee members. The dedication that each of you has to education enabled me with the knowledge to provide a case study that focused on an issue I was passionate about. Without this committee's guidance, I would not be able to complete this study and embark on my mission to implement change in the world.

## Table of Contents

Abstract .....	ii
Dedication .....	iii
Acknowledgments.....	iv
List of Tables .....	x
Chapter 1: Introduction .....	1
Background and Conceptual Framework.....	3
Statement of Problem.....	4
Purpose of the Study .....	4
Research Questions .....	5
Rationale, Relevance, and Significance of Study .....	5
Definition of Terms.....	6
Assumptions, Delimitations, and Limitations.....	6
Assumptions.....	6
Delimitations.....	7
Limitations .....	7
Summary .....	8
Chapter 2: Literature Review.....	9
Search of Literature.....	9
Information and Communication Technology History .....	10
Conceptual Frameworks .....	11
Background.....	11
Major Theorists.....	12



Connectivism .....	15
Online Learning Theory.....	15
Summary of Theories.....	17
Review of Research Literature.....	17
Information and Communication Integration .....	17
Position of Technology in Schools .....	22
Effects and Benefits of Technology Use .....	23
Obstacles to Technological Integration in Schools.....	25
Value of Experiences .....	27
Student Experiences and Engagement .....	28
Teacher Experiences .....	29
Review of Methodological Designs.....	31
Synthesis of Research Findings .....	32
Strategies.....	32
Instructional Approaches to Technology .....	33
Collaboration of Technology and Pedagogy.....	33
Importance of 21st Century Skills .....	34
Critique of Previous Research .....	36
Chapter 2 Summary .....	37
Chapter 3: Methodology .....	40
Research Questions.....	40
Purpose and Design of Study.....	40
Research Population and Sampling Method.....	41

Research Population.....	41
Sampling Method.....	41
Instrumentation .....	42
Data Collection .....	42
Semistructured Interviews .....	42
Field Notes .....	43
Identification of Attributes.....	43
Data Analysis Procedures .....	44
Semistructured Interviews .....	44
Field Notes .....	47
Limitations of the Research Design.....	48
Limitations .....	48
Delimitations.....	49
Validation.....	50
Triangulation and Member Checking .....	51
Expected Findings.....	52
Expected Outcomes .....	52
Ethical Issues .....	53
Chapter 3 Summary .....	54
Chapter 4: Data Analysis and Results.....	55
Description of the Sample.....	55
Research Methodology and Analysis.....	60
Data Collection .....	61

Semistructured Interviews .....	62
Follow-Up Interviews and Member Checking .....	62
Data Analysis .....	63
Coding.....	65
Interview Data.....	66
Member-Checking Data.....	66
Summary of Findings.....	66
Presentation of Results.....	68
Semistructured Interviews and Member Checking.....	68
Summary .....	81
Chapter 5: Discussion and Conclusion .....	82
Summary of Results .....	82
Discussion of Results .....	83
Results: Research Question 1.....	83
Results: Research Question 2.....	84
Discussion of the Results in Relation to the Literature.....	85
Limitations .....	88
Sample.....	88
Study Design.....	89
Research Method .....	89
Data Collection .....	89
Implications of the Results for Practice, Policy, and Theory .....	90
Practice.....	90

Policy .....	91
Theory .....	91
Recommendations for Further Research.....	93
Areas of Improvement .....	93
Participants.....	93
Additional Recommendations.....	94
Conclusion .....	94
References.....	96
Appendix A: Interview Questions .....	113
Appendix B: Member Checking Questions .....	114
Appendix C: Initial Codes, Collapsed Codes, and Themes .....	115
Appendix D: Steps to Inductive Analysis.....	120
Appendix E: Recruitment Flyer .....	121
Appendix F: Statement of Original Work.....	122

## List of Tables

Table 1. <i>Demographics of the Sample</i> .....	54
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## **Chapter 1: Introduction**

The role of a teacher is not only to educate but to inspire. To be an effective teacher, teachers must possess certain things such as technology integration skills. Technology integration is a skill that enables students to embrace the 21st century. The purpose of this study was to investigate the experiences and perceptions of secondary southeastern teachers. This investigation provided an understanding of each teacher's technology integration experiences and perceptions. Technology integration is the ability to use technological components, resources, and online platforms to facilitate the learning experience (Alpert & Shepherd, 2015).

In many southeastern schools, technology is used in various ways. The technologies referred to are the use of computers and its components, software applications, and online learning management systems and platforms (Fedora, 2015). One implementation at several school districts is the opportunity for every student to use a laptop throughout the year. At each school in these districts, students are assigned laptops at the beginning of the year and do not return them until the conclusion of the current school year (South Carolina Department of Education, 2014). This technology-driven program is designed to ensure that all students within this school district have and use 21st century skills. Because the district is technology driven, experiences and perceptions of teachers can provide insight into the feelings garnered by those who teach these students.

From stages as early as toddlers, children learn, navigate, and engage in technology and its various components. Because the 21st century thrives on technology, educators must learn how to use and make it pertinent to learning. According to Ak (2016), an understanding of technology is vital and required to reach and connect with today's postmillennials. Postmillennials are defined as individuals that were after the period following the millennium

(Merriam-Webster, n.d.). To prepare postmillennials, teachers must be digitally literate which requires the use of various forms of technology in their classrooms. Digital literacy is the ability for individuals to find, assess, and create information using various digital platforms (Bulger, Mayer, & Metzger, 2014).

Teachers must be able to select the correct technological components with various online resources that complement each lesson presented to look deeper in digital literacy (Bulger, Mayer, & Metzger, 2014; Higgins, Katsipataki, & Xiao, 2012; Niemi & Multisilta, 2016; Ribble, 2012). These integration techniques allowed students to process and share the knowledge gleaned with their peers and teachers. While the need for technology integration in the classroom has increased, understanding the experiences and perceptions of teachers can provide a strong foundation. Therefore, school leaders and district administrators must sustain funding so that they can compete with other schools. Available funding ultimately leads to further improvements in the area of technology (Ak, 2016; Alderman, 2013; Gibson et al., 2014; Matzat & Vrieling, 2016).

To ensure postmillennials are ready for learning in a technology-driven era, teachers must first develop a strong technological foundation. Teachers must also be knowledgeable and accept technology as a supplement to students current learning in the classroom (Heiman & Shemesh, 2012; Kopcha, 2012; Ribble, 2012). This case study focused on technology integration perceptions and experiences of teachers in secondary classrooms. Perceptions and experiences can play a significant role in how each teacher presents information in their class (Matzat & Vrieling, 2016; Shaffer, Nash, & Ruis, 2015). In this case study, an in-depth look was conducted to understand and uncover themes and patterns as they related to technology integration.

## **Background and Conceptual Framework**

Knowledge creation is through processes of active construction (Bruner, 1961; Dewey, 1910; Piaget, 1970; Vygotsky, 1978). Because constructivism requires student support, a model building process is used in which the teacher asks the student questions, which leads to knowledge and understanding. Through this process, students realize their strengths and weaknesses. Constructivism is an active process in which each student's interpretation and knowledge construction is different based on socio-cultural factors and his or her own experiences (Dewey, 1910; Piaget, 1970). The founders of constructivism built on the work of each other. Piaget (1970) first introduced the human development theory, after which Vygotsky (1978) proposed another approach that added a social aspect. Dewey (1910) took the ideas of Piaget and Vygotsky and created a theory that related specifically to the educational sector.

Three distinct theories have provided a foundation for this case study. They are constructivism, connectivism, and the online collaborative learning theory. These theories allow a greater understanding of how information and communication technology into K-12, higher education, and continuing education is integrated (Anderson, 2009). That integration ultimately increases students' academic achievement and technological capabilities. These actions better prepare students to succeed in the 21st century, post-secondary schooling, and workforce opportunities (Beetham & Sharpe, 2013). Enabling teachers to use various learning theories will empower students to comprehend critical teaching strategies necessary for sustained student proficiency (Anderson, 2009; Beetham & Sharpe, 2013). Effective use of these learning theories provided an overall picture of the learning process and how integrated technology produced successful learning outcomes.



The conceptual framework for this case study provided a foundation for teachers when using technology in their classrooms. Although teachers receive professional development throughout their teaching career, their past preparation has not enabled them to incorporate technology in their lessons. According to Hannaway and Steyn (2016), teacher perceptions and attitudes often affect the level of technology that is used or integrated into the classroom.

### **Statement of Problem**

The problem this case study addressed was the lack of understanding about the experiences and perceptions of secondary teachers regarding integrating technology in South Carolina classrooms. To keep students abreast of the frequent changes in the 21st century, they must incorporate 21st century skills through technology integration (Ribble, 2012). Postmillennials are required to use technology in everyday life as well as in their careers (Nieminen, 2016). Students must see the technology in varied capacities, and teachers must integrate technology in lessons so that students can synthesize and share the information learned with others. In this study, teachers' experiences in these situations provided data that shed light on why and how technology was used in the classroom.

### **Purpose of the Study**

The purpose of this qualitative case study was to describe the lack of understanding about technology integration experiences and perceptions regarding secondary teachers in southeastern classrooms. In this case study, qualitative data were examined to establish meaning and knowledge of teachers' technology integration experiences and perceptions. Specifically, data were collected to understand the experiences and opinions of daily instruction. These experiences and perceptions were documented as data from interviews and observations developed.

## **Research Questions**

Two research questions were created to gather data relating to the purpose of the study—that is, to describe secondary teachers' experiences and perceptions with technology integration in South Carolina classrooms. Each research question provided intuitive data on these experiences and perceptions (Hatch, 2002). This information can be used in the future to educate leadership on teacher experiences and perceptions of technology integration in the classroom.

- Q1. What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms?
- Q2. How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?

## **Rationale, Relevance, and Significance of Study**

The case study described the lack of understanding regarding secondary teacher perceptions and experiences with technology integration in southeastern classrooms. The purpose of a case study is to explore varying views of the problem and grasp a significant understanding of the research problem (Hatch, 2002). Therefore, a qualitative research approach was selected to ensure the data collected gave a clear and concise picture of the experiences and perceptions of all teachers with technology integration in the classroom. Because these study intentions were to examine the attitudes and experiences of teachers, a qualitative case study was most appropriate. As technology becomes prevalent in daily life, understanding its effects and integration in education becomes a greater focus. Understanding how the teachers feel about technology is essential. Teachers present the information learned by each student, therefore studying their perceptions and experiences supported the overall understanding of technology integration in classrooms.

## Definition of Terms

Although many of the terms below are familiar to educators, a glossary is provided to share the definitions as they are used in this study:

*Teacher experiences*: events that occur that relate to teaching (Rosa & Obillos, 2016).

*Technology integration*: the use of technology components, software, and platforms within content lessons (Safar & Alkhezzi, 2013).

*Teacher perceptions*: the attitudes, beliefs, and feelings of teachers (Proctor & Marks, 2013).

*Professional development*: structured learning that focuses on professional educational topics. Trainings designed for teachers to learn knowledge about content specific to their discipline (Piper, Zuilkowski, Dubeck, Jepkemei, & King, 2018).

*Student engagement*: The attention or involvement of students to a specific topic or concept (Marzano & Pickering, 2013).

*Information and communications technology (ICT)*: informational technology that focuses on unified communication and the integration of telecommunication devices (Mama & Hennessy, 2013).

*21st century skills*: Skills required for success in 21st century society such as critical thinking, creativity, collaboration, communication, information literacy, media literacy, technology literacy, and flexibility (Jansen & van der Merwe, 2015).

## Assumptions, Delimitations, and Limitations

### Assumptions

In each study, assumptions can be apparent and beyond the control of the researcher. However, assumptions are what establishes the relevancy of the study (Simon & Goes, 2013).

This case study was no different. An assumption in this study was that technology integration was a simple process that required minimal prior knowledge. I assumed that this thought process would not disappear and school leaders will continue to expect teachers to implement the newest technologies (Croteau, Rabah, & Venkatesh, 2014). Another assumption was that neophyte teachers supported the use of technology integration in the classroom. Lastly, I assumed in this study that all teachers would be honest, open, and detailed during their interviews.

### **Delimitations**

This case study was delimited by the beliefs and experiences of secondary high school teachers in South Carolina. The study was also delimited by including only schools in the southeastern United States. The selection of southeastern schools further reduced the findings, due to the schools not being high populated or suburban. Using the purposeful sampling selection of teachers was also a delimitation (McCaslin & Scott, 2003) because of the subjective nature of purposeful sampling, which relies on the judgment of the researcher.

### **Limitations**

As with any research, this study had limitations, which affected the collected data. One limitation was the inability to make inferences (Simon & Goes, 2013) because with case study research there is always the possibility of alternate explanations. Another limitation was the general nature of the findings, which was limited to the behavior, beliefs, experiences, or actions of one person, group, or organization (Stake, 1995). In case study research, the feelings and experiences of the teachers interviewed and observed may or may not reflect the beliefs and experiences of similar teachers. Therefore, because of the suggestive nature of case studies, similar findings may or may not be found in other studies. In this study, additional research was needed to validate data and ensure future duplication of the results.

Limitations specific to this case study were included the selection of teachers interviewed. All of the teachers were from school districts within a single state. Second, all of the teachers worked at a secondary school (McCaslin & Scott, 2003; Simon & Goes, 2013). Another limitation was the place of teacher employment, which was in South Carolina school districts. Lastly, the data were collected by one researcher, therefore yielding the possibility of biases (Stake, 1995).

### **Summary**

This qualitative case study focused on a secondary school teacher population, and the lack of understanding about the perceptions and experiences of teachers regarding integrated technology in the classroom. The research questions focused on teacher experiences and perceptions with technology in the school and the methods of implementation. These questions were answered through interviews and observations. These data retrieved provided an accurate picture of how South Carolina teachers perceive and experience technology integration in their classrooms.

In the following chapter, a closer look is given to literature that discussed teachers' perceptions and experiences with technology integration. The history of technology, constructivism, connectivism, and the online collaborative learning theory is discussed briefly. The above points are tied together throughout the literature review in Chapter 2. In Chapter 3, methodology, research design, and collection tools are discussed at length. Chapter 4 is a discussion of the results, and Chapter 5 concludes the case study sharing the findings as it relates to future study.

## **Chapter 2: Literature Review**

A review of related literature supported this study on how technology was used to improve student performance in secondary classrooms. This literature review provides a framework for the current research and included the conceptual framework and information on the history of information and communication technology and technology integration in schools. I further discuss online platforms and tools used in the classroom, the effects and benefits of technology, and obstacles to technology integration in schools. Each section offers a part in the overall student and teacher experience.

Each section contains a comprehensive look at the literature on how technology relates to the research. Researchers have noted the need for additional studies that identify methods to boost student engagement (Ivala, Gachago, Condy, & Chigona, 2013; Laird & Kuh, 2005). Information and communications technology (ICT) are a staple in 21st century learning; therefore, researchers need to explore how it can be successfully integrated into the classroom. The trends identified are teacher perceptions (experiences), student attitudes (experiences), digital citizenship, technology integration usages both in and outside of the classroom, and 21st century pedagogical changes (Heiman & Shemesh, 2012; Kopcha, 2012; Ribble, 2012).

This dissertation is divided into five chapters. The first chapter provided an introduction discussing the study's focus. The second chapter is the literature review. In this review, I include the conceptual framework used to guide this case study. In the following chapter, I discuss the methodology used that covers both the data collection and data analysis.

### **Search of Literature**

Understanding the dynamics of information and communications technology (ICT) usage in education is both a rewarding and daunting process. Each piece of the literature has roots in

student engagement, technology usage in the classroom, and student and teacher experiences. The need for improved student engagement is vital as students enter the modern competitive workforce. The focus of the review is K-12 education, but the strategies for improving learning are relevant to all levels of education (Ak, 2016; Alderman, 2013; Gibson et al., 2014). The literature provides themes grounded in the use of social media and other technologies to improve academic performance and teacher effectiveness (Matzat & Vrieling, 2016; Shaffer et al., 2015). To conduct a review of this breadth of research, I searched several databases, including ProQuest, Academic OneFile, Sage Journals, and ERIC via Concordia University's library, Google Scholar, and the University of South Carolina Library. The keywords I used were *transformational leadership, engagement, success, student outcomes, student satisfaction, efforts, performance, teacher characteristics, student experiences, teacher experiences, teacher perceptions, technology integration, and information and communications technology (ICT), 21st century skills.*

### **Information and Communication Technology History**

Although technology has expanded over the last 30 years, technology integration components were first used in the 1930s (Firmin & Genesi, 2013). Generally, technology is thought of as only computers. However, information and communication technology cover many components. Some of these components include SMART technologies (IWB), overhead projectors, headphones, televisions, calculators, interactive clickers (student response systems), laptops, and iPads. The first overhead projectors were created in the 1930s (Cooper, 1980) and were used specifically for military training in World War II. After noting the efficacy of the devices, many school leaders and corporate executives began employing them for classroom instruction.

In 1950, headphones were introduced into schools, specifically, in language labs (Stamp, 2013), where students could hear and review information that was presented previously. In 1958, the first educational television system was streamlined, and by the 1960s, the National Education Television network was airing educational programming across the country (Firmin & Genesi, 2013). In 1960 the Plato computer was introduced (Jones, 2015). In the 1980s public schools housed an average of one computer for every 90 students; currently, many schools have at least one computer for every four students (Jansen & van der Merwe, 2015).

In the 1980s, the graphing calculator was invented (Freiberger, Hemmendinger, Pottenger, & Swaine, 2016), making the curriculum in advanced math courses easier for students to understand. By the 1990s large strides began to take place in the world of information and communication technology. In 1999, the world was introduced to the interactive whiteboard (Coffey, Kotler, Little, McGregor, & Reid, 2012). The whiteboard combined touch screen capabilities, a projector, and a computer. In 2005, interactive clickers were created (Bruff, n.d.) Clickers or student response systems allow for hands-on interactive engagement in the classroom. Students interact through a quick one-touch response system. As of 2016, information and communication technology devices, laptops, iPad, PDAs, iPod, and computers remain a staple in K–12 classrooms.

## **Conceptual Frameworks**

### **Background**

Knowledge is created through processes of active construction (Bruner, 1961; Dewey, 1910; Piaget, 1970; Vygotsky, 1978). Because constructivism requires student support, a model building process is used in which the teacher asks the student questions, which leads to knowledge and understanding (Bruner, 1961). Through this process, students realize their



strengths and weaknesses. Constructivism is an active process in which each student's interpretation and knowledge construction is different based on sociocultural factors and his or her own experiences. The founders of constructivism built on the work of each other. Piaget (1970) first introduced a theory for human development, after which Vygotsky (1978) proposed an updated theory by adding a social aspect. From the ideas and framework of Dewey (1910) Bruner, Piaget, and Vygotsky created their approaches that related specifically to cognitive and social constructivism.

### **Major Theorists**

Constructivism is divided into two parts: cognitive and social constructivism. Bruner and Piaget shared their thoughts, creating the cognitive constructivism community, and Vygotsky created the social constructivist community. Dewey (1910) is considered the founder of the constructivist approach. This approach was later used to create Bruner's and Vygotsky's social constructivism and Piaget's cognitive constructivism.

**Dewey's theory.** Dewey's theory was a response to the growing rejection of the repetitive memorization witnessed in schools. Dewey (1910) contended that if any doubts rose about the way in which students learn, the best course of action is to engage in an inquiry; while continuously studying and pondering to develop beliefs grounded in the evidence. By participating in real-world practices, students demonstrate their knowledge through creative ways that promote enhanced collaboration. These ideas are centered on the concept of students thinking for themselves, through which they successfully articulate their thoughts. Dewey's concentrated efforts suggested all parts of education should be grounded in these real-world experiences, which are now possible through multiple information and communication technology platforms. Devices such as laptops, cellular devices, Facebook, and Twitter enable

students to participate firsthand in comprehending their academic and social process (Evans, 2014; Junco, 2015; Marzano & Pickering, 2013; Matzat & Vrieling, 2016).

**Piaget's theory.** Piaget (1970), like Dewey, rejected traditional ideas. Dewey identified learning as a dynamic process that involves successive steps. Each step allows students to actively construct their knowledge by creating and testing their theories and assumptions of the world. Through these processes, important educational principles are developed. A few of these principles are discovery learning, sensitivity to student readiness, and acceptance of individual differences (Schwebel, 1973). Of the principles, discovery learning encourages student motivation and engagement. Discovery provides the student with the ability to create knowledge instead of having it forced on them (Kistner, Vollmeyer, Burns, & Kortenkamp, 2016).

In the cognitive development theory and conception of equilibration, Piaget (1985) discussed how students go through four stages. This theory suggests that if students have not reached a stage, they cannot be taught specific cognitive tasks. New knowledge is constructed to align with existing knowledge. This process gave rise to three concepts: assimilation, accommodation, and equilibration, which provide students with the ability to comprehend and process information in an informed way (Zhiqing, 2015). These concepts play an important role in the construction of knowledge. Although accommodation and assimilation are vital, the ability to translate information is key to learning. Information and communication technology allow students to convert the information in a way that is versatile and relevant to 21st century thinking.

**Vygotsky's theory.** Vygotsky developed the concept of social constructivism. Vygotsky, unlike Piaget, rejected the idea that stated learning was separate from social context. Vygotsky (1978) believed that "every function in the students' cultural development appears twice; first,

between people and then inside the student” (1978, p. 57). Cognitive functions start within and should be explained as mere products of various social interactions. Creating knowledge is a process where students are integrated into communities.

Under Vygotsky’s (1978) zone of proximal development, specific features are apparent through guidance or facilitation. The first of these features is intersubjectivity (Vygotsky, 1978), a process that occurs when two students begin a task with different understandings. Upon concluding the task, each student shares a common understanding. The process provides a common ground for all students through scaffolding. The scaffolding process gives support to students adjusted in a way to fit their current skill or performance level. The final element is guided participation, which promotes collaboration between experts and students.

**Bruner’s theory.** Bruner gained theoretical foundation from Vygotsky. However, Bruner (1961) focused on the teacher and the instructional methods used. With instruction in mind, each student’s foundation for active learning is social interaction. The basis for this claim is intertwined in the Socratic tradition (Irwin, 2007), which states learning is achieved through dialogue. The dialogue process pushes students to find themselves through self-reflection. In social constructivism, each concept builds on another, creating a process of discovery. Through the discovery process (Bruner, 1961; Piaget, 1985), each student creates his or her knowledge, which builds on previous knowledge. Therefore, the instruction is focused on the experience and context. Second, education must be structured so learners can quickly absorb the information. This process is defined as a spiral organization (Cornford, 1997). Lastly, guidance should be designed to fill in the holes or gaps. Information is overlooked in traditional settings where the student cannot replay the instruction. Because of the need for repetition and instant accessibility of data, using information and communication technology can be beneficial. That is, within these

platforms' students can listen, record and rewind to deepen their understanding of the information presented.

### **Connectivism**

Connectivism, like many other learning theories, was created in response to the rapid rise of the digital age (Tschofen & Mackness, 2012). When technology is added to the classroom, old learning activities are forced to make connections that move learning into the digital age. Therefore, connectivism is the fusion of principles created through a network and self-directed theories. Simply stated, connectivism is social learning that is networked (Tschofen & Mackness, 2012). This new learning theory allows instructional modifications. These modifications enable students to enhance their education through their knowledge and perception via each student's network, through which he or she develops viewpoints and opinions that facilitate vital life decisions.

Through careful usage of connectivism and its practices, teachers can develop lessons that incorporate technology and effective instructional strategies. Because connectivism is a new learning approach, its foundation is different. Therefore, the creation of lessons is done in a nontraditional way. Connectivism is considered an actionable knowledge (Goldie, 2016)—that is, the importance of understanding where to find knowledge, which some believe is more important than knowing what the experience entails (Holloway, van Eijnatten, Romme, & Demerouti, 2016).

### **Online Learning Theory**

Online learning theory refers to information and communication technology integration in the classroom through insight that guides the implementation of instructional practices (Anderson, 2009). This philosophy encourages and engages student interest. Through

information and communication technology integration students benefit from higher-level learning options and methods to incorporate 21st century digital skills. Through online collaborative learning, students can succeed with the available technology available. The online learning theory shares and builds upon many features that align with Vygotsky's social constructivist theory. One of the major points of this theory is the ability to modify current instructional strategies to introduce and support technology. In essence, the strategy used in conjunction with technology is no different from the basics; these strategies are adapted and modified from traditional classroom practices. The difference lies in the instruments used. In this case, technology assists with instruction, allowing a seamless process of information and collaboration (Mandinach & Cline, 2013). It is also essential to note online learning theory borrows from many other theories, including constructivism, cognitivism, behaviorism, and connectivism (Ertmer & Newby, 2013).

Because various theories are intertwined in the online learning theory, some believe technology should be used to teach differently from the traditional methods of teaching (Anderson, 2009; Ertmer & Newby, 2013). Creating vitality updates altered current teaching practices to reflect 21st century thinking and education. Much of the teaching focus is centered around how to stay abreast of new knowledge while helping students learn how to learn. By including 21st century skills, teachers can increase the students' ability to problem solve and engage in higher level thinking. These skills are necessary to keep up with the constant change in information delivery (Jansen & van der Merwe, 2015). While the online learning theory relies on principles of older methods, its foundation is carefully adapted to focus on technology and its components (Marra, Jonassen, Palmer, & Luft, 2014).

In today's job market, higher-level skills are needed to gain entry-level jobs. Many of the jobs that previously required people now rely on machines (Kivunja, 2014). This shift in work dynamics suggests a need for educational adaptation and preparation. Through the online learning theory, the enhanced skills are reviewed, and curricula developed to meet current needs. Instructional practices must also progress to align with the constant shift in conditions of the job market and society. Teaching practices must mirror technological changes to prepare students for changes in society (Carpenter & Pease, 2013). Successful usage of the online learning theory will enable administrators and districts a closer look at how teachers use technology in the classroom as they prepare their students with the necessary technical skills.

### **Summary of Theories**

Constructivism and the online learning theory allowed a greater understanding of how information and communication technology was integrated into K-12 education, higher education, and continuing education. That integration ultimately increases students' academic achievement and technological capabilities, which better prepares students to succeed in later schooling or workforce opportunities. Enabling teachers to use both learning theories will empower students to comprehend critical teaching strategies pertinent to sustained student proficiency. Effective use of these learning theories provides an overall picture of the learning process and how integrating technology produces successful learning outcomes.

### **Review of Research Literature**

#### **Information and Communication Integration**

**Online platforms and tools.** The literature supported the idea that integrating technology increases student engagement and academic performance. Through the use of clickers (student response systems), information and communications technology increase student engagement

and academic achievement in secondary classrooms (Brusi, Portnoy, & Toro, 2013). A discussion shared previously stated without technology incorporation student scores were low. However, after the technology was introduced to the classroom, students were less likely to withdraw from the core class, and scores began to progress (Brusi et al., 2013). Orr and Foster (2013) used online quizzing methods that were done as an intervention to prevent high failure rates. To effectively use student response systems classes are divided into groups as small as 30 and as large as 150 students. This number range provides an environment for the effective use of student response systems (Orr & Foster, 2013).

The primary purpose of clickers is to encourage student involvement in the class by way of anonymity (Clawson, Kulesza, & Ridgway, 2014). This method of delivery caters to students with anxiety or disabilities that prevent them from interacting in class. Brusi et al. (2013) gave incentives for using the clickers, which afforded students the opportunity to familiarize themselves without the pressure of failure, which led to student morale increases. Further studies suggested that students are inclined to earn higher scores on assignment (Clawson et al., 2014; Han, 2014; Oswald & Rhoten, 2014) Therefore, each student experience is personalized as he or she invest in education. As a byproduct to the usage of student response systems, students can get notes from class, real-time student feedback, discussion initiation, and higher engagement opportunities because of learning management systems supported by clickers (Son, Kim, Na, & Baik, 2016).

Platt, Raile, and Yu (2014) addressed the use of synchronous online classrooms. In a recent study done between teachers, special education department, and the instructional technology department synchronous classrooms provided an alternative to traditional instruction. To capture the full effect of virtual classes, student data were collected in virtual classrooms.

One feature used was creating a virtual world that mimicked a traditional classroom. Many students find the similarities between conventional and virtual classroom an effective transition (Francescucci & Foster, 2013). From the study, students rated their experiences, engagement levels, and overall performance. Some of the themes identified were the convenience, technical issues, and course work understandability. With technological advancements, all students can be present and see and interact with each other while in different locations. In the future, students who are disabled, incapacitated, or homebound will be able to benefit from the virtual classroom experience from alternative sites. Heiman and Shemesh (2012) found that students with learning disabilities felt motivated to attain their goals through various pathways made possible through virtual technology

**Social media.** Because times are changing, so are the methods for classroom instruction. Students quickly understand and interact with social media as a means of self-expression (Matzat & Vrieling, 2016). By harnessing the power of various social media sites, teachers can reach students in their comfort zone. Teachers can create closed groups and forums on Facebook that facilitate student discussions outside of the classroom (Junco, 2012). During a survey to assess the frequency of social media use, researchers found mixed results. The results were analyzed in conjunction with data received from the National Survey of Student Engagement (Junco, 2012; Laird & Kuh, 2005). To ensure the validity of the study, roughly 36,000 students were surveyed. The focal points tracked were time expended, class interactions, and class preparedness (Junco, 2012). Some of the results suggested that Facebook hurt the student engagement scale score.

In contrast, arguments were made based on the data that indicated positive effects from Facebook. Some of the areas that displayed success due to social media use were the time spent preparing for class and the time spent on academic activities (Junco, 2015). Although this study



noted that not all social media outlets are beneficial for student engagement, it does suggest further research is needed.

Twitter, like Facebook, also provides an alternative to the traditional classroom approach (Buzzelli, Holdan, Rota, & McCarthy, 2016). Several studies have been conducted to understand the effects of Twitter on student engagement and academic performance (Buzzelli et al., 2016; Prestridge, 2014). Prestridge conducted a semester-long study of Twitter use and found it increased student engagement. Twitter was used to extend discussions presented in class. To gauge the effects of Twitter, grades were documented to note if changes occurred before, during, and or at the conclusion of the study. Students in the control group performed normally with grades remaining relatively the same, while students in the experimental group were more engaged and had a higher semester average. While Twitter may be seen as a social networking tool, recent literature suggests it can be used as a knowledge construction tool (Evans, 2014). The difference between this tool and traditional tools is that the interface uses mobile devices. Therefore, students are learning skills needed to interact with these platforms, which will prepare them for careers geared toward technology current jobs (Tiernan, 2014).

**Technology software.** Technology software is instructions, data, or programs that operate computers through specific actions (Merriam-Webster, n.d.). Technology software, like online platforms and social media, is useful only when prior knowledge is established. In recent years, the literature suggested teachers must be proficient with technology to integrate it in instructional settings (Jimoyiannis, Tsiotakis, Roussinos, & Siorenta, 2013). Many districts encourage professional development to ensure teachers understand how to use the software. Through technology think-tank series, teachers are taught skills that build on prior knowledge (Wang, Hsu, Campbell, Coster, & Longhurst, 2014). While there are many different software

options to use, digital storytelling has shown to be effective (Niemi & Multisilta, 2016; Shelby-Caffey, Ubeda, & Jenkins, 2014). This method of instruction yields high engagement rates when using the sociocultural theoretical framework. To continue pursuing engagement and academic increases the global sharing pedagogy (GSP) model was created. GSP focuses on three components, student-driven knowledge creation, collaboration, networking, and digital literacy (Niemi & Multisilta, 2016).

Students use practices such as this to learn through dialogical interactions. These interactions can be between people, substances, and artifacts. Hence, through using this model, teachers can predict student motivation and learning results (Blithe, Carrera, & Medaille, 2015). Creation of dialogue that promotes learning must be done with the help of graphics software. Microsoft Photo Story and Mobile Video Experience (MoVIE) are platforms for students to successfully learn by using 21st century skills (Ivala et al., 2013). Students can use graphics software to create, present, and publish their stories based on the knowledge ascertained through instruction. While this is not technology frequently used in many classrooms, its benefits highlight the aspect of peer tutoring and group work in an informal setting (Shelby-Caffey et al., 2014).

As a consensus, traditional instructional practices should be continued. These instructional strategies include student-teacher interactions, collaborative learning, peer tutoring, cooperative learning groups, and direct and differentiated instruction (Shaffer et al., 2015). However, to prepare postmillennials with the skills needed, online platforms, social media, and technology software should be used to enhance the overall learning experience (Safar & Alkhezzi, 2013). Ultimately, the goal is to incorporate both technological and traditional

methods in efforts to retain students' interest, therefore increasing student motivation and engagement.

### **Position of Technology in Schools**

In the United States, a projected \$69.4 billion was allocated for discretionary educational funding (U.S. Department of Education, 2016). Of this projected figure, \$125 million was earmarked for technology funding for teachers and principals pathway programs, and \$500 million for improving the effective use of technology in the classroom (U.S. Department of Education, 2016). This increase in technology funding has allowed nearly every U.S. public schools to access the Internet (Simonson, Smaldino, Albright, & Zvacek, 2014).

In previous years, technology in schools was accounted for by the number of computers in the facility (Simonson et al., 2014). Currently, technology has taken on a new face, with many diverse types in the educational arena. Instead of merely computers, technology has advanced to iPads, educational websites, software programs, cellular phones, whiteboards, and digital cameras (Cook & Sonnenberg, 2014). Most people in the United States can access the Internet (Cook & Sonnenberg, 2014), thus streamlining the old processes. To further facilitate technology expansion, schools are making technology a core component of their curriculum for students and teachers. To ensure that the focus remains prevalent, many professional development courses related to technology and the various avenues of integration in the classroom (Kopcha, 2012). Proctor and Marks (2013) indicated 68.3% of teachers thought they were adequately trained to operate technology equipment, and 71.1% thought they were adequately prepared to use administrative software to take attendance and submit grades. Of these statistics, many rated their technological skills as advanced or somewhat advanced (Ertmer et al., 2012).

With an increase in technology, many teachers are using these components every day (Mama & Hennessy, 2013). Amid the rise in technological quantities, technological interest, and technological use, it is essential to understand the capabilities of technology, how it influences academic performance, overall school performance and leadership (Kayalar, 2016). Analyzing these areas helped to better support each student learning experience and teacher instructional expertise.

### **Effects and Benefits of Technology Use**

While technology usage rises, the results vary. Some researchers have suggested academic increases for classroom students, while others researchers have shared unfortunate experiences with technology (Ackerman, Kanfer, & Calderwood, 2013; Castillo-Merino & Serradell-Lopez, 2014; Jansen & van der Merwe, 2015). To fully understand the entire technology phenomena, a discussion of both sets of results follows.

Several studies have showcased the potential benefits of using technology in the classroom (Laird & Kuh, 2005; Mandinach & Cline, 2013; Safar & Alkhezzi, 2013) Effective use of these technological advances shows improvements in student academic performance and their overall engagement in various curricula and socialization abilities. While student engagement has been an ongoing problem, these techniques display increased learning through social behaviors, contributions to learning, and cooperative learning groups (Laurillard, 2013). As student engagement changes, positive relationships have been seen between the increase in engagement and performance (Gibson et al., 2014).

However, an argument can be made that technology usage in the classroom increases student academic achievement through alternative methods (Morgan, 2014). These methods allow students to learn content specific information and understand the necessary state standards

(Eyyam & Yaratan, 2014). In a study focusing on the effects of feedback through the use of computer-based systems, Van der Kleij, Feskens, and Eggen (2015) found that students and teachers used technology in new ways to understand the information, thus providing students with alternate avenues to explore the content. While numerous studies have attested to the benefits of virtual instruction, one in particular also discusses the aspect of motivation. Chang et al. (2012) suggested that virtual learning increases student engagement, knowledge, and motivation. Their findings were based on the comparison of virtual instruction and traditional instruction. To understand student motivation, one must acknowledge the components of motivation. Alderman (2013) stated student motivation is harnessed by two elements, both of which are facilitated by teachers. These components focus on instructional methods and the encouragement of skill development. Creating environments such as these give rise to increased engagement, optimal learning, and overall performance motivation. Student motivation is classified as beliefs about personal competencies, abilities to finish work assigned, and personal aspirations to engage with school work (Ryan, 2010). As more technology advancements become available, increases in positive contributions will soar.

Technology integration has been long associated with successes among struggling students. Traditional instructional gaps have often rendered struggling students unable to reach at the highest potential. By integrating technology, teachers help struggling students compete with their peers, due to the various differentiated instruction and support given with technology. These abilities allow teachers and students to build on their strengths and recognize their weakness (Fedora, 2015). Therefore, technology functions in many capacities, one of which is a gauging tool. Technology offers the capabilities to instantly assess a students' comprehension of the content, highlighting areas of strengths and weaknesses. With the use of software programs

and Internet sites, teachers can better track students' skills levels, giving teachers a foundation that they can build on while helping struggling students (Kurt, 2014).

Information and communications technology can be used as a diagnostic tool. These diagnostic components allow teachers to assess whether students reach mastery and if further instruction would benefit the student. In a 5-week study on the usage of a reading assistive software program, students displayed higher success gains in the areas of reading and fluency (Potocki, Magnan, & Ecalle, 2015). The software trained students, decoding and text comprehension skills, suggesting software interventions can prove beneficial to student academic performance.

Additionally, technology provides the opportunity for teachers to spend more time with struggling students, while other, more independent students can work individually and learn new information as they progress. In a study covering students with disabilities, students became increasingly independent through constant use of assistive forms of technology (Bricker, 2015). During direct and small group instruction, teachers found they could offer more time to students with low comprehension because others were achieving goals through independently working with the software.

### **Obstacles to Technological Integration in Schools**

Advancements in classrooms are noted, some researchers contend the progress is specific only to certain classes, areas, or methods (Ak, 2016; Buzzelli et al., 2016; Owston, York, & Murtha, 2013). In a longitudinal study by Hanus and Fox (2015), software labeled as gamification was used in two separate courses. One course utilized the full gamification leaderboard theatrics; the other, a traditional instructional approach. The fully operational gamified course decreased student motivation, satisfaction, and empowerment over time. The

gamified students' final exam scores were significantly lower than the scores of its counterpart. The success of technology in cases such as these appears to be contingent upon how great technology is implemented, along with the type of technology used, the quality of the technology, the environment the technology is used in, and the methods of technology.

Because of the constant change in educational technology, results often appear different or unrelated. At question is if the extent to which the quality of the technology or the instructional strategies used in the classroom affects learning. Also, another focus is the need for increased strategy. This need allows a greater understanding of the pros and cons of technology integration. Therefore, the amount of time or quantity of technology does not forecast the probable benefits. For students to benefit from the full experience of technology the strategies used must be valid (Ak, 2016).

Over the last two decades, technology use in the classroom has increased substantially; but its integration faces obstacles. To effectively use technology in the classroom, teachers must be well versed in technological components, understanding the importance of the history, methods used, and the appropriate types for classroom incorporation. Technology alone cannot secure specific results; in some cases, it has been known to hinder the learning process (Wei-Wen, Lan, & Yu-Ting, 2013). With this information, it is vital to know and understand how to implement and operate technology and its components.

In South Carolina, technology usage has increased. Many districts are making strides in leveraging technology and its components in the classroom (Education, 2014). The state has implemented a technology plan that spans several years (2014–2016) to secure new modern approaches to instruction. Obstacles include the lack of standardization of classroom technology across schools and districts throughout the state. Many districts use several different technologies

that often compete with each other, causing the need for additional training delivered by school support staff. Only a small percentage of districts have developed a formal strategy to implement the standardization process. The state would benefit from devising a technology plan considered the standard and therefore used in all schools. Although the current idea presented is viable, due to budget limitations the ability to employ an organization to manage multiple systems use is not feasible.

South Carolina also faces challenges with district collaboration. Due to the limited cooperation between districts, many teachers are unable to share information and procedures they have learned. Because of a lack of knowledge across districts, training cannot be provided on the state level as well as the local district level. Lastly, a significant obstacle faced is that in recent years funding has decreased, and many professional development opportunities have decreased. This decrease led to a strained relationship between the state department of education and local districts.

### **Value of Experiences**

Although the importance of experiences is often misconstrued or poorly defined, experiences are essential to the growth of all learners, particularly concerning the relationship between information and communication technology and student performance. Merriam-Webster defined *experience* as “the fact or state of having been affected by or gained knowledge through direct observation or participation (Merriam-Webster, n.d.)” Bruner (1961), Dewey (1910), Piaget (1970), and Vygotsky (1978) believed that through these experiences knowledge creation occurs through processes of active construction created by each student’s interpretation and knowledge construction. Much of a learner’s interpretation is achieved based on their individual experiences and socio-cultural factors. To examine the current experiences related to the



integration of information and communication technology, I reviewed the current literature and note two salient categories: student experiences (perceptions) and teacher experiences (perceptions).

### **Student Experiences and Engagement**

Student perceived experiences are seen as unreliable or fabricated (Laird & Kuh, 2005). These results are due to their inability to accurately share their thoughts. To assess the validity of information and communication technology usage in academics, experiences both with and without information and communication technology incorporation are vital to creating an accurate picture of the 21st century student population. Our current community of students are born in a world where technology is a permanent fixture. These technology types are the use of computers and its components, software applications, and online learning management systems and platforms (Fedora, 2015). With this knowledge, the outstanding goal becomes how we can harness technology's potential and use it in current educational practices. To further understand experiences, a discussion about technologies' potential to enhance traditional instructional methods is needed (Magana & Marzano, 2014).

Information and communication technology provide many benefits to students. However, it is important to realize that information and communication technology alone cannot fix academic issues. It is essential for students to use strategies taught while using technology (Poole & Sky-McIlvain, 2014). Through the use of effective instructional strategies, students can experience life-changing educational experiences (DeMeester et al., 2013).

Student engagement like experiences is also related to technological integration. To grasp the issue with student engagement, Hepplestone, Holden, Irwin, Parkin, and Thorpe (2011) reviewed technology use in the classroom over a period of ten years. Many of the instructional

methods used are considered as teaching best practices. In the hope of increasing student engagement, the span covered tutoring to technology assistive devices. While student engagement plays a vital role in student experiences, so does student feedback.

With the intention of encouraging student feedback, students must feel comfortable sharing their thoughts and opinions. One way in which students share this information is through technology devices as their platform, including cellphone, iPods, iPads, PDAs, laptops, desktop computers, clickers, and tablets. Platforms used are Google classroom, My Big Campus, Twitter, Facebook, SchoolTube, and so forth. The above devices and platforms allow students a level of comfort so that their input in virtual spaces are truthful and accurate (Evans, 2014). Laird and Kuh (2005), a found a relationship between favorable student experiences and the use of technology. These experiences suggested a positive technology experience for educational purposes based on a students' perspective. Because of the flexible use of technology, students can understand the information presented on a level that is comfortable for them. These capabilities provide teachers and students with a new avenue of discovery that creates differentiated instruction in a modern way (Alpert & Shepherd, 2015).

### **Teacher Experiences**

In the 21st century, teachers' have focused more intently on understanding technology and how it is used in the classroom (DeMeester et al., 2013). While best teaching practices are always necessary, ways to enhance student engagement is a high priority. Many if not all of today's classrooms are filled with postmillennials; therefore, information and communication technology in classrooms is a must. Although there is a need for technology integration, teachers have mixed feelings about the heightened push for technology in the schools (Ertmer et al., 2012). The experiences vary from teacher to teacher. Many have noticed the changes in

education and how students comprehend, which increases the pressure to use technology. These changes have led to improved professional development and lesson planning guidance that adheres to contemporary skills and devices (Kopcha, 2012).

To have professional development, a culture must be established in the school. Administrators are responsible for creating a school culture that is both supportive and collaborative for teachers. When teachers are comfortable and supported, they are inclined to try new things (Hutchison & Woodward, 2018). Teachers and administrators can work together to create training and professional development that educates teachers on how to integrate technology in the classroom and daily lessons. Administrators must be open to developing a plan that is beneficial for them, the teachers, and the students (Gurfidan & Koc, 2016).

Like professional development, culture is equally as important. Culture is the attitudes, values, and environment established in a school or organization (Gurfidan & Koc, 2016). School culture sets the tone for how all interactions will take place. Han, Yin, and Wang (2014) suggested open dialogue and honesty was crucial for building relationships that encouraged a positive school culture. When administrators are transparent with their vision for the school, teachers can share feedback as it relates to them and their students.

Although experiences are essential, a closer look at teacher beliefs is needed. These beliefs provide the foundation for which teachers experiences are formed. Each teacher's views are different, but one consistent focus in the literature is teachers' prior knowledge with technology integration. Many teachers are apprehensive of technology, many are equally excited (Mama & Hennessy, 2013). Of the teachers who are apprehensive, the underlying reason centers on the lack of skill and understanding. Professional development can provide teachers with a condensed version of the technology and its uses. Condensed versions often cause teachers to

become frustrated about the processes (Hannaway & Steyn, 2016). Specific parameters must be present, to encourage teachers to use technology: technology courses, a platform to share attitudes and feelings, and technical and pedagogical assistance (Hannaway & Steyn, 2016). With these available, teachers can progress with their students and provide a stable foundation for each student to understand the information and skills required to be successful.

### **Review of Methodological Designs**

As previously discussed, many research designs have been used to analyze the impact of information and communication technology on student performance. In this study, I did not use the previously mentioned quantitative research designs, because they would not achieve the purpose of this study, which was to understand the impact of technology integration on teacher perceptions and experiences. Therefore, a qualitative case study research design allowed an in-depth review of technology integration and extended the previously gathered research by adding current research about both teacher and student experiences (Bassegy, 1999). The focus was the lack of technology integration by teachers, and the decrease of student engagement and academic performance in secondary classrooms. This information provided feedback to teachers, administrators, and districts so reinforcement and alternate methods can be used to benefit each student's learning experience. While I could have used a descriptive, comparative design, the direction of this study was not quantitative; therefore, qualitative data were essential to address the research problem.

Because the desired outcomes focused on the impact of technology integration on teacher performance, perceptions, and overall experience, a case study provided information discussing the effects on teacher and students experience. Additionally, this methodology enabled me to determine the impact of information and communication technology in secondary classrooms.

Subsequently, the results provided connections between student performance and teacher experiences. How technology affected student engagement, motivation, and overall performance was analyzed. This information was gained through teacher's perceptions and experiences with technology and their students.

## **Synthesis of Research Findings**

### **Strategies**

The availability or presence of technology does not necessarily translate to positive academic outcomes. An effective instructional approach is always crucial. The amount of technology in each classroom does not suggest that successful learning is taking place or increased academic performance, student engagement, or academic achievement (Higgins et al., 2012).

In contrast, studies have proved a direct relationship between the technology delivery method used and student gains. In a study of 850 students enrolled in e-learning courses, the amount of technology did not affect academic achievement (Castillo-Merino & Serradell-Lopez, 2014); however, technology coupled with increased motivation became a driving force. Technology must be combined with an effective instructional design, to allow for optimal student growth.

Based on the literature, many teachers primarily use technology with direct instruction (Padron, Waxman, Lee, Lin, & Michko, 2012). Therefore, it is critical to acknowledge that technology is not an instructional method; it is a tool that can be used to enhance the overall learning experience (Croteau, Rabah, & Venkatesh, 2014). Being a teacher requires an understanding that technology usage is not enough to reach students, but using practices and instructional methods can lead to positive experiences and increased academic performance.

Staying abreast of new technological advances, instructional practices, and content provides the necessary foundation needed to create a high innovation fully functional learning environment for all students.

### **Instructional Approaches to Technology**

As the need for digital citizenship arises, new methods and theories for instruction are created. Many of these theories have foundations in previous methods, yet adaptations have been made to integrate 21st century digital thinking. It is clear all students do not think in the same way; therefore, it is important to modify old instructional methods. Numerous technological practices are available, and many teachers find themselves using technology as a stand-alone learning approach. While this may suffice, it does not allow for the full potential of technology used to be realized. Transformative reflection becomes vital to the current profession of teaching, pushing teachers to modify their current practices in hopes of streamlining the learning experience. Students must be fluent in technology; therefore, using instructional methods created before the digital age is pointless to advance their 21st century skills (Tyner, 2014). Usage of outdated methods was counteracted by updating 21st century learning standards regularly to adhere to the constant change in the digital world.

To develop successful collaboration between technology and pedagogy, teachers use 21st century learning practices in conjunction with connectivism. Merging the two will yield lessons modified for the digital age (Transue, 2013). A key concept when utilizing technology is the employment of activities that are specifically designed and structured to meet the needs of the students. Therefore, technology should be understood to be a pedagogical tool (Heitink, Voogt, Verplanken, van Braak, & Fisser, 2016). To ensure the success of technology as an educational tool, active learning and instructional methods are used. Through technology-driven lessons

centered on the core principles of instruction, students receive the most significant benefit (Jimoyiannis et al., 2013).

Much of technology integration witnessed in the classroom is technocentric, that is, teaching focused only on technology integration and not content (Salomon, 2016). By being cognizant of the technocentric approach, teachers can develop lessons geared towards pedagogy and content in conjunction with technology integration. When teachers consider all vital components—technology, pedagogy, and content—lesson construction becomes a transformative process (Harris, Mishra, & Koehler, 2009) in which teachers can create 21st century classrooms rather than technology-driven classes.

Flexibility and spontaneity are always at the forefront of effective instruction; therefore, teachers review instructional strategies for possible adaptations and modifications. The constructivist learning approach allows teachers to introduce pedagogies that employ technological components. This approach was found to complement technology well, allowing teachers to see a balance between technology as a tool and the content (Bijker, Hughes, & Pinch, 2012). By integrating technology, teachers combine the practices of constructivism, connectivism, and digital learning. These components together provide a foundation for instructional practices that motivate students to be responsible for their learning experience. The digital age has provided a platform for new technology skills to be introduced and create connections between the content and the tools.

### **Importance of 21st Century Skills**

Digital skills are vital to the teacher professional growth and academic advancement of each student. These skills allow teachers and students to be competitive in education and life. To be productive and employable this skill set is essential (Griffin & Care, 2015). Many tasks done

by humans 20 years ago are now completed by machines increasing the need for skilled employees (Kivunja, 2014). Because the significant push for 21st century skills, many schools are focusing more on science, technology, engineering, and mathematics-based curriculums (Harris et al., 2009).

Occupations insist on significant knowledge in the above areas suggesting that these skills are considered the baseline (Jansen & van der Merwe, 2015). Hence, it is imperative that all students increase their digital skills. These skills benefit them in areas of critical thinking, problem-solving, cooperative learning, collaboration, and technological integration. Because students are not 21st century ready, many jobs that require these skills are taken by noncitizens and those competent in these areas. (Kivunja, 2014). For this reason, the introduction of digital skills at an early age is critical.

**Reasons for early presentation of skills.** Most states have transitioned to the implementation of Common Core standards that target critical thinking and problem-solving inquiry. These standards counteract the low percentage of U.S. students who secure careers in science, technology, engineering, and mathematics. The state of South Carolina, however, has lagged in the implementation of these essential components. Instead of Common Core adoption, South Carolina implemented the SC College and Career Ready Standards for all core subjects. These standards were approved in March 2015 (South Carolina Department of Education [SCDOE], 2015). The skills discussed in these standards focus on preparing each South Carolinian student for college and career opportunities. Many of the standards like Common Core focus on critical thinking, problem-solving, and inquiry-based learning. These standards promote the growth of 21st century skills that ultimately prepare students in the formative years of their lives for postsecondary careers in science, technology, engineering, and mathematics.



The South Carolina College and Career Ready standards help students to compete for high-level positions and pursue endeavors in diverse fields of study. A teacher's goal is to encourage students to continue paths into critical areas (Ackerman et al., 2013).

**Combination of 21st century skills and technology integration.** Ensuring the success of each student is vital to the advancement of leaders of tomorrow. Technology combined with instructional strategies provide an effective method to build current skills acquired throughout students' personal lives (Kivunja, 2014). When teachers help integrate these skills through problem-based learning and cooperative learning groups, students are equipped to be social and digital citizens of a continually changing world (Ribble, 2012). In these cooperative learning groups, interactive whiteboards are used (Jansen & van der Merwe, 2015). More extensive measures include the use of social platforms such as closed Facebook groups, Twitter, My Big Campus, virtual reality environments, and blogs. Although these platforms provide a great way to interact and learn, they are not suitable for younger audiences. The research conducted shared limited studies that cover students between the ages of kindergarten through fifth grade. However, Kimmons (2015) stated students need to be well rounded to compete in this technology-equipped world. Digital skills are now introduced to students as early as pre-kindergarten. The presentation of technology allows students to fine-tune their technology skills early on (Steckel, Shinas, & Van Vaerenwyck, 2015). Current research suggests the average child uses a technology device multiple times a day, because of this; students can adapt and learn at a faster rate than students who do not use technology frequently (Farisi, 2016).

### **Critique of Previous Research**

The previous research studies mainly used quantitative methodology. The current study will not duplicate these studies; however, similarities did exist, such as perception and

experiences of others as to how technology increases student performance (Ackerman et al., 2013; Castillo-Merino & Serradell-Lopez, 2014; Francescucci & Foster, 2013) and comparing the impact of technology integration on teacher experiences, perceptions, and student engagement (Brusi et al., 2013; Hepplestone et al., 2011; Ivala et al., 2013). Previous research demonstrated that student achievement was addressed with technology integration. Although the prevalent themes in many studies revolved around technology and student achievement, the themes for this study are technology integration, teacher experiences, teacher perceptions, student performance, student experiences, and student engagement in secondary classrooms. This study enhanced the literature available for the areas of technology use, teacher experiences, teacher perceptions, secondary student performance, student achievement, student engagement, and student motivation.

### **Argument for Advocacy Incorporating the Conceptual Framework**

A review of this literature helped to identify the conceptual framework using teachers' experiences and perceptions, technology integration, professional development, school culture, and administration support. The research further suggested the need to investigate the experiences and perceptions of teachers using technology integration in their lessons. The findings in this investigation provided helped to answer these two research questions: (a) What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms? (b) How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?

### **Chapter 2 Summary**

Over the last three decades, several advancements in technology ignited the need to modify traditional instruction to meet the needs of the 21st century. More research is needed to

improve technology integration; however, with effective teaching strategies and increased professional development; teachers use of technology integration can enhance student engagement, academic performance, motivation, and render students competent to compete in the 21st century.

This study provided research focused on the impact of technology integration on teacher experiences, perceptions and students. The review of literature focused on many aspects of student performance, student experiences, teacher experiences, and technology integration. The literature review began with the history of technology, then discussed the frameworks applicable to teacher experiences, teacher perceptions, student engagement, student motivation, and knowledge construction. The following section included descriptions of technology integration in the classroom. Within the section, I discussed technology's position in the school, the effects, and benefits of technology, and technology obstacles. This literature review also established the existence of the online learning theory as the framework. The constructivism theory was included as a basis for technology integration and teacher experiences. Finally, the review concluded with methodological issues, synthesis of research findings, and a critique of previous research. This critique provided an understanding of how the case study best provided an analysis of the identified problem.

The current case study was designed to increase the knowledge about teacher performance, experiences, and technology integration. Although quantitative research designs were used to research parts of this topic previously, such as technology integration, student performance, student and teacher experiences, and student engagement, the results from the current case study method provided an alternate viewpoint. The next chapter discusses the methodology that was required to implement strategies to prepare students for the 21st century.

The majority of the research I analyzed was qualitative (Croteau et al., 2014; DeMeester et al., 2013; Ertmer et al., 2012). These studies provided unique perspectives through, case study, narratives, focus groups and structured interviews. Quantitative methodology was also used to conduct similar studies (Eyyam & Yaratan, 2014; Francescucci & Foster, 2013; Gibson et al., 2014; Hanus & Fox, 2015). Both qualitative and quantitative data reviewed helped to provide a foundation for my understanding. By reading the methodology used in the studies, I created a plan to help me answer the research questions.

### **Chapter 3: Methodology**

The purpose of this qualitative case study was to examine how southeastern secondary teachers perceive technology integration in the classroom. A case study is a process of research in which much consideration is given to the construction of a group or situation over time (Hatch, 2002). Case studies are stories in which researchers present complex situations that involve a problem for which a solution is found. The method of research selected was a case study, involving specific aspects of a problem (Stake, 1995). The focus was the experiences undergone by South Carolina secondary high school teachers when using technology for daily instruction.

#### **Research Questions**

Two research questions guided this study:

1. What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms?
2. How do secondary high school teachers in a South Carolina school perceive the process of integrating technology in their daily lessons?

#### **Purpose and Design of Study**

The purpose of this case study was to investigate the experiences and perceptions of secondary high school teachers in the southeastern United States. In this case study, qualitative data were collected to understand the integration of technology in daily instruction and what effects it renders on teachers through interviews. My focus was on teachers who are currently in the classroom. Therefore, the case study conducted was that of teacher interviews (Hatch, 2002).

Given that technology is a permanent fixture in many schools and used by most millennials and postmillennials (Thiele, Mai, & Post, 2014), researchers need to understand how

teachers use technology during daily instruction (Rashida & Asgharb, 2016). For this case study, teachers' experiences and perceptions from the interviews were documented and analyzed for themes. Related literature research was primarily qualitative in case studies that explored teachers' perceptions and experiences. I conducted a case study to uncover several new and veteran teachers' perceptions and experiences with technology integration (Stake, 1995; Yin, 2013).

## **Research Population and Sampling Method**

### **Research Population**

The population in this study was South Carolina secondary teachers. These teachers had prior knowledge about technology integration and had used it in their classroom instruction. The characteristics of the population include their experience, discipline, grade level, location, and technology familiarity. All teachers had at least one year of teaching experience in a secondary classroom. Teachers were knowledgeable about some technology and had used at least one of the following in their classes: computers, iPads, laptops, student response systems, social media, and computer software programs. Teachers were willing to participate in interviews and follow-up sessions.

### **Sampling Method**

To identify credible teachers whose experiences addressed the research problem and questions, I used purposeful sampling (Creswell, 2014). Before data collection, recruitment for teachers happened passively using Facebook, Twitter, LinkedIn, and email. The sample size range was eight teachers (Stake, 1995). Each of these teachers was interviewed, and their mannerisms were observed. Teachers selected were secondary high school teachers in South

Carolina school districts who volunteered to participate. This method of sampling is also referred to as self-selecting because each teacher volunteered to be part of the study (Hatch, 2002).

### **Instrumentation**

To understand the experiences and perceptions of teachers in the classroom, I took field notes and conducted semistructured interviews. These instruments led to valid and reliable results (Hatch, 2002).

1. Field notes provided the evidence that gave meaning and clarification to the issues stated by teachers during interviews (Stake, 1995).
2. Semistructured interviews were conducted to understand the teachers' experiences and perceptions. Questions were predetermined and led to an open discussion about technology integration in the classroom. A list of interview questions appears in Appendix A.

Each of the above instruments enabled me to review all data in real time, identifying common trends that were discussed and analyzed for future exploration.

### **Data Collection**

Before data collection began, I obtained approval from the Concordia University Institutional Review Board (IRB). Data collection followed the guidelines established in the recruitment letter. Interviews were recorded with an audio device for an accurate account of the teachers' perceptions and experiences with technology. All audio recordings were deleted immediately after transcription per the Concordia University IRB.

### **Semistructured Interviews**

One-on-one semistructured interviews were conducted with each teacher from a South Carolina school. Interviews lasted 60 minutes with a set of predetermined questions for

continuous, open-ended discussions. Certain questions required background information to establish the teachers' demographics and to build strong relationships (Hatch, 2002). The essential questions focused on the core of the study and provided data that were central to the research (Guba & Lincoln, 1985). Next, detailed questions were asked so that teachers could discuss their thoughts and opinions and how it relates to technology integration in the classroom. Finally, I asked teachers contrast questions to understand better how each teacher made meaning of technology integration in their class (Hatch, 2002). Each interview was intended to yield relevant information to the current study.

### **Field Notes**

Field notes were the notes taken during interviews. These notes focused on behaviors exhibited by the teachers, activities, and events that took place and other features that led to understanding teacher experiences with technology integration (Hatch, 2002). Field notes provided an informal look at conversations and general thoughts by each teacher while being interviewed. These notes were reviewed at a later time to assess patterns, content, and experiences. These field notes were analyzed using an inductive analysis approach.

### **Identification of Attributes**

The attributes that defined and guided this case study were technology integration, secondary teachers, perceptions, experiences, secondary learners, teaching style, communication, delivery methods, technology experience, teaching experience, and communities. The experiences of each teacher were based on their perceptions and attitudes toward the use of technology in their daily instruction. Technology was integrated into all lessons or a selected few. The goal was to understand the experiences, process, and implementation in secondary classrooms.



The experiences of South Carolina high school teachers was the focus. These teachers shared their perceptions and experiences of the advantages and disadvantages of implementing technology in their lessons. Teachers tend to incorporate technology in their instruction based on their teaching styles, which vary from direct instruction to student-centered facilitation. Each teacher had some technology experience with a basic understanding of technology hardware and software. Teaching experience ranged from first-year teachers to 20 or more years. Each of these attributes contributed to the overall knowledge of teacher experiences and perceptions and how it related to the use of technology in classroom instruction (Thiele et al., 2014).

### **Data Analysis Procedures**

Qualitative research requires a data analysis to answer the questions established at the beginning of the research process. In this study, I analyzed interviews and field notes to answer the research questions. The data analysis used to find consistencies in these data and their meanings was inductive analysis. This analysis provided textual representations organized in ways that were communicated to support these data and make the findings understandable to other readers (Hatch, 2002).

### **Semistructured Interviews**

The semistructured interviews were audio-recorded. Before each interview, a verified informed consent form was reviewed. This consent form was given to each teacher upon agreement to participate in the study. Teachers were also given a written copy of the interview questions (see Appendix A) prior to the interview beginning, along with three to five minutes to review the questions. Once the teacher acknowledged that the items were reviewed, the interview began. Although teachers could ask for the questions to be clarified during the initial review, once the interview started, clarification of all questions ceased. Each interview was done in

person in a private location where the teacher felt comfortable. I conducted all interviews to improve my firsthand understanding of the information that teachers shared. I took interview notes to acknowledge the importance of nonverbal cues and mannerisms I witnessed, therefore providing a foundation for each teacher interview during transcription.

For interviews, the inductive analysis constant comparison method was used to understand each teachers' responses to the interview questions presented (Hatch, 2002). Constant comparison analysis is an inductive approach that gives rise to theme selection that is developed and connected with subthemes (Corbin & Anselm, 2008) — understanding these data started with specific elements and the connections between them. For this case study, interviews began with questions related to specific experiences and the perceptions each teacher had about technology, based on guidelines developed by Hatch (2002). The questions and responses moved from these specific levels above to the role of technology integration in each classroom and curriculum. Through constant comparison, I found patterns to make meaning of the collected data, from which I made general statements about teachers' beliefs and experiences with technology integration in the classroom. Hatch's (2002) steps guided the interviews (see Appendix D). From these responses given during data collection, I created three additional questions for subsequent member check interviews (Galletta, 2013).

The inductive analysis began with a closer look at the previous literature and how it applied to the current case study. Next, I used the meanings, ideas, and text snippets to develop categories relevant to teacher experiences and perceptions with technology. To arrive at this stage, I first formulate descriptive narratives from interview field notes. I paid close attention to teacher's responses, body language, tone, and delivery during each answer. On the same day, I reviewed the answers and narrative for accuracy and validity.

These data from each teacher were examined separately. Data then were combined to understand and document the technology integration perceptions and experiences of each teacher. First, all raw data were compiled in a standard format. Therefore, I typed and saved all notes in Microsoft Word on a hard drive. These data were then printed for a more efficient review. Next, I read aloud the transcribed data so that I could fully understand teachers' perceptions and experiences. These data were sorted and broken down into potential themes. As the transcribed information from each interview was evaluated, essential themes and subthemes emerged.

Following the formation of themes, the categories became defined and detailed. These categories were divided into upper- and lower-level categories. The upper-level types were themes that came from past literature, and the lower from the raw field data. These raw data were coded and then grouped based on specific text, phrases, or actions.

These data collected from interviews were coded manually using a method called initial coding or open coding (Saldaña , 2016). This method of coding allowed the qualitative data to be broken down into discrete parts, examined and compared (Saldaña, 2016). Through this coding method, actual words were coded to enhance and deepen the reader understanding of the teacher's experiences and worldviews (Saldaña , 2016). To make sense of these collected data, I provided a code next to every few lines of data. To ensure that I am acknowledging the teachers' voices, I often would underline, bold, or highlight words that appeared frequently or stated with emphasis. For efficacy, I used quotation marks to signify code words that were teacher inspired instead of those that were researcher generated. Codes were listed and placed in categories based on their meaning, hierarchy, or chronological order.

Coding was done based on several factors, including repetition, instances when the teacher signified the importance, information that intrigued me, and previous literature that provided similar thoughts. I coded the interview data effectively because the data were transcribed in a structured order. First, I entered a code name for each participant at the top of the first page. Next, I placed the date and time it was conducted at the top of the first page. All lines and pages were numbered. Each transcript was double spaced with line numbers, and the transcribed data also included the interviewers' dialogue. I created a three-column table to code the data. Column 1 included the initial codes, Column 2 included coded words or phrases that were reduced, and Column 3 was categories and emerging themes.

Next, important codes were decided based on all the created codes. Creating categories and themes from these codes was done by combining and reducing other codes. Again, I reviewed the codes and created additional ones by combining two or more singular codes. The categories and themes focused on processes, experiences, perceptions, technology, and differences that focus on the study. I labeled my categories and described the connections between them. All categories together formed the core of my case study. Lastly, I determined if any of the categories created were more critical than others. If so, I placed the categories in order of importance.

### **Field Notes**

Logging and analytic field notes were analyzed using inductive analysis. The purpose of logging was to keep track of each action while I observed and interviewed individual teachers. Through this method, I established the main outline that captured the various domains in these data and the relationships they had with each other and the case study. Specific descriptions were documented (Hatch, 2002). These descriptions were the domains witnessed that provided others

with a vivid picture of the interviews conducted. Many of these domains provided a cultural context that otherwise would have been missed. I paid close attention to each event, action, or dialogue. These data in time transformed from descriptive to analytic; that is, these data changed from raw field notes to domains that are portions of the larger picture that focuses on teachers' perceptions and experiences with technology. The analytic notes included my thoughts or impressions about the interviews I conducted. Once the notes were specified, domains were created and reviewed. Therefore, the identification of patterns in the notes was found. Many of these patterns came from direct quotes and actions of the teachers participating in the study. A preliminary analysis of these notes produced emerging themes.

Triangulation was used to validate the findings obtained from these data collection methods. This triangulation method provided the accuracy and validity of these data sources (Hatch, 2002). This documentation is intended to provide a clear and concise collection of evidence from interviews and field notes. These data included the dates, times, teachers, their responses or actions, and results. To ensure consistency and organization of these data, the same process was followed throughout the case study.

### **Limitations of the Research Design**

#### **Limitations**

Several limitations are present in a case study research design. One limitation was the inability to make inferences (Simon & Goes, 2013) because in case study research there is the possibility of alternate explanations. Another limitation is the general nature of the findings, which was limited to the behavior, beliefs, experiences, or actions of one person, group, or organization (Stake, 1995). In case study research, the feelings and experiences of the teachers interviewed may or may not reflect the beliefs and experiences of similar teachers. Therefore,

because of the suggestive nature of case studies, similar findings may or may not be found in other studies. In this study, additional research was needed to validate these data and ensure future duplication of the results.

Another limitation was the schools, districts, and teachers chosen. By only selecting one state, the limits were placed on the external validity of these data. These results may not apply to larger districts in suburban areas. Therefore, the findings were presented in a way so that middle and postsecondary schools could interpret and determine how the information may or may not relate to their current setting. Another limitation was teachers did not want to share their experiences and beliefs because of perceived adverse effects on their current position. This limitation was addressed by assuring each teacher that his or her comments and recordings will remain confidential.

### **Delimitations**

Delimitations are characteristics that limit the case study (Simon & Goes, 2013). These delimitations likely were caused by exclusionary or inclusionary methods or decisions made during the development of the case study (McCaslin & Scott, 2003). Many of the delimitations found in research result from choices made by the researcher. These include the research questions, research problem, design, and selection of teachers (Simon & Goes, 2013).

This case study was limited to the beliefs and experiences of secondary high school teachers in South Carolina high schools. The study was delimited by including only one state in the southeastern United States. By selecting a school, further reduced the findings from that of larger or suburban schools. Using the purposeful sampling selection of teachers was also a delimitation (McCaslin & Scott, 2003). This delimitation occurred because of the subjective nature of purposeful sampling, which relied on my judgment.

## **Validation**

**Credibility and dependability.** While each case study's goal is to provide valid and credible information, specific processes must be done to ensure the accuracy of the information received. An excellent qualitative case study provides both credibility and confirmation of data gathered. According to Lincoln and Guba (1985), a qualitative study must be believable to critical readers and approved by teachers who provided these data during the investigation. To achieve this credibility Lincoln and Guba (1985) shared various techniques that enhance the validity of the research, including prolonged engagement, persistent interviews, triangulation, and member checking.

I intended to have prolonged engagement with teachers and school district administrators. This form of validation will ensure the data gathered through interviews will be credible (Hatch, 2002). The goal was to spend enough time so that a range of discussions was made, resulting in accurate data. Through persistent interviews, I gathered an in-depth and intensive perspective on experiences and understanding of each teacher and their achievements and barriers with technology usage.

**Strengths and weaknesses.** To ensure the trustworthiness of these data, additional verification was achieved by evaluating the strengths and weaknesses of this qualitative case study. While there is a large amount of research on technology integration in the classroom, the focus on teacher experiences and perceptions are limited (Rosa & Obillos, 2016). Understanding technology and its components were vital for the growth of technology integration in the classroom. Therefore, a full understanding of teacher experiences and perceptions with technology led to an increase and improvement of technology integration strategies, creating a framework for others to follow.

A strength of this study is how teacher technology perceptions and experiences were explained as it related to the use and integration of technology in the classroom. The technology perceptions and experiences of the teacher's affected how administration and students perceived technology. These perceptions determined whether more technology is needed and if it provided beneficial results for student and teacher performance.

By addressing weaknesses in this study, the level of validity and integrity increased. Due to the use of a qualitative case study, the findings may be specific to a particular area or demographic. All members that participated in this study remained confidential. However, some felt their answers provoked repercussions from the administration. Because it is imperative that all teachers remain confidential, the selection size remained small, and only one state was utilized. Through these weaknesses, these data were subjective to areas in the southeastern United States.

### **Triangulation and Member Checking**

Triangulation was used to validate research findings by gathering data from multiple sources. These sources are interviews and field notes. To ensure that interview data were valid, field notes were used to document specific events. Also, to ensure credibility and reliability of information gathered, I conducted member checking. Data recorded, interpretations, and field notes were reviewed by the participating teachers at the beginning of each member checking session. Each data and notes review were achieved by providing paper copies of each transcript to the teachers. Creswell (2014) contended member checking allowed teachers to share concerns about inconsistencies throughout the study. Teachers voiced their opinions about whether their perceptions and experiences represented accurately in these data (Koelsch, 2013) and if the conclusions are credible from their perspective. During the interview, teachers offered their



opinions about the findings. Based on the information gained during member checking, I asked each teacher three additional interview questions.

By triangulating the data obtained with additional data from interviews and field notes, the confidence, reliability, and credibility of the findings are improved (Hatch, 2002). Exact language and rich descriptions were used to increase the validity of the study and provide themes or patterns identified. To further support and justify the information gathered, direct quotes from the teachers were included. By including quotes, I shared personal perceptions of each teacher and how these perceptions related to other teachers, therefore potentially providing varied viewpoints about technology integration (Guba & Lincoln, 1985).

### **Expected Findings**

The case study was expected to show that many teachers have a favorable perception of technology integration in secondary classrooms. I expected to find that many novice teachers used technology more frequently in the classroom than veteran teachers. I also expected to find students are more receptive to technology presentations, methods, and platforms. Veteran teachers' apprehension with the usage of technology was another expected finding. I anticipated that after conducting this case study and gathering data, similarities would be found between technology integration, teacher attitudes, experiences, perceptions, and student overall performance rates.

### **Expected Outcomes**

Upon concluding this case study, I expected the following outcomes:

1. Better understood perceptions of technology integration in secondary classrooms.
2. Recorded strategies that will enable teachers to foster an environment receptive to technology.

3. An analysis of the barriers that prevent positive experiences and perceptions of technology integration.
4. A potential plan for secondary schools to encourage technology integration for students, teachers, and parents.

### **Ethical Issues**

Previous to any data collection, I followed the aligned research procedures to ensure that I met all guidelines established by the Concordia University IRB for research with teachers. These guidelines, outlined in the Belmont Report (1978), mandated that research must be adequately conducted before, during, and afterward. The guidelines that are pertinent to this case study are protected from harm, informed consent, right to privacy, and professional honesty (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978). To recruit teachers, I shared flyers through emails; these flyers were approved by Concordia University IRB. Teachers chose to be part of this study and were not coerced. Emailed flyers served as recruiting tools where teachers self-identified as potential teachers. The names of each teacher who participated was protected and kept confidential.

An informed consent letter was sent to each teacher explaining the study and if they did not want to participate, they had the option to withdraw. This informed consent letter stated that there were minimal risks involved and the teacher nor job would be in harm's way. To acknowledge each teacher's agreement to participate in the study, a signed copy was collected through email or face to face pickup.

To provide an example for other researchers to follow, documentation of interviews was critical (Stake, 1995). This ensured that the work could be replicated and extended knowledge in the education field and qualitative research. Maintaining research integrity was important, so

when data were collected, all information was reported accurately and honestly. All data regarding the results were reported so that the conclusions could be drawn about the case study (Hatch, 2002). Lastly, the Concordia University IRB approval was secured before data were collected.

### **Chapter 3 Summary**

To prepare students for the 21st century, teachers needed to think critically about technology, analyze various technological components, and apply these components in student-centered classrooms. Virtual, interactive teaching help both teachers and students learn and develop their current technology skills. Understanding the experiences of teachers helped to identify strategies for integrating technology in their lessons.

This qualitative case study focused on the secondary school teacher population, and their perceptions and experiences with integrating technology in the classroom. The research questions centered around teachers' experiences, attitudes, and methods of implementing h technology in the classroom.

## **Chapter 4: Data Analysis and Results**

The purpose of this qualitative case study was to investigate teacher experiences and perceptions of technology integration in secondary classrooms. A case study was chosen because it explores varying views of the problem and grasps a significant understanding of the research problem (Hatch, 2002). Using interviews and field notes, this case study produced valuable data that were used to understand the perceptions and experiences of teachers.

I interviewed eight teacher participants who integrated technology in their secondary classrooms. Two research questions were established to guide this case study:

Q1. What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms?

Q2. How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?

Data collected from all interviews were studied to identify themes that were common to teacher experiences, perceptions, engagement, student performance, and professional development (Kopcha, 2012). In this chapter, the results are discussed. The chapter is structured in the proceeding order: (a) description of sample, (b) research methodology and analysis, (c) summary of the findings, (d) presentation of the data and results, and (e) summary.

### **Description of the Sample**

The eight teachers ranged from 25 to 69 years of age. The sample included seven females and one male; seven were African American, and one was White. While all were certified teachers, their levels of experiences varied. Two teachers had less than five years of teaching experiences, and three had 10 years or less of experience, and three teachers had 11 or more years of experience. One had retired twice. Teachers were invited to participate in the case study

through flyers and emails. After 50 flyers were distributed, 10 teachers originally responded, but saturation was reached after the first eight semistructured interviews. Each of the participants had used technology in their classroom for a minimum of one year and had worked in the public-school system. Table 1 indicates the demographics for each teacher participant.

Table 1

*Demographics of Participants*

Pseudonym	Subject	Gender	Years Teaching	Years Using Technology in Classroom
Sherry	English	Female	13	13
Amy	Math/Science	Female	10	8
Carmen	Early Childhood	Female	12	10
Sheila	Business Ed	Female	2	2
Laura	Science	Female	10	10
Kelsey	Social Studies	Female	8	6
Ashley	AP English	Female	34	15
John	JROTC	Male	4	4

**Sherry.** Sherry had spent most of her life in South Carolina. Although she had traveled, she loved the southern feel that her home state provides. Sherry received her Bachelor’s in English Literature from a small historically Black college, and her master’s from a large public university, both out of state. She came from a two-parent home where education was also pushed. A mother of one, she believed that education is key to moving to the next level in life. Over the last 13 years, she had worked in many roles in education. While completing undergraduate studies, she was a mentor and a resident advisor. During her graduate studies, she was a teaching assistant for women’s and gender studies. She had taught in secondary settings,

continuing education setting, an undergraduate setting. She enjoyed being an adjunct teacher in her spare time to stay knowledgeable about changes in the higher education field. She had been teaching at the same school for 10 years. This small school a predominant minority population. She taught courses in English, women's studies, and African American history.

Sherry believed that all students should have access to education. She believed that changing the norm will allow more students to connect with the material; therefore, she regularly read articles to incorporate new methods in her classroom. Sherry had piloted a paperless classroom to ensure that all students have full access to learning.

**Amy.** Amy was a native of New York who started teaching at the age of 21. Although South Carolina was not her birth home, she had come to love the slow pace of living. Amy had been teaching science and math at the same school for 8 years. The school had a student population of roughly 1,300 students. Because of the previous licensure in elementary studies, Amy was also certified to teach math and science courses. Amy believed all students should have the opportunity to use technology. Because of school economics, Amy lacked access to many forms of technology; however, she said she enjoyed the using technology.

Early in her career, Amy taught in a rural school. The students were poverty stricken with no resources to understand or use technology. For her first 2 years, she taught second grade. This experience gave her a better understanding of what students in rural, impoverished areas go through. This experience also enabled her to understand her students and connect with them on a real-world level.

**Carmen.** Carmen was a high-spirited young woman who loved to teach and change lives. Carmen was a native of South Carolina and attend university there as well. Carmen received a Bachelor's in Early Childhood Education and began teaching upon graduation. Carmen taught

for 10 years at a vocational school and enjoyed each day. However, upon marrying she relocated to a different area. During the 10 years, Carmen received her master's and educational specialist degree. She was currently certified for both principal and superintendent in the state of South Carolina. Carmen considered herself a perfectionist, and she continually challenged herself to learn new information related to her career. She frequented education conferences and sponsored her students' trip to nationals each year.

Over her last 13 years, Carmen had learned many things from her students involving technology, which she believed is the missing link when connecting to her students. She firmly believed education is the foundation that everyone needs to be successful. Through technology, Carmen was sure students can absorb and replicate the information they see and hear. She said technology gives all students to the ability to review the information multiple times in different ways.

**Sheila.** Sheila was a new teacher. A native of South Carolina, she attended university in the capital. Sheila originally went to a university for a business degree. However, after working several years in the business field, Sheila found she was unhappy and decided to change careers. Both her parents and her sister are educators. Sheila took the alternate certification route that South Carolina offers. This process took 2 years; she had completed the program to receive full certification one few months ago. Since starting her new career, she had relied heavily on technology. As a business major, she loved using it and taught her students to understand and use it also. Sheila had encountered many changes since becoming a teacher, but she was sure that in time she would perfect her skills and become an indispensable asset to her district.

**Laura.** Laura had been teaching science for 10 years. Laura initially received her licensure in New York. After teaching in New York for 8 years, she moved to South Carolina.

Laura was the science team PLC lead and loved to attend conferences to bring new ideas back to the school. Laura enjoyed using a variety of technological components in her lessons. She believed it increases student engagement in the lesson. Her motto was that technology increases her ability to teach and present new and exciting things. This leads to stronger connections and greater comprehension with her students.

**Kelsey.** Kelsey was a social studies teacher and department chair. Kelsey was a South Carolina native but had relocated many times as a military wife. She had been teaching for 8 years and said she loved teaching young minds. Before teaching, Kelsey was a secretary, and she eventually received a Master's in Teaching. She also recently completed a principal licensure program for South Carolina. Her goal was to become a principal, but until then she loved teaching in the classroom.

Kelsey, unlike many of the other teachers I interviewed, had a love-hate relationship with technology. While she believed that technology is a great tool, she believed society has become overly dependent on it. She said that technology alone is useless; there must be a skilled teacher teaching the information so that students can see the connections between the text and virtual resources. Kelsey currently taught at a school that was entirely virtual, which made it difficult at times to bit her personal touch on things. She noticed that her students were doing better than other schools in which she had taught. This made her wonder about her technology viewpoints.

**Ashley.** Ashley had been teaching English at the same school for 34 years. She was a South Carolina native and taught in the same city in which she grew up. The school was a rural high school with a small population. Ashley received a Bachelor's and Master's in English. During her tenure, she had taught English, AP English, Greek Mythology, and African American



History. She was also the department chair for the English department and AP studies. She was on the school improvement council and actively volunteers for the parent teacher association. Because of her of many years of educating, Ashley expected only the best from her students, whose parents she had also taught in many cases. She was considered family to many of the students and their parents. She believed that all students can learn given the right parameters.

Many of her past students had shared how her class alone prepared them for college. She demanded high-quality work and forced students to redo their work until it as high quality. She prepared her students with the correct grammar background, but she was not a big supporter of technology use. When asked why, she said when she started her teaching career there were no computers in the classroom; instead, teachers relied on their skills and intuition. She used technology in her classroom only minimally.

**John.** John was retired from the U.S. Army. He was an instructor in the military, so upon his retirement, he decided to teach high school students. He believed that students had lost sight of what is important. As the JROTC teacher, he shared his story and challenged the students to find the best in themselves. John had been a teacher for three years and was enjoying his new career.

Although John was not a veteran teacher, he could control his class like other veteran teachers. He was not a big fan of technology; however, he believed students are more engaged when he uses it. Outside of work, John was a mentor to young men in the community. He had a relatable personality allowing him to connect with others and encourage change.

### **Research Methodology and Analysis**

In this qualitative design, I used a case study to understand teachers' perceptions and experiences regarding whether technology integration in South Carolina secondary classrooms

affected them in a positive or negative way. Two questions guided this case study: What are the experiences of South Carolina secondary high school teachers teaching in technology-equipped classrooms? How do secondary high schools' teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?

To gather these data, I used semistructured interviews and member checking. To analyze these data, I used the inductive analysis model (Hatch, 2002). I conducted face-to-face interviews, which I recorded using a voice memo program. I then transcribed each interview by hand using Microsoft Word. Upon conclusion of each interview, I told each teacher that I would meet with them again to review the content for authenticity and clarity. During each of these sessions an additional three questions were asked to further help with these data collection and understanding (see Appendix B).

Using each detailed interview was substantiated by the method of collection of the information regarding the case study (Galletta, 2013). To ensure the integrity of each interview and follow up, an interview protocol was established. Upon interview transcription, each teacher was asked to review the transcript. No changes were made to the transcription data shared. Throughout data collection and analysis member-check procedures were used (Guba & Lincoln, 1985). This ensured that all information gathered was stated correctly and unbiased.

### **Data Collection**

I gathered the data in two stages: conducting the interviews, and then the follow-up member checking and three additional questions. In addition, I took field notes were taken to understand better statements made by teachers. I was also able to summarize the teacher responses and develop underlying meanings. These notes explained each teachers' mannerisms

and events or language that was unique. With this information, I was able to understand teacher experiences and perceptions as it relates to secondary education research.

### **Semistructured Interviews**

I conducted my first round of semistructured interviews with each of the eight teachers during a 2-week period. Each prearranged, 60-minute interview was conducted at a time, date, and at closed-door study room at a library or in a classroom.

Participants were initially asked the 12 interview questions I created before data collection (see Appendix A). These questions complemented the current research about teaching experiences and perceptions of technology integration in the classroom. Questions 1 through 4 were established to give each participant the opportunity to share what they considered technology to be, with a focus on how technology is used in their classrooms and its purpose within the curriculum. Questions 5 and 6 were created to allow participants to share their experiences with technology and the frequency of use. Questions 7 and 8 were created to understand the teachers' perception of student's willingness and grouping when using technology. Questions 9 through 11 were established to give participants the ability to compare technology and nontechnology usage differences and whether these have increased or decreased the ability of teachers to teach. Question 12 was created as a feedback question for the researcher. Participants could share other new ways they thought technology could be used in their lessons and classroom.

### **Follow-Up Interviews and Member Checking**

Member checking was done with each teacher during a 2-week period. A copy of the teacher's transcribed interview was given to each teacher for review. Because member checking is a form of extensive review (Hatch, 2002), I was able to confirm the validity and accuracy of

the information. During these follow-up interviews, each teacher was asked an additional three questions (see Appendix B). The first question directed teachers to define technology. The second question asked teachers how technology had evolved over their teaching career. The last question asked for teachers to elaborate on their experiences with technology professional development and what role it plays on their teaching abilities. These sessions allowed further triangulation of these data to grasp each teachers' responses. Each session was informal, allowing the teacher the ability to speak freely. These data were transcribed in preparation for the coding process.

### **Data Analysis**

I used inductive analysis to analyze the semistructured interviews, and, as a follow-up, member checking (Hatch, 2002). The analysis method used was discussed in detail by Saldaña (2016). I used open coding, also referred to as initial coding (Saldaña, 2016). During my first round of coding, each interview was first examined separately. Data were then combined to understand and document the technology integration perceptions and experiences of each teacher. All interviews were transcribed in a standard format in Microsoft Word documents on a hard drive and printed. Next, I read aloud the transcribed data so that I could fully understand each teachers' perceptions and experiences. From this round, I identified 120 codes. These data were then sorted and broken down into potential themes. As the interview information was evaluated, important themes and subthemes emerged. From this first round of review and evaluation, I identified five themes: (a) student engagement, (b) technology relevancy, (c) student experiences/responses to technology, (d) teacher experiences/responses to technology, and (d) understanding how teachers integrate technology. These themes allowed me to examine

these data focusing on specific responses. This ultimately led me to understand these data as applicable to my case study (see Appendix C).

Following the formation of these themes, the categories became more defined and detailed. These categories were then divided into upper- and lower-level categories. The upper-level categories were themes from past literature and the lower categories from raw field data. These raw data were then coded for a second time using pattern coding to gather these codes in smaller categories. These categories were grouped by creating sections that had meanings, specific statements, or mannerisms observed. Some of these specific texts or phrases are as follows: Web-based resources, professional development, flipped classroom, technology experience, school financial health, 21st century skills, and teaching styles. After this cycle of review, I was able to identify 53 codes.

Through inductive analysis, I was able to reduce these data by focusing on actions and statements and to identify new patterns I had previously missed. All similar codes were condensed into 13 clear codes. From these codes, I reviewed these data to find developing themes. I reviewed these data a final time to ensure I had not missed any additional patterns. I was unable to establish any additional codes.

All of the codes identified were highlighted in a three-column coding chart. All codes that appeared similar were condensed into like categories. From this process, I was able to create five categories. Again, I repeated the process to confirm the validity of these data. I compared the findings and found these five overarching themes. These themes were (a) teacher willingness to use technology, (b) teacher technology level of experience, (c) teacher feelings or perceptions about technology in the classroom, (d) student performance with technology, and (e) teacher

technology experiences. The data analysis was sent to each teacher to review. Upon review, the teachers suggested no changes.

## **Coding**

Saldaña (2016) and Hatch (2002) informed my coding process. Each transcript was read focusing on one question. For example, based on the question “How does the teacher feel about technology use?”, I was able to take notes on the transcriptions, which allowed me to make connections in these data and develop my primary analysis frame for the teachers’ responses. To ensure I understood these data, I examined these data once more, this time in answer to different questions. The questions were, “What have your experiences been when using technology? Have you noticed a change in your students when using technology?” Through the use of these additional analysis frames, I was able to produce data to strengthen the teachers’ responses. Each of the frames listed above allowed these data to be divided into smaller parts for coding.

Once I achieved the creation of frames, I began analyzing these data for codes. Each code had a color designated for it to find patterns to better indicate repetition and patterns (Saldaña, 2016). For example, the phrase “Technology is always integrated into my classroom” was color-coded blue, as technology integration. When reviewing transcripts, if Sherry stated, “my lessons are built with online resources and learning management systems in mind,” I would code the statement blue.

Another example of technology integration was Amy when stated, “Not all of my usage with technology has been great. Many times, we were unable to use the Internet because of my school’s economics.” Although this statement falls under teacher experience, it can be dual coded. The second code was teacher perceptions. This code was color coded pink. Amy’s connections of poor Internet to school economics was a perception.

One hundred twenty codes emerged from these data, after which I further reduced the data to 53 codes, these codes were condensed to 13 codes under the five themes noted above.

### **Interview Data**

After I collected all data from the semistructured interview and follow-up member checking session, I evaluated each response given by the eight teachers. (See Appendix C for coding table.) As I reviewed the data, I kept in mind the frame analysis questions. These provided direction so that I could understand the meanings of the questions asked. During each interview, I wrote notes in the margins to document the teacher's feelings and mannerisms. These actions were not a predetermined part of the interview; however, they were necessary for framing the way in which I viewed these data. The scripted notes provided boundaries when reading the transcripts. These notes were read before I viewed and coded the data as described above.

### **Member-Checking Data**

Upon completion of the member-checking interviews, I reviewed each teacher's responses using the coding bank created from the initial interview data. Much like the previous interviews coded, I saw commonalities within the teacher responses. I then organized this information by themes and patterns.

### **Summary of Findings**

Many teachers stated technology was an intricate part of the educational process. Teachers discussed the need for technology and how it has enhanced teaching and learning in many cases. Although teachers expressed they were able to teach their lessons without technology, most believed the technology integration helped with the presentation and review of concepts. Several of the teachers said technology integration alleviated stress caused by the

process of locating and incorporating new information. This was achieved through the constant availability of information on various educational websites and textbook companion resources

Teachers discussed technology integration as an integral part of the lesson creation process. Teachers shared technology was used frequently throughout the school in many ways. This attention to technology usage suggested that, although technology may not be incorporated in every lesson, students witness or use technology every day at school. Many teachers said that technology was not a requirement; however, it was both helpful and necessary. Teachers discussed the effect technology integration had on them as teachers and as individuals. They stated that technology could be a hassle and sometimes complicated; however, when used correctly it could be an effective learning tool.

Teachers said that teaching in schools now required that they understand how to navigate various technology devices and programs. Teachers said they viewed technology devices as any system that facilitate information in an audio/visual format. Most frequently used forms of technology were desktop computers, laptops, smart boards, clickers, projectors, Microsoft Office, SchoolTube, and Khan Academy. Teachers said that being provided training for the technology was essential to its use. With the knowledge acquired in these training, teachers stated they were better equipped to teach students and differentiate their instruction.

Teachers saw technology integration as an important part of teaching and learning. Although some teachers said they used only the necessary forms of technology, they all agreed technology was used in almost all classrooms. Teachers discussed the need for a technology standard to exist, which would allow its integration to be aligned with best practices and learning goals in schools. The findings showed teachers believed technology helped the learning



process to flow smoothly. However, they also stated that more technology options must be readily available to reach all students.

From these findings, five themes emerged in answer to the two research questions:

1. In order to integrate technology in the classroom, technology must be considered relevant.
2. Teachers' perceptions of technology often influenced student response to technology integration.
3. How teachers integrate technology in their classrooms dictates their willingness to learn new technology types.
4. Teachers' successful use of technology in and out of their classrooms determines how conducive the learning environment is for students.
5. Teacher technology experiences are often skewed by administrations' support and appreciation of school culture or lack thereof.

### **Presentation of Results**

These data were analyzed from the first interview and member checking data using Hatch's (2002) inductive analysis method. The coding process I used was initial coding (Saldaña, 2016). The results from that analysis are presented in this section.

#### **Semistructured Interviews and Member Checking**

The combination of the patterns that surfaced provided a clear meaning of these data (Hatch, 2002). Initially, 53 codes emerged. After a subsequent review of the codes, I reduced the codes to 13. Each of these codes is discussed below.

**Code 1: Technology purpose.** Each of the eight teachers stated that the purpose of technology was the foremost reason for integration in the classroom. Teachers mentioned the

terms *data analysis, teach students to be digitally responsible, enhance student engagement, makes content relevant, extend learning pass seat time, and broaden everyone's worldview.*

Carmen said, "Technology's purpose is to allow me to analyze data and develop lesson plans. It really helps me understand the directives given by leadership." Sheila said, "I am teaching my students to understand technology, so they are responsible for their work in a virtual world. In my classroom, students submit all assignments virtually." Laura summarized many views points by stating, "Well, the purpose is to enhance student engagement in the lessons in a variety of ways. This allows students to learn while having options."

All teachers stated technology integration is necessary for students today. "All of these kids have or use some form of technology multiple times a day. Why not, enhance those skills with technology integration in academics," said Sherry. John surmised that "due to the need for 21st century skills, technology has now become a staple in many aspects of life. Helping to extend each student learning is both necessary and beneficial for postsecondary preparation."

To understand the purpose of technology, teachers must be willing to try new things. Through these explorations, teachers will find an evolution of their lessons. While many stated their current lessons are adequate, the true purpose is to make each lesson great. This can only be achieved by pushing the limits. Encouraging technology integration allows each teacher to push their limits, because of the numerous opportunities that technology provides for academics.

**Code 2: Culture.** Teachers stated the teaching culture has changed over the last 20 years. They stated that understanding and embracing the culture proved beneficial for most teachers. However, there was also discussion about how the culture was directly connected to trust. Many suggested when administration support a technology-driven classroom, more demands were placed on them. At times, there were overloads of new technology with no direction on how to

use or its purpose. Therefore, trust is important, because if teachers believe their administration will make decisions with their best interest in mind. Kelsey said,

Based on my background both as a teacher and a department chair, I have found ensuring a culture that both promotes technology and teacher's voice is vital. The entire traditional school culture has changed. Not only is there a need to incorporate technology in lessons, but there are also entire schools that are designed based on technology.

Laura mirrored Kelsey's thoughts by saying, "Not using technology is now considered archaic. They also have blended learning schools. These schools were created to embrace technology and the culture that surrounds it. Without embracing this culture, traditional schools may become obsolete."

Sheila explained,

Even if all teachers do not support the idea or culture of technology, it is in the interest of the schools to still advocate for it. In almost all of the schools, there are classes offered that focus on technology. Here in South Carolina, they start the students off in elementary school using Chromebook and iPad. For teachers not to take advantage of this resource is crazy.

When there is a culture that values teacher's input while providing new avenues to engage students through technology resources. Teachers are more susceptible to trying new practices that focus on technology. Ashley said,

I find it particularly difficult to incorporate new technology into my lessons continually. I am from the old school. I have taught students for over 34 years, and much of this new technology did not exist when I started. Although I may not be quick to use large amounts of technology in my classroom, there are some things that I always use. I use my

computer, smart board, and projector almost daily. So, I guess even though I did not think I was embracing the technology culture, I have been all along. To be honest, if I do not have these technology components, I believe I will not be as effective.

**Code 3: 21st Century Skills.** Teachers stated that all students needed 21st century skills to be productive after high school. These skills provide a foundation for any postsecondary career goal. Amy said,

In order for students to compete both academically and in the workforce, they must understand how to use technology. Because of this many of these skills are being introduced at the primary level. When I taught on the elementary level, we would incorporate the use of computer navigation. Amazingly, many of these students could use the technology better than my peers and I.

Carmen stated, “Although we all want to believe that 21st century skills are new, we have been incorporating them for a while.” Those skills involve critical thinking, creativity, collaboration, communication, information literacy, technology literacy, media literacy, flexibility, leadership, and social skills.

Sherry said,

As teachers, we have focused on critical thinking, communication, information literacy, and social skills for the last 20 years and that is great. However, now it is also vital to include focuses on creativity, collaboration, technology, and media literacy, and leadership. To ensure our students are ready for this evolving 21<sup>st</sup> century we need to create tomorrow’s leaders. Therefore, they can build on the information we have introduced and make it better.

Teachers explained that 21st century skills extend beyond any lesson and the classroom. They said that providing this preparation for students gives rise to endless possibilities for the future. Many of these skills enhance student competitiveness who pursue careers in science, technology, engineering, and math sectors. John said,

These 21st century skills are also necessary for advancement in the military. Being able to incorporate these skills in my career helped with promotions. Therefore, it is important for students to know each 21st century skill they possess can help them in jobs from McDonald's to corporate America.

**Code 4: Student collaboration.** The teachers pointed out that since using technology integration in their classrooms, student collaboration had increased. Sheila said, "Previous to teaching in a business technology class, many of my students were apprehensive to work together. However, after showing how simple it was to collaborate using the various technology devices; student collaboration increased."

Ashley stated,

Traditionally, I would use cooperative learning groups. These groups often forced students to work together. The issue faced with this method was the need for intentional grouping. This ensures that at least one person in the group was knowledgeable enough to help facilitate the groups' learning. However, with technology integration grouping can occur randomly. Because the technology acts as the facilitator and is based on the student's responses the information presented is predictive.

Teachers reasoned that student collaboration allows enhancement of their 21st century skills. It also allowed students to take ownership of their learning. By having their peers present,

additional motivation from each other helped to extend the discussion. Ultimately, increasing each students' comprehension of the information.

Kelsey argued,

Although collaboration is ideal, ensuring that the student comprehends accurate, current information is foremost. This is achieved through technology-driven student collaboration. Because technology often updates automatically unlike textbooks and handouts.

**Code 5: Student engagement.** The teachers said student engagement has always been an issue in classrooms. They mentioned that throughout the years, many of their districts provided training on ways to increase student engagement. These methods would only work for a short amount of time; then student engagement would decrease. Laura said, "Low student engagement is something we have all witnessed increase dramatically over the last decade." Carmen speculated, "Much of the engagement issues is because of the multiple attention grabbers available today. In my classroom, I found technology to be an issue. Many of my students had phones and constantly used them even though it was against school policy." Sheila and Sherry both agreed they solved this issue by incorporating phone usage within their lessons. The students were able to download an application that allowed them to participate in open discussions. Kelsey stated, "I think that encouraging our teachers to incorporate mobile usage in their classrooms is brilliant. By including phones, student's engagement increases yielding student-centered lessons." Ashley added,

After teaching for 3 decades, I know a thing or two about student engagement. We as teachers need to stay current. Since students use mobile devices in many parts of their

daily lives, it is important for use. It also can be used to leverage the devices abilities for educational purposes.

**Code 6: Technology requirement.** Teachers said the increased demand to integrate technology has caused many feelings to surface. The teachers stated each of their schools required them to use technology in some form. Although no technology requirement document stated technology must be used, everyone understood the expectations. Ashley said,

Several years back, we started using an online platform for our lesson plans. Each week we had to upload or input our plans for the week. Our administration or curriculum facilitator would review them to ensure we were teaching students based in South Carolina standards.

Some teachers stated that because of the technology requirement they felt forced to use technology in their classrooms. Others stated that the requirement ignited their interest, which led to them finding more technology to integrate. Sherry said, “I absolutely love technology. Any chance I have to use it, I do!”

“To meet the technology requirement, I always include a video in my lessons so that I could use my projector and smart board,” said Amy.

Laura concluded, “My school is technology driven. Our classes all use smart boards and learning management systems. Everything we do has some technology included. We are entirely paperless, so resistance to the technology requirement rarely exists here.”

**Code 7: Technology as an effective learning tool.** The teachers stated while learning has always existed in classrooms, over the last decade more tools had been introduced. “Technology integration is one of those resources that provides so many different avenues. That is why it is so effective,” said Sherry. Amy said, “What makes technology so useful is that it is

predictive. Unlike traditional worksheets or direct instruction, technology responds to each search or answer by giving another result or question that builds off the previous.”

According to Ashley, “As much as I know technology is an effective tool, I also know that a certain level of facilitation is necessary to ensure its effectiveness.

Teachers often explained they incorporate technology into their lessons to extend the students learning. Sheila said, “Using technology as a learning tool allows students and teachers to grasp information in various ways.”

Laura added,

It is true that technology is an effective learning tool. When I taught my students about kinetic and potential energy, I was able to show them this in action by showing a rollercoaster simulation. Students saw the creation of the rollercoaster track. They also witnessed several trials of the coaster on the track. From the data we received as a class we were able to calculate both the kinetic and potential energies. My students said they enjoyed this because it was like they were on the rollercoaster.

Carmen said,

I believe technology is effective for learning because the information can be presented in so many different ways. I enjoy using our textbook companion resources. Many of these resources present subject matter in different formats. For a chapter review, the information is presented as a summary, crossword puzzle, guided reading review, linked through Quizlet, matching, and so many more. This is awesome because with so many options all student learning types are supported.

**Code 8: Technology through differentiated instruction.** Teachers said when integrating technology, they noticed an increase in their student’s overall comprehension.



Carmen said, “One of the reasons I think my student understanding increase was due to their willingness to use the technology. They thought using technology devices was ‘cool,’ so I had an advantage from the start.”

“I find it imperative,” said Kelsey, “to determine if any of my students have issues when using technology. What I have found that even my students with accommodations enjoy using technology. They can understand the information allowing them to also learn in various ways.”

John explained,

I believe my students’ understanding increased because technology, for the most part, is straight forward. Once the student learns the system one time, they can progress at their own pace. They do not feel rushed or slowed, because most of the technology integration includes solo work.

Laura asserted the following:

Technology integration is perfect because it is mainly differentiated instruction. For teachers this is huge. No longer are the days when we had to wait for all the students to understand the material. Now if a student does not fully grasp the concepts, reinforcement can be assigned for the student alone. This is all done by clicking or selecting a box from the teacher’s account.

Amy said:

To ensure my students understand the concepts, I always include a review as an exit slip on my learning management system platforms. This is another way to gauge student performance so that I can make changes to the course work to promote individualized instruction.

**Code 9: Technology frequency.** Teachers said technology integration was used regularly both in their classroom and school. Sheila said, “Honestly, technology integration is used everywhere we go. This due to technology devices being everywhere, but also we use our technical skills that include problem-solving for almost every aspect of our life.”

Amy said,

I may not use technology as much as my peers; however, it is still used every day in my classroom. To say I use technology integration every day suggests a high frequency in my opinion. I definitely post my lesson plans using technology.

Sherry said,

I use technology integration frequently. From the time I walk into my classroom until the time I leave, I am using some form of technology. I post my lesson plans online. I also utilize a learning management system [LMS] such as Blackboard or Moodle to enhance my class discussions. I also use this integration to create and assign quizzes, tests, and even papers. I do not mind constantly using technology integration. I believe it helps me to keep up with 21st century skills, advancements, and constant changes.

Teachers said that constant use of technology integration at times could be challenging. However, they all agreed that the results they received from utilizing technology integration outweighed the challenges. Carmen stated,

Without technology integration, I worked much harder attempting to get my students to comprehend. Now with one click, I can upload the necessary materials, have my students review it, and then address their questions based on their understanding of the material.

This is all achieved from frequently using technology in my classroom.

**Code 10: Technology usage.** Many teachers use technology integration in multiple ways. Teachers mentioned using technology for posting and sharing lesson plans, as a way to include new information, extend discussions and class assignments, assess student knowledge, take attendance, correspond with parents, students, peers, and administration, conduct interactive labs, and WebQuests. Laura said,

I love technology; however, I do not want to be dependent on it. So, I am intentional about when and how I use it. I try to teach without it however this proves difficult because I need my computer and smart board. Using these ensure all of my students can view the information I am presenting.

Ashley stated,

I use technology minimally. I post my lesson plans online, take attendance, and communicate with my student families. However, my first attempt to families is by phone. During my lessons, I use my computer and smart board. I also have printed copies of the notes to hand out. I encourage my students to write, particularly journaling. So, I use technology about 50% of the time.

Kelsey said he had a daily routine for technology integration, adding, “It works, and my students are accustomed to it.”

**Code 11: Professional development.** Teachers explained that it was important to have related professional development about technology integration. Teachers noted they received limited professional development focusing on technology. All agreed that regular professional development training was necessary to understand how and when to use newer technologies fully. Sherry said, “Although I believe I am technology savvy, I still need refreshers. This is an area that my school is falling short in. We have to request training to learn more.” Kelsey said, “I

believe technology professional development is always necessary. At my school, we have multiple trainings each month. We even have a technology think tank.” Amy stated, “We receive technology professional development; however, it is usually a lot of information with no discussion about its purpose or how to integrate it.”

John explained,

At the start of the school year, we spend multiple days reviewing the technologies we regularly use. This allows us to learn about new updates if applicable. After that, we are pretty much on our own. I use Lynda, the online site that offer tutorials for professional practices, and YouTube when I do not understand things. This gives me a tutorial and an overview which is extremely helpful.

Ashley noted, “The professional development we receive is minimal. I often ask my peers for a crash course. Sometimes this works, and other times it does not.”

Professional development should not be limited to a few hours throughout the school year. “Teachers would benefit from training that happens frequently,” said Sheila. “If we were given access to sites such as Lynda, I know our learning would extend past our few sessions.”

**Code 12: Perceptions.** Teachers said they had mixed feelings about technology integration. “I enjoy integrating technology,” said Carmen. “What I do not enjoy is when administration attempts to push technology on me because it was gifted or discounted.” Laura said, “If we are going to prepare our students for the 21st century, our technology must be aligned with those skills.”

Amy said, “I am not too happy about the technology overload I have experienced over the last 5 years.” Sherry noted, “My feelings have always been the same. I believe technology is

the key to the future. Yes, sometimes I feel overwhelmed; however, the benefits make it worth it,” said Sherry.

John said,

I dislike when I receive mandates. So, when I hear we “needed” to incorporate more technology resources in our lessons, I was frustrated. I teach JROTC, most of my course is hands on. After testing some of the software and online platforms, I found they were not terrible and straightforward to use.

Ashley said,

I know I keep saying I have been teaching for three decades, but I have. For me, this new technology wave has been a nightmare. However, as a teacher, I know change is inevitable. I will admit some of the technology have proved very useful especially in my AP English and mythology classes.

**Code 13: Experiences.** Teachers mentioned having had more positive experiences with technology integration than negative ones. John said, “My experiences integrating technology in my classroom has been mostly positive. The few times I had bad experiences were due to site links not working or poor streaming quality.” Laura stated, “I think my experiences have all been good. If I did encounter an issue, usually it was because of something out of my or the technologies control.

Amy said, “I have issues more than average I believe. I think this is because my school does not receive a large technology budget. Much of our technology is outdated.” Sherry said, “I would not say that I have bad experiences. We have a large amount of technology. If I encounter an issue, I simply use a different technology.”

“I am a firm believer,” Carmen said, “that things are what you make them. I do not complain, because in my experience technology has made my teaching preparation easier.

Sheila stated,

My experiences with technology integration in my classroom have been no different from my traditional teaching experiences. There are good days and bad days. I personally believe that the benefits gained far surpass the issues I faced some days.

### **Summary**

Throughout this case study, several teachers elaborated on certain points more than did their counterparts. The teachers focused on five areas regarding technology integration in the classroom: teacher willingness, experience level, feelings, student performance with technology, and experiences. The findings revealed there were problems with technology; overall, however, teachers’ experiences were favorable. Teachers discussed the need for technology integration in their schools because at least one part of their lesson planning required them to use technology—specifically, to upload and share their lesson plans with their department and administrators. Teachers reported increases in student engagement when using technology in their lessons. Teachers said it was important to receive technology professional development to increase their knowledge. Finally, the teacher found it necessary to observe and survey technology integration in the classroom regularly.

## **Chapter 5: Discussion and Conclusion**

In Chapter 5 I present a discussion of the study, conclusion, and future implications. I provide significant findings as they relate to the literature review discussed in Chapter 2 and revisit the literature using constructivism, the conceptual framework of this study. I close the chapter with suggestions for future practice, policy implementation, and study.

### **Summary of Results**

I created two research questions to address teachers' experiences and perceptions with technology integration in secondary classrooms. Through the semistructured interviews, member checking interviews, and personal notes I was able to provide accurate and descriptive information about the teacher sample.

1. What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms?
2. How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?

Teachers highlighted five areas that related to their experiences and perceptions with technology integration. They were more likely to integrate technology if professional development was available, a supportive and collaborative culture existed, and increases in student performance were found. Teachers indicated that technology integration was used in their classrooms at least half the time. Many teachers stated when there is an understanding and supportive culture, one that valued all teachers input, they were inclined to try new technology resources in their classroom.

Teachers' perceptions of technology determined the path in which technology integration took in their classrooms. Results revealed all teachers understood how to use necessary

technology and that they used it for lesson plan posting and sharing, taking attendance, communication, and displaying lesson notes and visuals. This use of technology suggests that teachers also use technology integration in their classroom. Teachers used 21st century skills to guide their technology implementation. They coupled these skills with the knowledge they learned during professional development sessions and online resources such as Lynda and YouTube. Several teachers indicated they enjoyed using technology in their classrooms. Although they had mixed feeling about technology integration being a requirement, all the teachers mentioned technology integration alleviated traditional stresses like lesson preparation and student engagement. The results further suggested that teachers believed technology integration helped to tailor curriculum so that differentiation could occur effortlessly.

## **Discussion of Results**

### **Results: Research Question 1**

The first research question was, “What are the experiences of South Carolina secondary high school teachers in technology-equipped classrooms?” The teachers had similar experiences when integrating technology in their classrooms. The teachers thought professional development was a vital part that determined their frequency of use. The majority of teachers indicated they used at least the basic types of technology. Some teachers further stated that, although they initially were apprehensive to the usage, the integration was a straight forward process. Teachers also stated that if they perceived they were appreciated or valued by the administration, they were more inclined to use various types of technology suggested.

Teachers indicated that the administration was responsible for setting the culture for the school. Teachers stated increased administration support was necessary when trying new things such as full technology implementation. These results supported two of the themes discovered in



this case study. First, teacher technology experiences were often skewed by administrations support and appreciation of school culture or lack thereof. Second, teacher perceptions of technology often influenced student response to technology integration.

One theme reflected how teachers integrate technology in their classroom dictates their willingness to learn new technology types. Teachers stated that when overloaded with technology requirements, they were less likely to try new types, but they were comfortable and used technology that they chose, lessons were productive and students engaged.

### **Results: Research Question 2**

The second research question was, “How do secondary high school teachers in South Carolina schools perceive the process of integrating technology in their daily lessons?” Teachers indicated their use of technology and their level of experience played a role in how engaging their classrooms were. Teachers stated that on most occasions that used some technology to present their lessons. Although some teachers stated they did not want to become dependent on technology, they all concluded it was needed for differentiated learning so all students could comprehend and excel. Teachers noted that in order for them to fully implement new technologies introduced, they needed to ensure that the technology was relevant. Most teachers focused on integrating technology they thought was useful for their students. Teachers indicated some of the technology introduced to them by the administration was not used. They said some technologies did not apply to their content, and they felt forced to use it. The results of this study supported the themes of technology must be relevant to integrate, and the successful use of technology determines whether the learning environment is conducive for all students. The teacher’s perceptions regarding technology integration molded their continued use and selection.

The theme of technology relevancy was uncovered through the teacher's numerous comments about the technology requirements and how not all technology applied to them. Teachers indicated that their thoughts should always be considered when selecting technology for each department. Some key components that ensure both technology relevancy and conduciveness to student learning included the alignment of technology with 21st century skill and South Carolina standards, differentiation ability, ease of use, student manageability, and adaptability. Most teachers saw themselves as progressive thinkers who wanted all their students to be able to compete on a global scale. Each teacher recognized that change was inevitable and to ensure the success of all students, adaptations needed to be made to both curriculum and technology. Finally, the results indicated that teachers needed additional resources and training to implement technology integration in their daily lessons accurately.

Overall, the results indicated that teacher experiences with technology integration were mainly positive. The teachers indicated a need for professional development and online training resources. By having this additional knowledge, teachers could effectively use technology for more than traditional uses. Teachers indicated that their receptiveness for technology would increase if administration created a culture that was collaborative, supportive, and appreciative of their contributions.

### **Discussion of the Results in Relation to the Literature**

Technology integration is visible in many educational settings (Pisanu, 2014). Teachers described their experiences with technology as mixed. Teachers stated their use of basic technology was positive; however, newer technologies sometimes represent a challenge. Even though technology integration differs from teacher to teacher, research has suggested using technology benefits both the teacher and student. In secondary classrooms, students display a

higher engagement level when technology is involved (Witton, 2017). Some evidence has supported the use of technology integration in primary grades. Steckel et al. (2015) suggested preparing students for the 21st century technology literacy should start at the primary level. Teachers constantly push to create a curriculum that is challenging and beneficial to the students. This is achieved by incorporating 21st century skills coupled with technology integration (Farisi, 2016). Teacher experiences ultimately determine whether technology integration will be included in their classroom (Darling-Aduana & Heinrich, 2018). Teachers stated their goal was to prepare their students with the skills needed to compete on a global level.

Another key point for teachers is professional development and training. Teachers must view the information presented as relevant and valid. Not only must the training be focused on their content, but also technology literacy (Hutchison & Woodward, 2018). Educating teachers on how and when to integrate technology requires an administration that both supports and value the whole teacher (Han, 2014).

Teachers described parameters for professional development in technology literacy that included group sessions, one-on-one sessions, and continued online courses. To ensure that teachers understand the information presented, strategies and interventions are necessary (Admiraal et al., 2017). Training teachers to integrate technology occurs in many forms. Current literature (Piper et al., 2018) has supported a focused strategy that thoroughly trains and educates teachers. The themes identified as most helpful for training to integrate technology include technology literacy, understanding of implementation, and available resources.

Technology integration training includes creating access to educational technologies, knowing how to use technology for instructional purposes, and improving the technology used to facilitate learning effectively. Technology professional development sessions are created to share

ideas, practices, and resources that will benefit teachers and students (Kafyulilo, Fisser, & Voogt, 2016). To fully understand professional technology development, best practices must be shared, including chances to research information about technology literacy and its effects on student engagement and performance (Shao & Purpur, 2016).

Productive training focuses on technology integration results and changes in teacher technology use (Li, Garza, Keicher, & Popov, 2018). Administrators can change how teachers teach students by establishing their dedication and support to teachers' perceptions and opinions (Ketterlin-Geller, Baumer, & Lichon, 2015). Teachers have described culture as being either an inhibitor or promoter of technology integration. There is evidence that supports the need to create a positive, appreciative, teacher-centered culture. This culture allows teachers to feel valued and their voices heard (Gurfidan & Koc, 2016). Establishing this culture can be done if administrators take the initiative to embrace teachers and listen to their concerns. However, creating professional development that is geared towards technology literacy can translate into a permanent way to improve teachers experiences with integration (Kafyulilo et al., 2016). Teachers are committed to providing a learning environment that allows students to learn in different ways. Teachers can take the knowledge gained from these training to create beneficial practices in their classrooms.

Teachers create an atmosphere for technology receptiveness in the classroom. They have skills that can either promote or demote responses to technology integration. Through creating a culture of support, collaboration, and 21st century thinking, administrators can facilitate and encourage teacher growth in the technology area. Teachers in this study stated their experiences and perceptions helped to define technology integration for themselves and their students. These

perceptions captured their willingness and motivation to take risks and integrate technology to empower students.

A large amount of research has indicated a positive relationship between technology integration and student academic success (Cabi, 2017). Some results suggest that technology integration techniques fail to consider the whole student and their learning abilities (Cunningham & Carlsen, 2014). One study contradicted the mainly positive relationships between technology integration and student performance (Angeli, Howard, Ma, Yang, & Kirschner, 2017). This study has indicated that students respond to technology integration either positively or negatively. Students are motivated academically based on their relationships formed with their teachers. The literature (Kimmons, 2015) further has suggested how professional development provides additional knowledge needed for technology integration, which is a predictor of positive outcomes. These results signify there is a high demand for professional development to help facilitate the understanding of technology integration for teachers within their content areas, classrooms, and the students they serve.

### **Limitations**

#### **Sample**

Limitations highlight areas of growth in this case study, which was limited to the perceptions and experiences of a small sample of eight teachers. These teachers were all part of South Carolina districts that had begun implementation of 21st century technology skills. This case study provided a distinct set of data captured through semistructured interviews and member checking. Each semistructured interview and member-checking session reflected the teachers' perceptions and experiences in the study sample included. The validity and accuracy of

teachers' data rested solely on the participation of each teacher, to be honest, and thorough with their responses.

### **Study Design**

These data collected and analyzed during this case study was limited by the interview questions I created. Data collection occurred during face-to-face sessions at multiple sites. I collected, analyzed, and reported all data. My experience as a teacher and researcher limited my interpretation of these data as a reflection of the insight and direction my experience provided during the analysis process.

### **Research Method**

The purpose of case studies is to share a detailed understanding of the case (Creswell, 2014; Hatch, 2002). This study was created to discover the perceptions and experiences of teachers regarding technology integration in their classrooms. Technology integration focused on these perceptions and experiences in an academic setting, which was limited to teachers. The results from the study cannot be generalized because the study was undertaken in districts where technology integration was present. It is important to remember that setting of school districts may vary. Therefore, readers, teachers, and educational leaders can determine how this study could apply to them.

### **Data Collection**

These data were limited by a small sample size of eight teachers, whose experience and perceptions guided the case study. In addition, the interviews and member checking occurred at multiple sites. Each semistructured interview was limited to 60 minutes for each teacher. The member check and follow-up sessions were limited as well. Each follow-up session lasted for 25 minutes. Thus, the total time I spent gathering data from each teacher was approximately 1.45

hours. I did not meet or communicate with these teachers outside of the time indicated above for this qualitative case study. Other limitations were the analysis of the semistructured interviews, member checking, and follow-up sessions. This information came from seven women and one man, therefore limiting the data collection to a specific population. These data were also limited because these data analyzed occurred over seven months using Hatch's (2002) inductive analysis method.

### **Implications of the Results for Practice, Policy, and Theory**

In this section, I discuss the implications of the results in regards to practice, policy, and theory. The results are reviewed using a constructivist conceptual framework. I also explain the implications of the results concerning practice and policy.

#### **Practice**

In this study, I investigated the gaps in the technology integration practice as indicated by the failure of teachers to integrate technology in the classroom. Teachers use technology integration to increase student engagement and to differentiate instruction. Teachers requested additional professional development to understand technology and how to incorporate it in their lessons (Hutchison & Woodward, 2018). These requests were connected to teacher experiences and perceptions of technology. Teachers stated if they received support and understanding from the administration, they would be more likely to integrate technology in their classrooms.

Teachers evaluated their experiences and perceptions to determine when and how to integrate technology. Evaluation requires ongoing research and continuing professional development. Teachers should assess the effectiveness of technology in their classrooms and incorporate relevant methods gained from training and professional development.

## **Policy**

The results of the study represent only the sample of teachers who participated in this case study. These results indicated that teachers want increased professional development, a supportive culture, and additional resources to integrate technology into their lessons effectively. As more South Carolina school districts embrace technology integration and implement necessary programs, a policy that encourages training on 21st century skills and technology would be beneficial. These training sessions can educate teachers about technology selection for engagement, lesson differentiation, student performance, and alignment with each learning style (Hutchison & Woodward, 2018).

For these districts, I suggest the teachers engage in open discussion roundtables, one-on-one sessions with the administration, and surveys. Teachers should also begin professional development that focuses on 21st century technology skills. The teachers stated they were open to further learning about technology integration and how to use it in the classroom. Teachers indicated that learning best practices would help their instructional strategy implementation and student performance.

## **Theory**

The results of this study suggest that teachers are gaining knowledge based on their experiences, perceptions, and learning from being a teacher. Based on the conceptual framework, teachers understand technology integration with regard to classroom instruction through their own experiences.

The constructivist theory focuses on how learners acquire knowledge and learn (Dewey, 1910). A significant part of the constructivist theory is that humans construct knowledge and meaning from their experiences (Bruner, 1961; Dewey, 1910; Piaget, 1970; Vygotsky, 1978).



Vygotsky (1978) believed knowledge builds results in the cognitive development and the creation of knowledge was a process where learners are integrated into communities. In this study, teachers' experiences and perceptions concerning technology integration in the classroom promoted my deeper understanding of constructivism. Bruner (1961) explained that the learner's foundation for learning is social interaction. Bruner's views were supported in this case study. Administrators possess specific information and are responsible for creating the culture for technology integration. Administrators use this knowledge to create professional development training, which leads to the implementation of technology integration in the classroom.

Constructivism is the process of learners building knowledge based on their perception. Constructivism also suggests the focus is the learner and not the lesson taught. Another critical point is that no knowledge is independent of experience by the learner. As the results in this study show, teachers made meaning of their experiences with technology integration while they engaged in social settings. These meanings were created in various ways depending on their perception or experience. Therefore, the results found in this case study support the constructivist view.

In this case study, the findings suggest the teachers did not always integrate technology and their experiences varied based on the culture established by the administration in their school. Reasons included school economics, fear of change, unsupportive departments and administrators, and the lack of resources and professional development. These concerns were associated with ineffective or nonexistent training and professional development, teachers' understanding of technology integration, and school culture. To create lessons that are effective and integrate technology, teachers must evaluate their curriculum and their technology integration components. After evaluation, teachers and administrators must collaborate to create

a systematic plan that resolves the teachers' and students' needs. Teachers also stated interest in online resources. These online resources can help to facilitate methods and strategies that present 21st century technology skills that enhance teacher and student experiences and engagement.

### **Recommendations for Further Research**

#### **Areas of Improvement**

Further research is called for in terms of formal, structured interviews with teachers; observations in teachers' classrooms; a larger, more diverse sample; and allowing a longer period to conduct interviews and follow-up sessions. Conducting formal interviews with a structured outline would allow additional data about the whole teacher and not just the teaching practice. Observing teachers in their classrooms would provide in-depth data regarding technology integration. Also, extending the time frame for interviews would ensure accurate interpretation of the teacher's experiences and perceptions. Improving these areas would increase the credibility and consistency of the data and integration practices. This study would also benefit from replication with teachers from other states or countries.

#### **Participants**

Increasing the number of teachers who participate in a case study could benefit local and state education initiatives, local school board, and similar school districts. A descriptive data analysis framework (Hatch, 2002) could provide support for narratives and themes that were not uncovered using the current inductive analysis framework. Through the incorporation of these recommendations, the creation of an extensive case study that utilizes teacher narratives and interpretations can guide data analysis.

## **Additional Recommendations**

Additional recommendations include examining the experiences and perceptions of administrators and students with technology integration along with the teachers' experiences and perceptions found in this case study. Supportive and collaborative administrators are the foundation for success in K-12 schools. Administrators with a clear and transparent vision are the initiators of new instructional and technological processes (Majocha, 2015). Therefore, a qualitative case study that investigates technology integration experiences and perceptions of administrators and students would provide a deeper understanding on the issues that classroom teachers face in using technology. The educational sector views of technology integration have dramatically changed over the last decade (Vinogradova, Kulyamin, Larionova, Maloletko, & Kaurova, 2016). Including the perceptions and experiences of students and administrators would be a vital part of the discussion.

Using a quantitative approach for future study is also a recommendation. A quantitative survey could assess the effectiveness of technology integration. Students, parents, teachers, and administrators could examine the similarities and differences experienced when technology is integrated. A report of student scores with and without technology integration could compare trends and anomalies. Through the use of a quantitative study, information can surface that was not revealed with the current qualitative case study. The information gained could assist in the creation of practices and strategies that benefit the educational community.

## **Conclusion**

In this chapter, I discussed the results of this case study. A detailed discussion of results used the two research questions as the frame of reference. Teachers indicated that supportive and collaborative school culture is needed to promote technology integration; additional training and

professional development would support the 21st century technology integration initiative.

Teachers defined technology integration and thought technology integration is an essential part of 21st century skills for students to compete on a global scale. These teachers indicated that their role in student success was providing them with the tools needed to adapt and progress. The teachers perceived the issues identified in school culture existed because administrators made decisions about technology changes without consulting the teachers first. The teachers stated that they had some technology apprehension; however, many if not all teachers, used technology in at least one part of their daily lessons.

This dissertation focused on the issues related to technology integration. The issues were addressed using the constructivist theory as a frame to examine the perceptions and experiences of teachers as they integrated technology in the classroom. This qualitative case study was selected to learn more about these teachers and, thus, yield an in-depth story about each of their experiences and perceptions with technology integration in their classrooms and lessons.

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## Appendix A: Interview Questions

### Face to Face Interviews

Name:

Date:

Time:

1. Could you describe a typical day in your classroom?
2. What is the general consensus about technology usage in daily lessons?
3. How do you perceive technology usage in your school and classroom?
4. Could you give an example of your understanding of technology and the purpose it serves in your curriculum?
5. What types of experiences have you had when using technology in your daily lessons?
6. How often and when do you use technology in your classroom?
7. How are your students grouped for activities that require technology integration?
8. How would you describe your students' willingness to use technology in their lessons?
9. Can you compare technology usage and non-usage in your daily instruction?
10. What are the differences that you notice?
11. Based on your experiences in what ways have technology increased or decreased your ability to teach, and the students' understanding and comprehension of the information presented?
12. Based on your experience how else might technology be used in each lesson?

## **Appendix B: Member Checking Questions**

### **Second Interview-Member Check Interview**

Member check interviews are conducted to verify the accuracy of the information gained during the first interview. The teachers interview transcript is shared for review of accuracy. If any changes are needed, they will be included in the documentation for this interview.

**Name:**

**Date:**

**Time:**

### **Follow Up Questions:**

1. What is your definition of technology? Do you feel technology integration is the same as technology?
2. Since the beginning of your teaching career, how has technology evolved? Has this been a positive or negative experience for you?
3. Are there any specific technology experiences that stand out? What are some examples of the role technology as on your teaching abilities?

### Appendix C: Initial Codes, Collapsed Codes, and Themes

Initial codes	Collapsed codes	Emerging themes
21st century skills	21st century skills	
Technology builds		
Engagement		
Preparation for the future		Student performance with technology
Critical thinking		
Leadership skills that reflect feelings		
Incorporate technology components		
Requires collaboration		
Needed experience		
Understanding as a team	Student collaboration	
Peer instruction		
Cooperative learning groups		
Grouping		Student performance with technology
Flipped Curriculum		
Assessments		
Modeling		
Ongoing learning		
Positive excitement	Student Engagement	
Development of core skills		
Perceptions guide connections		Student performance with technology
Integrate technology		
Believe in self		
School and teacher create parameters		
Happy	Technology Requirement	Teacher technology experiences.
Technical issues		



**Initial Codes, Collapsed Codes, and Themes (continued)**

Initial codes	Collapsed codes	Emerging themes
Mandatory		
Apprehension		
Alleviates stress		
Helpful		
Supports teachers	Culture	
Allows for ideas to be heard		
Relationships peers		
Feels appreciated		
Administration controls		
Disregard teacher input		
Ideas for integration		Teacher willingness to use technology
Relationship with administration		
Relationships with students		
Accountability		
Traditional teaching		
Alternative teaching		
Conflicts between teachers and administration		
Embraces change		
Transparency		
High results for resources	Technology: Effective Learning Tool	
Professional development		
Ongoing learning at fingertips		Teacher technology experiences
Differentiated learning		
Teacher perceptions effective and usage		
Teachers experiences skew effectiveness		

**Initial Codes, Collapsed Codes, and Themes (continued)**

<b>Initial codes</b>	<b>Collapsed codes</b>	<b>Emerging themes</b>
Witness results immediately Reinforces knowledge taught Wonderful aid Must be used correctly Teacher facilitated	Technology. Increased Student Understanding Through Differentiated Instruction	
Student centered Online modified lessons Using multiple platforms for learning styles Transformation in learning Discussions on mobile platforms Flipped classroom Meets each student at knowledge level Gaining knowledge and technology skills	Technology. Usage	Student performance with technology
Hands on simulations Incorporate online textbooks and videos Make lessons meaningful Taking attendance Communication Makes schools able to compete Subject area connection Enhances learning Constant access Assists productivity		Teacher technology level of experience

**Initial Codes, Collapsed Codes, and Themes (continued)**

<b>Initial codes</b>	<b>Collapsed codes</b>	<b>Emerging themes</b>
Differentiated instruction		
Every day	Technology. Frequency	Teacher experiences
Few times a week		
Only for direct instruction		
For modeling		
Once a week		
Occasionally		
Not required		
Manage course data	Technology's Purpose	
Increase knowledge		
Analyze data		
Create lesson plans		Teacher experiences
Enhance student engagement		
Give options		
Make content relevant		
Provide large amounts of information		
instantly		
Formal/informal	Professional Development.	
Useful		
Minimal		Teacher willingness to use technology
Overload of information		
Not specific to technology		
Necessary to teach 21st century skills		
Positive/ Negative	Experiences	Teacher technology experiences.
Contingent on administrators support		

**Initial Codes, Collapsed Codes, and Themes (continued)**

<b>Initial codes</b>	<b>Collapsed codes</b>	<b>Emerging themes</b>
<ul style="list-style-type: none"> <li>Helps to construct new knowledge</li> <li>Replicate real world issues</li> <li>Technical issues</li> <li>Helps with daily instruction</li> <li>Drives excitement and engagement</li> <li>Increased student understanding</li> </ul>		
<ul style="list-style-type: none"> <li>Bridge into 21st century</li> <li>Afraid</li> <li>Positive</li> <li>Eager</li> <li>Welcoming</li> <li>Technology is inevitable</li> <li>Student engage from witnessing teacher feelings.</li> <li>Only good if used correctly</li> <li>Another box to check</li> </ul>	<p>Feelings. Perceptions.</p>	<p>Teacher feelings or perceptions about technology in the classroom</p>

## **Appendix D: Steps to Inductive Analysis**

1. Read the data and identify frames of analysis
2. Create domains based on semantic relationships discovered within frames of analysis
3. Identify salient domains, assign them a code, and put others aside
4. Reread data, refining salient domains and keeping a record of where relationships are found in the data
5. Decide if your domains are supported by the data and search data for examples that do not fit with or run counter to the relationships in your domains
6. Complete an analysis within domains
7. Search for themes across domains
8. Create a master outline expressing relationships within and among domains
9. Select data excerpts to support the elements of your outline

## **Appendix E: Recruitment Flyer**

Technology Integration Experiences and Perceptions of Secondary Southeastern Teachers  
Qualitative Research Case Study  
Concordia University  
Department of Education

The proposed case study will investigate the experiences and perceptions of secondary high school teachers in the southeastern United States. Qualitative collection strategies will be used to establish meaning and understanding of teachers' experiences and perceptions about technology integration. Specifically, data will be collected via interviews and observations.

### Who is Eligible?

- State certified teachers
- Currently teach in a South Carolina school district
- Located in South Carolina
- Have a basic understanding of technology integration

### What will you be asked to do?

- Spend 30 to 90 minutes being interviewed on multiple occasions
- Allow observations
- Share your experiences and perceptions about technology integration in your classroom.

### Compensation

You will receive a gift card up to \$25.00 for your participation in this study.

If you have any questions or are interested in participating, please contact:  
Candace Pattman at [phone redacted] or Email: [email redacted]

## **Appendix F: Statement of Original Work**

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

### **Statement of academic integrity.**

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

### **Explanations**

#### **What does “fraudulent” mean?**

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

#### **What is “unauthorized” assistance?**

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

**Statement of Original Work (continued)**

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University- Portland Academic Integrity Policy during the development and writing of this dissertation.

2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*

*Candace M. Pattman*

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Digital Signature

Candace Marietta Pattman

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Name (Typed)

02/01/2019

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Date