NOVICE ELEMENTARY TEACHERS' SENSE OF PREPAREDNESS INCORPORATING TECHNOLOGY: A PHENOMENOLOGICAL STUDY

by

Amanda Lynn Margiewicz

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

[Doctor of Philosophy]

Liberty University

2023

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APPROVED BY:

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Abstract

The purpose of this transcendental phenomenological study was to understand the phenomenon of novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. The theory guiding this study was Albert Bandura's theory of self-efficacy as it relates to novice elementary teachers' self-efficacy and perceived preparedness with incorporating technology into instruction. The qualitative research method was used along with a transcendental phenomenological approach to understand the phenomenon. The participants included 11 novice elementary educators employed within the South-Central Pennsylvania school districts that have had previous experiences with the phenomenon. The three data collection methods that were used included individual interviews, focus group discussions, and letter writing samples. The data was analyzed using preliminary jottings, coding, triangulation, and member checks. Five themes emerged: (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4) need for professional development support. Each of these themes aligned with the studies central research question and sub-questions. The findings revealed areas of support that teacher-education programs and school districts can provide to better equip educators with the implementation of technology into instruction.

Keywords: attrition, educational technology, novice teachers, professional development

Copyright Page

Dedication

I dedicate this dissertation to my husband, parents, sister, and grandmother. Who have collectively been my biggest cheerleaders and encouragers from the very start and especially when things got tough and I did not think I could persevere to see the end.

To my husband, who dealt with my stressors day in and day out. The past three years have been filled with early mornings writing and weekends of research, and he has supported me through it all.

To my parents, who always believed in my abilities and celebrated my successes. My mom with the countless “Atta-girl” along the way and my dad who bragged about my accomplishments with anyone and everyone.

To my sister, whom I strive to make footsteps for you to follow in. I hope I am an example for you as you now embark on your own career and educational journey.

To my grandmother, who instilled a drive for lifelong learning; from helping me as a child with practice multiplication tests to pushing me to achieve the highest academic degree possible.

Thank you all for never doubting me.

Acknowledgments

I would like to acknowledge my chair, Dr. Christine Saba and my committee member, Dr. Rachel Hernandez for their encouragement and support in completing this study. Dr. Saba your timely feedback and guidance assisted me greatly from the very beginning of this study all the way to the end.

I would also like to acknowledge all 11 of my participants. They took time out of their already hectic end of the school year to share their experiences with me. I will forever be grateful for their willingness.

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List of Abbreviations

Content Acquisition Podcasts (CAPs)

Coronavirus Disease 2019 (COVID-19)

Early Career Teacher (ECT)

Institutional Review Board (IRB)

Practice-Based Professional Development (PBPD)

Technological Pedagogical Content Knowledge (TPACK)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this transcendental phenomenological study was to understand the phenomenon of novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. Background information of the study's problem is supported through related literature in three different contexts: historical, social, and theoretical. A thorough description of the significance of the problem also is included tying together theoretical, empirical, and practical perspectives. The purpose statement is then stated to provide reasoning for why this study is needed and what information can be gained from its results. The significance of the study is included to discuss the theoretical underpinnings of the study's topic. Research questions will be utilized to dive deeper into the participants' individual experiences and perceptions they have had personally with the phenomenon. Lastly, definitions of frequently utilized terms are provided before the summary of the chapter to assist the reader with a deeper understanding of the content and terminology included.

Background

Due to educational environments utilizing digital technologies throughout instruction more consistently, there is a need for teacher-education programs to adapt to these changes and for schools to provide additional professional development opportunities to support novice educators. Educational technologies have drastically evolved throughout the decades (Betrus & Molenda, 2002). Although there has been an increase in the use of educational technologies throughout the last few decades, the COVID-19 pandemic caused an even bigger push for these technologies in schools. The COVID-19 pandemic drastically changed the landscape of school systems worldwide (Wang et al., 2021).

Teacher-education programs must evolve with these technological changes to ensure aspiring teachers are prepared for 21st century teaching practices (Ibrahim et al., 2019). There is an increased need for school districts to support their novice educators and provide them opportunities to increase their background knowledge and skills according to the digital technologies that are currently being utilized in their schools. Meaningful opportunities that have been found to be effective include mentoring, collaborative workshops, and other professional development opportunities (Schwartz & Dori, 2016). Building an educator's self-efficacy and self-confidence in digital technologies can increase their willingness and motivation to implement these resources into their instructional practices (Artino, 2012).

Historical Context

Educational technology has been incorporated into the educational environment for decades. Over time the use of educational technology in school systems has advanced drastically beginning with the use of flat pictures (Betrus & Molenda, 2002) to the current implementation of blended and asynchronous learning (Dvir & Schwartz-Oppenheimer, 2020). Educational technology is a complex process that includes individuals, devices, and ideas incorporated in all parts of human learning (Lakhana, 2014). Although different forms of technology have been used for centuries, the educational technologies being required as a 21st century teacher is constantly changing and there are requirements being put on teachers to implement these new technologies daily into their instructional practices (Dvir & Schatz-Oppenheimer, 2020).

In 1840, Sir Issac Pitman implemented distance education by offering education courses by mail (Schulte, 2011). The use of technology in teacher-education programs has been used since the early 1900s (Betrus & Molenda, 2002). Beginning in the 1920s and 1930s the use of visual aids and flat pictures were being utilized by institutions (Betrus & Molenda, 2002).

Throughout the 1920s and 1930s there were numerous technological advances including the use of radio broadcasting, sound recordings, and motion pictures (Reiser, 2001). Overhead projectors were also introduced in 1930s and began being included in school settings and take the place of magic lanterns and hand slates (Reiser, 2001). During the 1940s and 1950s, video tapes and instructional television began being incorporated into instruction (Reiser, 2001). Throughout the 1980s and 1990s microcomputers began being utilized in school systems (Betrus & Molenda, 2002). In 1991, the World Wide Web developed and allowed educators to approach learning and instruction in a multitude of new ways (Edgar, 2012).

During the years 2000 to 2010, computer internet delivery and interactive videoconferencing expanded the prominence of distance education (Schulte, 2011). In the early 2000s tablets were introduced and made learning more accessible (Resier, 2001). From 2011 to the present, digital video real-time communications such as Zoom were introduced and these communication tools are being incorporated into a variety of at-home or school learning experiences (Fuller & France, 2016).

Since the COVID-19 pandemic, online teaching, blended learning, and asynchronous learning have become more prevalent (Dvir & Schwartz-Oppenheimer, 2020). Educators must be adequately prepared for these types of instructional methods along with new educational technologies through their teacher-education programs and through professional development opportunities to be successful. Teacher-education programs prepare aspiring individuals to become successful educators (Livers et al., 2021). These programs must adapt with these educational technology advancements to ensure the aspiring educators are well-prepared for entering the field and incorporate technology effectively into their instruction (Starkey, 2019).

Social Context

Globally, high amounts of teachers leave the profession each year (Van den Borre et al., 2021). Teachers leaving the field negatively impacts the school systems including the students, staff members, administration, and communities. The educational environment and learning experience are negatively affected when teachers leave (Shankar & Nayaken, 2020). Teacher retention and success are tied to their sense of preparedness (Livers et al., 2021). Teachers should be better equipped for their careers when entering the field, so they are more confident and comfortable in their position.

Educators and students are both affected by the problem of lack of preparedness. When technology is not utilized effectively, the learning environment can be negatively impacted. Educators need to have the self-efficacy and confidence to effectively implement educational technologies to enhance their instruction (Shankar & Nayaken, 2020). If educators do not have self-efficacy and confidence along with previous experiences with educational technologies, they will not be able to assist their students in successfully utilizing the technological resources and equipping them for life in the 21st century (Paulus et al., 2020).

When educators are adequately prepared for the field their sense of preparedness can positively impact their self-efficacy (Artino, 2012). A rise in teachers' self-efficacy levels with the use of educational technology affects their future use and implementation of technology infused instruction (Polly et al., 2020). This confidence can lead to novice educators' retention in the field which would decrease the number of changes and disruptions that education environments are experiencing (Van de Borre et al., 2021).

Theoretical Context

This study expands upon Bandura's (1977) theory of self-efficacy by focusing on teacher self-efficacy incorporating technology into instruction. Bandura's (1977) theory of self-efficacy

has been widely researched with a focus on teacher self-efficacy in the field of education (Akhter et al., 2015; Corry & Stella, 2018; Shabani, 2016).

It has been found that teachers' self-efficacy can be increased through the use of training and education (Shabani, 2016). Research has also found an increase in educator self-efficacy when opportunities were provided for interactions with students, colleagues, and administrators to build background knowledge, competencies, and skills (Akhter et al., 2015). The three main areas of research that related to impacting the levels of teachers self-efficacy in online learning included: self-efficacy in the implementation of online teaching, demographic variables that impact online teaching self-efficacy, and changes in educators self-efficacy before and after professional development opportunities provided (Corry & Stella, 2018).

Although previous research has been extensively conducted in the education field, further research focused on how to effectively build teachers' self-efficacy with educational technologies is needed (Menon et al., 2020; Paulus et al., 2020). By understanding and implementing Bandura's (1977) self-efficacy theory to professional development opportunities and teacher-education programs, novice educators can build a knowledge base and skills with educational technologies. This increase in self-efficacy can motivate teachers to incorporate educational technologies into their instructional practices and enhance the learning that takes place.

Problem Statement

The problem is novice elementary teachers can feel underprepared to incorporate technology into instruction. Each year there are high percentages of educators that leave the teaching field, especially within the first five years of their career (Van den Boore et al., 2021). Educators' sense of preparedness is a key factor in the effectiveness of the teacher and retention in the field (Livers et al., 2021). Digital technologies have become extensively utilized in schools

and classrooms (Calderon et al., 2020; Starkey, 2019). These technologies are constantly changing at a fast pace and educators need the appropriate background knowledge and skills to successfully incorporate them into their instruction. Educators need to feel confident with incorporating educational technologies and understand how to effectively utilize them to enhance their teaching (Moorhouse, 2021). Teacher-education programs should prepare aspiring teachers to feel confident as beginning teachers for the materials, resources, and challenges they will face entering the school setting (Khan et al., 2020). Districts should also provide in-service trainings, inductions, and mentoring programs to assist novice educators in building their confidence and knowledge base to ultimately impact their effectiveness (Bawani & Mphahlele, 2021; Van den Boore et al., 2021).

Although researchers have previously studied novice teachers' sense of preparedness within the teaching field, there is limited research investigating the sense of preparedness for incorporating technology into instruction (Galway et al., 2020; Kwok et al., 2021; Polly et al., 2020). It has been recommended that future research focuses on the actual experiences with the uses of technology that aspiring teachers, professors, and current teachers have (Polly et al., 2020). Additional research was also noted as being needed in regards to teacher perceptions of educational technology and the integration of iPads and other educational devices within teacher-education programs (Galway et al., 2020). Previous literature has also been limited in determining what supports are most beneficial in aiding novice educators to succeed in the teaching field (Kwok et al., 2021). Furthermore, much of the existing literature regarding technology integration is focused on the secondary level leaving a gap in literature within teacher-education programs specifically throughout the elementary level (Polly et al., 2020).

Literature and previous research have not fully addressed novice teachers' sense of preparedness to incorporate technology into instruction. This study addresses these gaps at the elementary school level to determine what supports would be most beneficial for novice educators. Experiences throughout teacher-education programs, professional development, and professional supports may positively impact novice educators' technology implementation, increase the effectiveness of these teachers, and ultimately increase student learning.

Purpose Statement

The purpose of this transcendental phenomenological study was to understand novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. At this stage in the research, teachers' sense of preparedness incorporating technology into instruction will generally be defined as the extent to which teachers' feel comfortable, knowledgeable, or capable of integrating technology into their instruction. The understanding gained from this study can be used to assist teacher-education programs and school districts to design coursework and professional development opportunities that increase novice educator's self-efficacy, background knowledge, and skills to effectively incorporate technology into their instruction.

Significance of the Study

The theoretical, empirical, and practical significance are included. The theoretical significance explains how this study will contribute to Bandura's (1977) self-efficacy theory. The empirical significance explains how this study relates to similar studies. Lastly, the practical significance describes how the knowledge gained from this study will make an impact on the educational system.

Theoretical Significance

This study contributes to Bandura's (1977) self-efficacy theory. Data gathered throughout this study will identify novice educators' sense of preparedness in incorporating technology into instruction which directly relates to their self-efficacy in this specific area. Bandura's (1977) self-efficacy theory focuses on the idea that an individual's confidence in their own abilities can determine their drive, outlook, and motivation. This theory is key in understanding the impact that educators' sense of preparedness has on the effectiveness and willingness to incorporate technology into instruction.

Empirical Significance

This study contributes to the existing literature focused on teacher preparation by adding insight from the perspectives of novice educators' lived experiences with educational technologies. Recent studies have indicated educators new to the field of education have felt a lack of preparedness (Akiri & Dori, 2022; Arnett-Hartwick & Cannon, 2019; Bawani & Mphahlele, 2021; Livers et al., 2021). Inconsistencies have been found within professional development and relevant teacher training that contributed to ineffective implementation of instructional practices (Bawani & Mphahlele, 2021). It has been found that teacher candidates feel under-prepared due to a lack of opportunities provided for active learning in their teacher-education programs (Livers et al., 2021). The effectiveness and importance of mentorship and professional development workshops to provide opportunities for novice teachers to grow in the field of education has been recognized (Akiri & Dori, 2022). A high importance has also been placed to understand the concerns from the teachers themselves and that adequately preparing these educators can increase job satisfaction while reducing teacher attrition (Arnett-Hartwick & Cannon, 2019). While these studies focused on teacher preparation none of them had solely

examined the sense of preparedness the individuals had with incorporating technology into their instruction.

Practical Significance

This study provides a deeper understanding in the sense of preparedness that novice educators have when entering the field of education. This information will be valuable for colleges and universities to gain insight into what aspects of their teacher-education programs are lacking and what modifications can be made to the current requirements to better prepare the aspiring educators. This information will also be valuable for school districts to identify what professional support opportunities are seen as effective to novice teachers and additional supports that can be included to better equip their educators to successfully incorporate technology into their teaching practices. Although my study is focused throughout South-Central Pennsylvania school districts, the information learned may provide a deeper understanding for school districts and universities worldwide of the challenges and needs novice educators have.

Research Questions

This transcendental phenomenological study was guided by one central research question and three sub-questions. These questions were created to coincide with the theoretical framework of Baundra's (1977) self-efficacy construct. The central research question will frame the study. This question was created to gain in-depth descriptions and a deeper understanding of novice elementary educators' sense of preparedness incorporating technology into instruction. Using the sub-questions, the researcher was able to explore the previous lived experiences novice elementary teachers had with technology in the field of education, teacher education program preparations, professional support opportunities, and what can be done to positively impact this occurring phenomenon. These questions provided the novice elementary teachers with an

opportunity to speak out about their own perceptions regarding their preparedness to incorporate technology into instructional practice.

Central Research Question

What is novice elementary teachers' sense of preparedness for incorporating technology into instruction?

Sub-Question One

How do novice elementary teachers describe their experiences with technology in the field of education?

Sub-Question Two

How do novice teachers describe experiences in teacher-education programs to prepare them for implementing technology in the classroom?

Sub-Question Three

How do novice teachers describe experiences with professional development opportunities to support incorporating technology into instruction?

Definitions

1. *Asynchronous* - Asynchronous learning is when educational tools and resources are available for the learner to complete at their own time (Calderón et al., 2020).
2. *Attrition* – Attrition is when an individual voluntarily and prematurely leaves the field (Macdonald, 1999).
3. *Educational technology* - Technological resources that are used as a learning tool and delivery system to enhance and personalize learning and instruction (Ross, 2020).
4. *Induction* - A professional support provided to novice educators to assist them in learning pedagogical skills and develop instructional practices (Kwok et al., 2021).

5. *Novice teachers* – Teachers that are within the beginning stages of their career (Akiri, 2021). This study refers to novice teachers as teachers within the first five years of their career.
6. *Teaching practicum* – The coursework that occurs when a teacher candidate is placed in a school environment (Livers et al., 2021).
7. *Technology infusion* - An approach to intentionally incorporate technology into curriculum and instruction to develop digital skills and promote higher-order learning (Ross, 2020).
8. *Self-efficacy* – An individual's personal beliefs in their own capability and confidence to complete a task (Artino, 2012).
9. *Synchronous* - Synchronous learning is when educators and students engage in instruction in real time (Moorhouse, 2021).
10. *Teacher Self-Efficacy* - A teacher's efficacy belief is a judgment of one's own capability to influence student achievement (Bandura, 1977).

Summary

The purpose of this qualitative transcendental phenomenological study was to understand the lived experiences novice educators have in their preparedness to incorporate technology into their instruction in South-Central Pennsylvania school districts. This provides a deeper understanding of the sense of preparedness these individuals have to enhance university teacher-education program requirements along with school districts professional development opportunities. Unveiling the sense of preparedness novice educators feel can promote a change that can enhance the learning environment for students not only in South-Central Pennsylvania school districts but worldwide.

CHAPTER TWO: LITERATURE REVIEW

Overview

A systematic review of the literature was conducted to explore the problem of novice teachers' attrition and sense of preparedness for incorporating technology into instruction. This chapter will present a review of the current literature related to the topic of study. In the first section, the self-efficacy theory will be discussed. A synthesis of recent literature regarding teacher attrition and current demands for teaching in the digital age including online instruction and new educational technologies will be addressed. Lastly, teacher preparation both from teacher-education programs and professional development opportunities will be reviewed. In the summary, a gap in literature will be identified, presenting a viable need for the current study.

Theoretical Framework

There are various theories that can be applicable to this study. This literature review will examine the self-efficacy theory. The review will identify how this theory correlates to novice teachers' sense of preparedness from both teacher-education programs and professional support programs and opportunities that novice teachers have.

Theory of Self-Efficacy

Self-efficacy is an individual's own belief in their ability to produce a specific performance to attain a goal (Akiri & Dori, 2022; Artino, 2012; Bandura, 1977; Yang, 2021). The self-efficacy theory is rooted in Albert Bandura's social-cognitive theory (Artino, 2012; Bandura,1977; Bawani & Mphahlele, 2021; Yang, 2021). Bandura (1977) emphasized the important role that observing and modeling plays to increase learning. The self-efficacy theory is also referred to as task-specific self-confidence (Artino, 2012). The self-efficacy construct is utilized to assess one's ability to perform a task that is believed to lead to a desired result

(Bandura, 1977). This theory initially began in the field of psychology but has since expanded to fields such as healthcare, social and political change, psychopathology, and education (Artino, 2012). Research on learner's self-efficacy has grown in the area of achievement and motivation (Artino, 2012). Self-efficacy plays an integral part in academic achievement, motivation, and learning (Artino, 2012; Schunk, 1991). The amount of persistence and effort individuals will put into a challenging task can be determined from their self-efficacy (Artino, 2012; Bandura, 1977).

Teacher Self-Efficacy

In education, educators' self-efficacy refers to a teachers' belief in their capability to enhance and improve students' learning (Siwatu, 2007). Teaching self-efficacy can be described as a teacher's perception of their ability to effectively promote students' knowledge, values, and behaviors (Tschannen-Moran & Hoy, 2001). Self-efficacy is key in a teachers' decision making throughout the classroom and instruction which impacts student learning (Gunning & Mensah, 2011). Educators' self-efficacy can be strengthened through training and education when they develop increased background knowledge and skills (Ketelhut et al., 2020; Shabani, 2016). Novice teachers show significant lower self-efficacy than experienced teachers (Tschannen-Moran & Hoy, 2001). The more self-efficacy educators have the more willing they will be to engage in activities that will increase the development of their knowledge, skills, and abilities regardless of how challenging the task may appear (Schunk, 1991). Teacher self-efficacy, specifically pertaining to the efficacy with technology and experiences related to pedagogy and content knowledge can play an integral part in student motivation and academic achievement (Teri et al., 2014).

Technology Self-Efficacy

Technology self-efficacy can be explained as beliefs that shape decisions including the integration of new technologies and teachers' beliefs that using these new technologies will positively impact student learning (Bandura, 1977; Menon et al., 2017). If teachers have more self-efficacy in the use of educational technologies it can positively impact the implementation of technology in the classroom (Mueller et al., 2008). Teachers with high self-efficacy are more inclined to integrate new educational technologies into their classroom and instruction (Menon et al., 2020). Self-efficacy and motivation are two important components for educators to have in order to stay up to date with technological changes and to incorporate these technologies effectively into their instruction. Online teaching self-efficacy impacts the teachers' own beliefs about their skills, knowledge, and abilities to effectively instruct learners in a virtual environment (Green & Bettini, 2020). Including technology opportunities for individuals in teacher-education programs can help enhance their technology self-efficacy (Menon et al., 2020). Incorporating perspectives from the self-efficacy theory can prepare novice educators with the confidence, knowledge, and experiences needed to effectively incorporate technology into their instruction to enhance learning.

Related Literature

The related literature is broken up into three main parts. These parts include teacher attrition, technological demands for teaching, and teacher preparation. Within teacher attrition, a focus is placed on the impact of attrition and retaining novice teachers. Within those topics administrative support and incentives and favorable teaching conditions are reviewed. In the technological demands for teaching section, educational technology, online teaching, and technological challenges that educators face are addressed. Throughout these sections, technology standards and frameworks are reviewed along with constantly advancing

technologies. Literature included in the teacher preparation section includes preparation from teacher-education programs and professional support programs and opportunities. Within the teacher-education programs section coursework and field placements, challenges and issues, and technological preparation are addressed. Throughout the professional support for novice teachers' section professional development opportunities, mentorship, meaningful technology opportunities, and professional support precautions are discussed.

Teacher Attrition

There are high percentages of teachers that leave the field every year (Shankar & Nayaken, 2020). There are an estimated 8% of educators leave the field each year and an additional 8% change schools which totals a national teacher turnover rate to 16% annually (Sutcher et al., 2016). Retaining quality educators is an issue that is being felt globally (Mafora, 2013; Van den Borre et al., 2021). Teacher attrition can be tied to initial career commitment and previous work experiences (Shankar & Nayaken, 2020). Teacher attrition rates can be viewed as a U-shaped curve, beginning with novice educators at the initial peak, then educators gain experience and get settled which can be viewed as the bottom of the U-shaped curve, and the rise back to the top is individuals nearing the retirement years (Ingersoll, 2001).

Impact of Attrition

High rates in teacher attrition leads to a loss of continuity, time, and commitment to supporting current educators and instead creates a focus on recruitment of new staff (Mafora, 2013). Low retention rates around the world also creates instability for students and wastes resources (Ryan et al., 2017). There is a negative effect on the efficacy of the educational environment when school districts need to replace high amounts of teachers (Macdonald, 1999; Shankar & Nayaken, 2020).

Schools invest large amounts of money to recruit and train novice educators (Ryan et al., 2017). Attrition of novice teachers cost the United States up to $2.2 billion annually with the majority of the money and resources being invested into teachers at the start of their career (Haynes, 2014). High attrition rates were mentioned as not only a financial burden to districts but also negatively impacts the school culture, student achievement, and learning outcomes (Kelly & Northrop, 2015). Attrition creates instability which makes it challenging to provide effective instruction (Redding & Henry, 2019). High teacher turnover rates can also result in districts employing inexperienced and unqualified educators to replace the teachers that are resigning due to teacher shortages (Mafora, 2013).

Novice Teachers

A novice teacher refers to educators that have been in the teaching field for a short time frame (Hirsch et al., 2019). Novice teacher can also be referred to as an apprentice, or beginner, that refers to a certified professional educator who has less than five years of teaching experience (Perrone et al., 2019; Räsänen et al., 2020; Watson, 2018). Novice teachers in the early stages of their career are typically in a state of survival and not in a state of development (Zavelevsky et al., 2022). Throughout the first few years of a teacher's career a need of basic stability and security should be emphasized to build their professionalism (Zavelevsky et al., 2022).

Novice Teacher Attrition

Teachers have been found to leave their careers at high rates early in their career (Macdonald, 1999; Shankar & Nayaken, 2020). One of these reasons can be attributed to burnout. Research has found that teacher burnout occurs more frequently in educators that are in the beginning of their career than in the later years (Shankar & Nayaken, 2020; Yang, 2021). Researchers have noted that many teachers leave the field within the first five years of their

career (Arnett-Hartwick & Cannon, 2019; Van den Boore et al., 2021). Teacher attrition within the first five years in the field is not just a problem in the United States, this issue is gaining worldwide attention (Whalen et al., 2019). This phenomenon can be described as Early Career Teacher (ECT) attrition (Van den Borre et al., 2021).

It has been found that novice teachers are more prone to leave the field than veteran teachers (Shankar & Nayaken, 2020). A reason for this can be that novice teachers are often not prepared to handle the challenges that arise during a school day and these challenges can be overwhelming and stressful to aspiring teachers (Shankar & Nayaken, 2020; Sutcher et al., 2019; Van den Boore et al., 2021). Demands and stressors that novice educators face can impact the perception of their own competencies and result in them leaving the field entirely (Harmsen et al., 2018).

Retaining novice teachers that are high-quality has been a challenge (Jin et al., 2021). Despite efforts to retain educators, 20% of novice teachers leave the field within the first three years (Barnatt et al., 2016). Before the end of the first year 10% of teachers have been reported to leave the profession (Ingersoll, 2012). It has been noted that public schools in the United States hire a high percentage of novice teachers but within the first five years, 40% of these teachers leave the education field (Shankar & Nayaken, 2020). International research has also uncovered high attrition rates for educators within their first five years of teaching (Arnett-Hartwick & Cannon, 2019). Once an individual is hired into the school system there is over 50% likelihood that they will leave the profession within their first five years (Hare et al., 2001).

Retaining Novice Teachers

The ability to retain quality novice educators is a component of an effective school (Carver-Thomas & Darling-Hammond, 2019). Teacher retention is a critical step to solving

teacher shortages because recruiting more educators is not beneficial if they leave the field shortly after being hired (Sutcher et al., 2019). Novice teachers have unique challenges, goals, and motivation that must be attended to in their first five years of teaching (Whalen et al., 2019). Retention of novice educators can promote school success (Zavelevsky et al., 2022). In order to retain qualified teachers, it is essential to attract skilled and motivated individuals to the field (Sutcher et al., 2019). Being a novice teacher has the expectation that skills must already be developed like their experienced coworkers already have, which is not the case (Whalen et al., 2019). Novice teachers are in need of support and assistance if they are expected to stay in the teaching field (Kwok et al., 2021). There is an importance of first understanding the concerns first-hand from the teachers' perspectives in order to come to a solution (Arnett-Hartwick & Cannon, 2019).

Administrative Support

Attrition has been found to be lower in schools with more administrative support for teachers (Shankar & Nayaken, 2020). School leaders must understand that novice teachers cannot be expected to have the same capabilities and skills as the more experienced teachers (Van Nuland, 2011). It has been found that teachers' growth through professional development improves their teaching skills and has a positive impact on retention in the field (Akiri & Dori, 2022). Support and training is required for them to gain that experience and grow and develop with professional development, time, and mentoring (Whalen et al., 2019). Supportive administrators can encourage teachers with time, space, and resources needed (Whalen et al., 2019). If support is not provided, there is a large chance of these educators leaving the field due to being unsatisfied with their workplace (Kelly, et al., 2018). To increase retention, administrators should support teachers in the educational process, encourage professional

development, create a collaborative school culture, and provide teacher feedback and praise (Akiri & Dori, 2022; Shankar & Nayaken, 2020; Van den Boore et al., 2021).

It has been found that administrators play a critical role in the successful induction by setting clear goals, accountability, and access to resources for novice teachers (Johnson et al., 2019; Walker & Kutsyurbua, 2019). It has also been found that principal leadership is key in mentoring and teacher retention by being supportive and having a shared vision and values (Whalen et al., 2019). Administrators should create a positive school culture otherwise teachers may reduce their commitment and effort in the school environment which can decrease student learning (Day & Gu, 2014).

Administrators play a large role in the factors that can impact teachers' feelings and perceptions towards the profession and their sense of efficacy as a teacher (Mafora, 2013). A positive correlation was found between supportive leadership and educators' work engagement and satisfaction (Chan, 2019). When teachers feel a sense of efficacy they will stay in the profession as adult learners and support the learning of students (Day & Gu, 2014). Teachers must also be involved in the decision-making process and respected for their knowledge and skills if they are to stay in the field (Mafora, 2013).

Incentives and Favorable Conditions

Administrators should be provided the authority to initiate retention incentives to valued educators that want to leave their position (Mafora, 2013). Incentives that motivate and retain teachers include remuneration, career opportunities, positive changes to the working conditions, and instructional support (Macdonald, 1999; Sutcher et al., 2019). Reasonable teaching caseloads and accessibility to adequate academic resources have also been noted as conditions that attract and retain teachers (Mafora, 2013). Research has shown induction programs and mentoring also

support and prevent novice teacher attrition (Akiri & Dori, 2022; Shwartz & Dori, 2016). Effectively preparing and supporting educators can lead to an increase in job satisfaction and a decrease in teacher attrition (Arnett-Hartwick & Cannon, 2019).

Technological Demands for Teaching

There is a changing reality in the teaching field with the incorporation of educational technology and online learning (Dvir & Schatz-Oppenheimer, 2020). Technology is currently being used extensively in schools and classrooms (Paulus et al., 2020; Spiteri & Chang Rundgren, 2018; Starkey, 2019). Research has suggested the use of technology in the educational environment can increase student interest, instruction quality, and active learning (Ross, 2020). Educators must be prepared for schools that are highly digitized (Starkey, 2019). The technological pedagogical content knowledge (TPACK) framework can support educators in developing knowledge and skills to design pedagogical and technology immersed instruction (Nurdiani et al., 2019).

Educational Technology and Online Teaching

Educational technology is a learning tool that can enhance and personalize instruction (Ross, 2020). There must be an attempt to ensure that students and teachers have access to technology in and out of the school environment in order to prepare them to be creative, active, knowledgeable, and ethical individuals in a highly technological society (U.S. Department of Education, 2010). Each year, technology is becoming more and more of a key component throughout K-12 education (Ross, 2020). As technology advances in day-to-day life, there is a bigger push for school leaders to innovate as a means to remain current (Galway et al., 2020).

Throughout the past two decades, school districts across the United States have incorporated technology into K-12 educational settings through one-to-one device initiatives

(Ross, 2020). Devices, software, and products must be selected appropriately for the use in classrooms according to a needs assessment, product quality, and educator input and support (Morrison et al., 2019). The use of educational devices adds a layer of responsibility to school leadership to appropriately manage the scope and sequence of curriculum and provide relevant course materials to support the incorporation of technologies throughout teaching and learning within the classroom environment (Galway et al., 2020). School districts and administrators must be open to adopt and utilize new technologies and resources that can benefit face-to-face, remote, and blended-learning environments (Francom et al., 2021).

Educational Technologies

The use of educational technology is becoming more evident and widely incorporated to enhance instruction and student learning (Bowman et al., 2022; Spiteri & Chang Rundgren, 2018). As the world becomes more technologically dependent, the technology use in educational environments will continue to increase (Ross, 2020). Teachers are expected to use devices in the classroom including tablets, laptops, and interactive whiteboards (Hockly & Dudeney, 2018; Starkey, 2019).

Mobile technology in education has created new approaches and models for teachers to deliver instruction (Galway et al., 2020). The use of mobile technology has provided new ways for information to be created, exchanged, and shared for students in K-12 schools (Burden et al., 2019). With the implementation of educational technology, digital skills become developed, there is access to devices and digital resources, and higher-order learning can be fostered (Ross, 2020). Devices have been found effective in enhancing student communication and collaboration, increasing feedback among aspiring teachers and their professors, and simplifying scheduling throughout teacher-education programs (Galway et al., 2020). Devices such as iPads

and tablets are beneficial due to their mobility and functionality (Galway et al., 2020). The use of iPads in schools began as early as 2010 and by 2016 Apple sold around 250 million devices to educational settings worldwide (Swartz, 2016). The incorporation of the iPad in educational settings has had additional advantages including accessibility, versatility, flexibility, and increased collaboration (Galway et al., 2020).

Educational devices bring shifts within instructional practices and paradigms (Galway et al., 2020). Teachers must be able to effectively implement this technology into the content and pedagogy in their classrooms (Ibrahim et al., 2019). The overall view of technology should be a tool to enhance the teaching and learning that takes place (ISTE, 2020). Research has suggested that educational technologies should not just cover traditional classroom practices instead they should be used as a tool to support standards-based learning by being integrated throughout daily routines and activities (Keengwe & Onchwari, 2009). The integration of technology in the classroom aims to leverage available technological resources to improve learning (Bowman et al., 2022).

As technologies continue to be incorporated into teaching and learning, educators should be preparing students with intellectual tools and strong efficacy beliefs as a way for them to foster their own education and knowledge (Artino, 2021). Teachers and curriculum leaders must systematically integrate technology with already existing instructional content to create a balanced learning environment (Ross, 2020). The use of technology in the classroom can also enhance instruction by using presentations and creating easy access to parental communication through social media applications (Spiteri & Chang Rundgren, 2018). Technology integration can aid learners in achieving high levels of cognitive tasks and gaining life-long skills (Bowman et al., 2022). Integrating technology into instruction beginning in primary grades makes these

digital resources and methods of learning a familiar experience that can then be easily incorporated in upper grades (Spiteri & Chang Rundgren, 2018).

Technology Standards and Frameworks

The International Society for Technology in Education (ISTE) provides technology standards for educators. These standards include collaborating with other teachers to create learning experiences that incorporate technology, setting personal goals to learn, apply and reflect on technology-based approaches, and maximize learning through the use of digital resources (ISTE, 2020). Technological Pedagogical Content Knowledge (TPACK) is another framework that is essential for educators to understand technological integration with pedagogy and content knowledge (Mirshra & Koehler, 2006). TPACK was originally developed in 2006 and has become globally recognized (Nurdiani et al., 2019). TPACK is used as a framework to uncover the knowledge educators have when they integrate technology into their instruction effectively (Polly et al., 2020). The TPACK framework includes seven components of knowledge into one learning program (Nurdiani et al., 2019). These components are Content Knowledge (CK), Pedagogical Knowledge (PK), and Technology Knowledge (TK) (Karchmer-Klein & Konishi, 2021). This framework provides aspiring teachers a lens to communicate how they connect their technological knowledge with the content and subjects they teach (Polly et al., 2020).

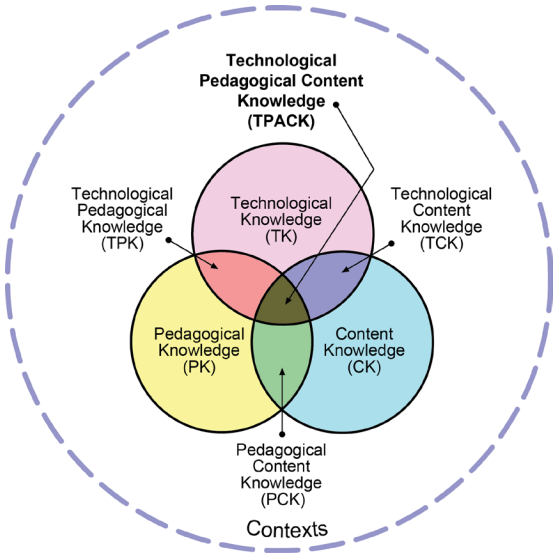

Figure 1. The TPACK model. Reproduced by permission of the publisher, © 2023 by tpack.org

The goal is for current teachers and aspiring teachers to develop their TPACK and develop skills and knowledge of teaching with technology (ISTE, 2020). The development of TPACK is one way to assist educators in successful implementation of technology into instruction (Karchmer-Klein & Konishi, 2021). Within teacher education, the TPACK framework is an instructive lens that focuses on the preparation of aspiring teachers and the requirement to include experiences with content-specific technology and connections between technology and specific research-based pedagogies (Polly et al., 2020). Field placements within these programs provide a setting where aspiring teachers have the most authentic opportunities to teach technology which is why the need to model technological integration is so important for professors to support their students' development of TPACK (Polly et al., 2020).

Online Teaching

Online teaching, digital learning, and distance learning refers to instruction delivered by technology devices (Clark & Mayer, 2016). In this type of learning method, there is a use of technological devices to achieve educational learning (Muljana & Luo, 2019). Online learning has been researched since the internet began but has continually become more of a focus

throughout the past decade (Wang et al., 2021). Online learning is an effective tool to create individualized, innovative, and flexible learning (Dhawan, 2020). Online education provides opportunities for learners to engage and reflect on their own learning through assignments, digital readings, and collaborative discussion boards (Calderón et al., 2020).

The two forms of online learning are fully online learning and blended learning (Wang et al., 2021). Blended learning is considered the more preferred form because of its effectiveness in providing flexible, continuous, and timely learning (Rasheed et al., 2020). Some teachers view online teaching as exactly the same as face-to-face teaching but just utilizing a different platform (Zheng & Ye, 2020). Teachers have attempted to re-create their instruction in an online learning environment with the goal to achieve the same educational outcomes as face-to-face learning (Wang et al., 2021). When teaching online, educators have the opportunity and platform to provide interactions between classmates when the instruction is asynchronous (Stapleton & Stefaniak, 2019).

It is stated that primary teachers often lack skills needed for successful online teaching due to their insufficient training opportunities (Wang et al., 2021). Teachers are in need of a clear and detailed outline for what online teaching should look like and training is needed for online learning practices, strategies, and technologies (Francom et al., 2021). To assist teachers with teaching virtually it is important that they are aware of websites and applications that are accessible to them and that would be a good fit for their current instruction, strategies that would be beneficial for student learning, and preparation for challenges that may be encountered (Francom et al., 2021).

Teachers have reported having limited background knowledge and skills for online learning (Francom et al., 2021). Teaching online has added challenges and adjustments for all

teachers despite their age or experience level (Moorhouse, 2021; Yang, 2021). Online teaching requires a range of different skills from face-to-face instruction (Moorhouse, 2021). Students' online learning can be greatly impacted by the ability teachers have to provide timely feedback and create a virtual sense of community (Wang et al., 2021). Educators that are teaching online must also be able to teach and communicate across a device, facilitate interaction in a virtual environment, and assist with technical difficulties that arise (Rehn et al., 2018). Teachers should also have the skills to adapt in-person activities and practices into a virtual model (Moorhouse, 2021; Yang, 2021).

Educator Technological Challenges

Teachers must be aware that facilitating an environment incorporating technology can be challenging (Menon et al., 2020). When devices are implemented into instruction, challenges that can arise include but are not limited to security and technical issues, prior knowledge, training and professional development issues, cost, and off-task use of devices (Galway et al., 2020). In addition to these challenges, educators must be aware of legal frameworks with the use of educational technology and use the technology ethically and responsibly (Spiteri & Chang Rundgren, 2018).

Constantly Advancing Technologies

The Coronavirus Disease 2019 (COVID-19) pandemic created a multitude of new challenges for educators including the use of new technologies, remote learning, and an increase in work (Yang, 2021; Zadok-Gurman et al., 2021). During the COVID-19 pandemic, complete online teaching was the only option for instruction throughout many countries (Francom et al., 2021). This online learning that occurred due to the pandemic has been called emergency remote teaching (Hodges et al., 2020). Due to the COVID-19 pandemic, schools worldwide were closed

and educators needed to modify their instruction for an online learning environment (Francom et al., 2021). Until the pandemic, a typical day in school was focused on formal teaching created around a tight schedule and student learning was evaluated and monitored closely (Song et al., 2020). The pandemic has changed the dynamic of learning and forced young students that were previously considered not capable of self-regulating to attend asynchronous courses (Wang et al., 2021). Many teachers and students were not prepared for this change in instruction and were faced with numerous challenges (Francom et al., 2021). The level of preparedness educators had did not matter when it came to the COVID-19 pandemic and online learning; it had to be done (Butcher, 2020). Changes to the educational environment due to COVID-19 will likely be reduced but the increased use of technology for online and blended modes of teaching will continue (Lindfors et al., 2021).

The COVID-19 pandemic should be a warning to teacher-education programs to consider how to better prepare aspiring teachers for increased technological education environments (Moorhouse, 2021). This pandemic also provided administrators and school leadership with an opportunity to evaluate their districts virtual learning options and resources (Francom et al., 2021). Evidence shows that primary teachers' online teaching training and experiences were scarce prior to the COVID-19 pandemic (Song et al., 2020). Investigating what teachers had felt throughout the pandemic and what supports would have been helpful can aid administrators and school leaders to ensure these supports are present for teaching in a virtual environment (Francom et al., 2021).

Teachers must know how to effectively use this new technology and be confident with it to increase the quality of education (Dvir & Schatz-Oppenheimer, 2020; Shankar & Nayaken, 2020). Teachers also need guidance on not only how to use educational technology but how to

incorporate it into their content areas and instruction (Spiteri & Chang Rundgren, 2018). Educators not being properly trained in the use of educational technology and online teaching can add extra stress and anxiety and negatively impact the effectiveness of instruction (Moorhouse, 2021).

Digital technologies are changing at a fast pace which requires educators to constantly stay up to date with them (Karchmer-Klein & Konishi, 2021; Starkey, 2019). Because of the constantly evolving changes that take place in school systems, educators worldwide should plan for hybrid online and in-person learning along with synchronous and asynchronous resources and technological tools (Calderon et al., 2020). The evolving technological changes demand that school leaders and educators re-think education, re-define the responsibilities of schools, and re-consider what devices and technology can do to meet the unique needs of the students (Wang et al., 2021). There are gaps in educators' experience and skills with technological tools (Dvir & Schatz-Oppenheimer, 2020). Incorporating technology into instruction requires a deeper understanding of technological devices than the skills needed to use these devices in everyday life (Starkey, 2019). When teaching virtually, educators can spend more of their time learning how to use the new technologies and preparing for the activities and lessons than teaching which can have a negative impact on student learning (Yang, 2021). It is important for educators to stay abreast to these technological changes so that they can successfully utilize these resources to positively impact their classroom lessons and activities.

Technological Challenges

There are numerous challenges that an educator may face when incorporating technology into instruction. Challenges that arise in online learning can be an opportunity for educational change by identifying existing needs and supports that can be met with the incorporation of

technology (Adedoyin & Soykan, 2020). A recent qualitative study showed that primary teachers face numerous challenges with online teaching that can reduce teachers' motivation such as technological difficulties, workloads, and previous online teaching experiences (Rasmitadila et al., 2020).

Internet and device accessibility has been found to be a significant challenge that teachers face when teaching virtually and using educational technology in their classrooms (Francom et al., 2021). Limitations with educational devices include connectivity problems and reliability when using them in the classroom (Galway et al., 2020). Another challenge that has been found is an inability for teachers to build rapport with their students in a virtual environment (Moorhouse, 2021). School leaders must also anticipate that students may not have access to the resources needed for online learning (Czerniewicz, 2020). The lack of parental support and involvement was found to be another challenge by creating a significant barrier for communication when teachers were trying to contact them regarding student motivation and participation (Francom et al., 2021).

Teacher Preparation

Teacher training is essential to the teaching and learning of children (Bawani & Mphahlele, 2021). Teachers need to be trained to be effective educators within the field of education (Bawani & Mphahlele, 2021; Khan et al., 2020). Teachers' sense of preparedness has been found to be one of the key components of their success not only as a teacher but in retention in the field as well (Livers et al., 2021).

Teacher-Education Programs

Teacher-education programs are fundamental in creating effective educators and providing adequate preparation (Darling-Hammond et al., 2017; Khan et al., 2020; Van den

Boore et al., 2021). The goal of teacher-education programs is to support aspiring educators to positively impact student learning within the school context they will enter (Livers et al., 2021; Starkey, 2019). A key component for teacher-education programs to consider is the individuals' sense of preparedness (Livers et al., 2021). A teacher candidates' sense of preparedness has been found to be a predictor for success in the field and has also led to an increase in student success (Brown et al., 2019).

Teachers' skills and abilities are influenced by their teacher preparation programs (Starkey, 2019). These programs must prepare teachers with the skills, knowledge, and attributes for teaching and learning to ensure the individuals have a sense of preparedness for future success within the field of education (Clark & Newberry, 2019; Livers et al., 2021). There have been pedagogical advantages of teacher-education programs including increased connectivity and collaboration, the ability to use blended learning and flipped classrooms, mobility inside and outside of traditional classroom settings, peer-to-peer communications, participation in professional learning communities (PLCs), the creation and access to digital content, mentors, field experiences, and peer evaluation (Baran, 2014).

Coursework and Field Placements

Experiences in schools throughout teacher-education programs are critical in the preparation of teacher candidates and can positively impact their confidence in their teaching ability (Bawani & Mphahlele, 2021; Livers et al., 2021). Influential components of teacher-education programs that also impacted sense of preparedness, including coursework, field placements in school buildings, and student teaching (Livers et al., 2021). Student teaching is an important part of the teacher education program, which prepares individuals to be teachers (Ibrahim et al., 2019; Karchmer-Klein & Konishi, 2021). Coursework and assignments that

include active learning where teacher candidates learn by doing have been reported to create a high sense of preparedness (Livers et al., 2021). After the completion of teacher-education programs, aspiring teachers should feel confident about their preparedness as a beginning teacher for current and future contexts within the educational environment (Khan et al., 2020).

Challenges and Issues

Worldwide, there are many challenges within teacher preparation concerning the development and support of aspiring teachers (Livers et al., 2021; Starkey, 2019). It is impossible for teacher preparation programs to anticipate all the challenges and resources that novice teachers may encounter in their schools (Kwok et al., 2021). One of the challenges that has been found is that preparation varies across teacher-education programs (Tondeur et al., 2017). Teacher preparation program instructors should prepare aspiring teachers for unanticipated challenges that they may encounter (Menon et al., 2020). A lack in the preparation throughout teacher-education programs can significantly impact the readiness to teach (Ibrahim et al., 2019). Novice teachers have reported a lack of preparedness in areas such as diversity, technology-based instruction, and classroom management (Livers et al., 2021; Moorhouse, 2021; Tondeur et al., 2017). Other issues that have been found throughout teacher preparation programs include ineffective mentors, a lack of involvement in the classrooms, not enough time in the educational settings, and a lack of experience with educational technologies (Livers et al., 2021; Starkey, 2019).

Teaching is evolving with the integration of educational technologies and teacher preparation programs and training need to adapt with these changes (Spiteri & Chang Rundgren, 2018; Starkey, 2019). Teacher-education programs have been criticized for under-preparing aspiring educators to incorporate technology in the classroom (Schuck et al., 2018). These

programs play a key role in shaping aspiring educators' beliefs about educational technology by providing opportunities to incorporate these technologies in a variety of contexts (Karchmer-Klein & Konishi, 2021). It is important for administrators of teacher-education programs to know and understand what teacher candidates have prior experience with in regards to models of technology and the use in different contexts to adequately prepare them for incorporating technology into their classroom and instruction (Polly & Binns, 2018).

Technological Preparation

It has been found that successful technology-integration instruction is limited within teacher-education programs (Polly, 2014; Tondeur et al., 2012). There needs to be in-depth planning in the delivery of pre-service teacher education to navigate the evolving technological shift (Galway et al., 2020). The National Educational Technology Plan focuses on the need for teacher-education programs to provide and incorporate experiences with educational technologies in all coursework and field placements (U.S. Department of Education, 2017). The Replacement, Amplification and Transformation framework also supports the need for aspiring teachers to have more than just access to devices for successful implementation; they need professional learning, experimentation, exploration, practice, and professional support (Galway et al., 2020).

Preparing a teacher for the 21st century must include exposure and understanding of technology integration to support all subject areas (Ibrahim et al., 2019; Spiteri & Chang Rundgren, 2018). Educators should have the ability to actively utilize technology to enhance learning and motivation (Schunk, 2016). Some key factors that impact the use of technology among K-12 teachers include the incorporation of technology in teacher-education programs and knowledge in different applications (Hernandez-Ramos, 2005). Research has shown the need for

aspiring teachers to have opportunities to not only use and develop understanding of technology but also create opportunities to develop students' comfort through the use of technology (Polly, 2014).

Teacher-education programs need to incorporate technology skills so that the graduates are prepared for the technological-pedagogical challenges that they may encounter in the field (Ibrahim et al., 2019). It is also important that teachers are aware of the integration of technology that is appropriate to the learners' intellectual and psychological level (Schunk, 2016). Solutions to better equip beginning educators include teacher educators modeling good instructional practices with technology, opportunities for virtual teaching practicums, and partnerships with districts that have technology incorporated into their daily instruction (Moorhouse, 2021). There is a high importance on effective technology integration modeling within teacher-education programs (Galway et al., 2020). Professors have been found to model technology integration with higher-order thinking skills such as project-based learning (Polly et al., 2020). Then, as the novice teachers enter their career experienced teacher colleagues have modeled this integration through lower-level activities such as educational games and videos (Polly et al., 2020). Research has shown effective practice includes creating a space where teacher educators are role models, learning about technology, uncovering attitudes towards technology, collaborating with colleagues, and creating meaningful technological experiences (Tondeur et al., 2012).

Educators' efficacy in educational technology can be strengthened through technological, pedagogical, content knowledge (Paulus et al., 2020). TPACK-framed teacher-education programs can influence novice educator's implementation of technology in their classrooms (Karchmer-Klein & Konishi, 2021). TPACK-framed technology preparation can also positively affect the educator's pedagogical knowledge and technology knowledge (Karchmer-Klein &

Konishi, 2021). Teacher-education programs that incorporate the TPACK framework support aspiring teachers to be qualified educators and have the ability to successfully instruct 21st century learning (Nurdiani et al., 2019).

There are common issues that teacher-education programs had in preparing novice teachers to integrate technology effectively including a disconnect between the training provided and a lack of relevance within the field (Sutton, 2011). Teacher-education programs and schools should have a partnership to ensure that the teacher candidates are effectively trained and equipped with the programs, technologies, and strategies currently being implemented (Ibrahim et al., 2019). It would be a great advantage if preservice teachers were to use similar technologies in their field placements that they would be using in their own classroom (Menon et al., 2020). Universities should have a class set of tablets for teacher candidates to utilize, just like those that are provided in many elementary schools (Galway et al., 2020). It would also be beneficial if teacher-education programs provide these aspiring teachers with a means to evaluate apps on a set criterion to find valuable ones that can be used in their actual classroom environment (Galway et al., 2020).

Professional Support for Novice Teachers

Novice teachers require professional development, support, and mentoring to develop self-efficacy to become successful educators (Majocha et al., 2016). Professional support programs can include pairing a novice teacher with a veteran mentor teacher, professional development, and participation in a mentoring network (Akiri & Dori, 2022; Shankar & Nayaken, 2020). Empirical literature from the past 30 years have shown that induction programs can have a positive impact on retention, commitment, instructional practices, and student achievement (Ingersoll & Strong, 2011; Whalen et al., 2019). Mentoring has become a critical

component of teacher training worldwide (Burger et al., 2021). Research has shown mentorship as a key part of teacher retention and attrition reduction (Whalen et al., 2019). Novice teachers who participate in induction programs and professional development activities leave at a drastically lower rate than those who do not (Ingersoll & Strong, 2011).

Professional Development Opportunities

Teachers are expected to be lifelong learners, which further increases the necessity of professional development opportunities being available to them (Ibrahim et al., 2019; Van den Boore et al., 2021). Professional development opportunities are offered to in-service teachers to enhance their knowledge, skills, and strategies (Bowman et al., 2022). Effective professional development programs include opportunities for feedback (Darling-Hammond et al., 2017). Researchers have found that to enhance long-term teacher capability to increase skills and increase student learning, professional development needs to be collaborative, provide explicit instruction on skills, create learning opportunities to incorporate newly obtained skills, and provide feedback (Ball & Cohen, 1999; Hirsch et al., 2019).

Administrators must put a focus on implementing professional development approaches that promote competencies and skills needed to keep novice teachers in the classroom (Hirsch et al., 2019). It is imperative that professional development is valuable and produces changes in the teacher's knowledge, skills, and implementation (Hirsch et al., 2019). Teacher training must not only be present in the beginning stages of their career but ongoing to properly develop skills (Akiri & Dori, 2022; Bawani & Mphahlele, 2021; Van den Boore et al., 2021). In-service training, induction, and mentoring programs have been successful in assisting novice educators and have impacted their effectiveness (Bawani & Mphahlele, 2021; Van den Boore et al., 2021). In order to acquire new skills and enhance their teaching, educators need professional

development, instructional materials, and administration that is supportive and helpful (Bawani & Mphahlele, 2021; Shankar & Nayaken, 2020). When a school culture promotes educator training opportunities, teachers have the ability to collaborate, reflect, and share on the newly gained knowledge and skills (Tondeur et al., 2016).

Content acquisition podcasts (CAPs) and practice-based professional development (PBPD) are valuable professional development tools that can be used to build teachers' knowledge and skills (Hirsch et al., 2019). CAPs are enhanced podcasts with visuals, on-screen text, and narration that can assist in a teachers' instructional knowledge of a specific practice (Kennedy & Thomas, 2012). CAPs are resources that provide teachers models of classroom practices and to see explicit examples of how resources can be utilized effectively (Hirsch et al., 2019). PBPD contains components of instructional coaching, content acquisition podcasts, and teacher study groups (Hirsch et al., 2019). The six major parts of PBPD are to engage colleagues with similar needs, create professional development for the current needs, assess prior knowledge and skills, model independent practice, use similar resources to those that will be used in the classroom, and give feedback (Ball & Cohen, 1999).

Teacher Induction

Induction programs have become a professional development source greatly used (Darling-Hammond et al., 2017). Induction programs can vary from not having a program at all to one-year or two-year programs (Kwok et al., 2021). It has been found that teacher induction programs and mentoring programs can build confidence, teach best practices, and increase workplace satisfaction (Ingersoll & Strong, 2011). Mentoring and induction programs together tend to reduce attrition rates of novice teachers (Whalen et al., 2019).

A teacher induction program is created to support teachers within their first two years of teaching to help them develop skills and practices (Kwok et al., 2021). Induction program evidence has been shown to be positive to teacher and student outcomes, instructional quality, and retention (Bastian & Marks, 2017; Kwok et al., 2021). Induction can help teachers gain skills on how to be optimistic and effective (Whalen et al., 2019). Induction should be led by an individual that has a deep understanding of not only the school but also the students and community to be most beneficial to the novice teacher (Whalen et al., 2019).

Mentoring/Instructional Coaching

Instructional coaching is another form of professional development. Teacher coaching, also known as instructional coaching, is typically a key part within induction programs and has shown positive educational outcomes (Kwok et al., 2021). Teacher coaching has been defined as individualized, intensive, sustained, context-specific, and focused work that ties an experienced coach and a novice teacher together for a collaborative experience (Kraft & Blazar, 2017). Teacher coaching utilizes a partnership approach where the coach's role is critical to the value and success of the induction program and teachers' development (Kwok et al, 2021). In instructional coaching, the teacher works alongside an expert or experienced colleague to learn new practices (Hirsch et al., 2019). In this method, the coach provides support and feedback without having a supervisory or evaluative role (Hirsch et al., 2019).

First-year teachers can be required to participate in induction programs that can provide critical support and include a formal mentoring program (Shwartz & Dori, 2016; Burger et al., 2021). In mentoring, a veteran teacher is given the task to support a novice teacher's learning, development, and well-being (Hobson & Maxwell, 2017). Within the mentoring program, mentors assist novice educators to plan lessons and activities, teach about best practices and

pedagogies, complete observations, and provide feedback and reflection to the novice educator (Shwartz & Dori, 2016). There is evidence of the positive impact mentoring has on novice teachers' well-being in the transition from college to career life (Burger et al., 2021). Research has shown mentoring to reduce novice teacher attrition (Ingersoll & Strong, 2011). Novice teachers have reported mentoring to be more beneficial than induction programs due to mentoring typically lasting over a longer span than the initial induction phase (Whalen et al., 2019).

The support novice teachers receive from veteran teachers has been found to have a positive impact on their development as an educator (Akiri & Dori, 2022; Shankar & Nayaken, 2020). Mentors supporting and coaching novice teachers provides them with the sense that they are not alone during this high stress time of their career (Whalen et al., 2019). Effective mentors play a key part in providing care and attention to novice teachers (Schatz-Oppenheimer, 2017). Novice teachers need to have support and feedback from veteran teachers to grow as leaders and instructors in the field (Shankar & Nayaken, 2020). It is important for these beginning educators to have the support they need as they build their pedagogical knowledge and content knowledge (Akiri & Dori, 2022).

It is critical that a mentorship is a parallel learning experience and that the mentee is an active participant in the journey (Whalen et al., 2019). An effective mentor can guide a novice teacher from dependence to independence and builds meaningful connections throughout the school community (Dvir & Schatz-Oppenheimer, 2017). When novice teachers have mentors, they can receive much needed assistance and support while developing skills and strategies for ongoing development and growth (Geeraerts et al., 2018). Mentors can provide novice teachers

with communication, emotional support, resources, and support their immediate needs and long-term professional goals (Akiri & Dori, 2022; Paulus et al., 2020; Shankar & Nayaken, 2020).

Meaningful Technology Opportunities

Meaningful technology integration in classrooms is a current issue due to the lack of professional development (Paulus et al., 2020). The pandemic and online learning that unexpectedly occurred must impact school leaders' thinking when providing professional development opportunities so that they not only support face-to-face learning but also incorporate virtual learning (Francom et al., 2021). Evidence has found professional development programs to be effective in improving the use of technology in the educational environment (Bowman et al., 2022). Strong professional development among schools is critical in helping teachers integrate technology into instructional practices and learn how to use new resources confidently and effectively (Ross, 2020). Schools need to provide effective professional development and training on online teaching so teachers are prepared with background knowledge and skills essential for successful online learning (Wang et al., 2021).

The goal of technology professional development is to support teachers in gaining technological skills and knowledge to enhance instruction and learning (ISTE, 2020). It should include how to effectively incorporate devices and software but promote change toward student-centered and individualized learning on an even deeper level (Ross, 2020). Developing the skills of educational technology requires time, training, collaboration, support and feedback (Spiteri & Chang Rundgren, 2018). The value placed on technology and proficiency of the skill can be increased through professional development opportunities (Bowman et al., 2022). Although most novice teachers are digital natives it does not negate the fact that professional

development is needed to teach how to successfully integrate devices into instructional practices (Galway et al., 2020).

Leaders must support the implementation of educational technology through professional development activities (Paulus et al., 2020). It is important for school leaders to check on the program, device, and resources' sustainability by having teachers complete evaluations, feedback, and share their experiences throughout the implementation (Ross, 2020). School leaders should also implement policies for the online environment and the use of educational devices so that teachers can ensure quality, consistency, and gauge their own performance (Wang et al., 2021).

There is a learning curve that requires a period of support and adaptation with any new technology (Stec et al., 2020), so it is critical that administrators allow teachers time to interact with the devices and utilize their skills to navigate the learning process (Galway et al., 2020). Professional learning communities can provide teachers with ongoing technology integration support to ensure successful implementation (Paulus et al., 2020). Collaboration among colleagues should take place so that each teacher is not having to create effective lessons incorporating technology for each subject and grade (Ross, 2020). Mentoring and support is key in novice teachers overcoming their fears and adjusting to a technology-rich environment (Menon et al., 2020). Mentors modeling the use of technology can also be a motivator for initial teachers to gain the experience and practice to implement technology usage in their own teaching (Tondeur et al., 2016). Educators must feel confident and comfortable in the use of educational technologies and understand how to properly use them to enhance their instruction (Moorhourse, 2021).

Professional Support Precautions

Although professional supports can have numerous positive impacts on novice teachers there are some precautions that need to be discussed. It has been found that professional development trainings are typically only a one-time workshop that focus on topics that may or may not even be relevant to their teaching (Ball & Cohen, 1999). As for induction programs, they can provide support but there needs to be a balance for novice teachers during this hectic and stressful period in their career (Kwok et al., 2021). Administrators and school leaders may not have a deep understanding of what knowledge and skills the novice teachers have, making it hard to create a valuable induction program (Kwok et al., 2021). Although there is extensive research on how these programs affect teacher retention little emphasis has been on induction curriculum and if it coincides with the district's novice teachers will be employed with (Kwok et al., 2021; Ronfeldt & McQueen, 2017).

Mentoring interactions are not always beneficial for novice educators an example of this would be having a judgmental mentor that can impact the mentee's self-esteem (Burger et al, 2021). Mentoring can negatively affect novice teachers' well-being by providing critical feedback and being unavailable (Bjorndal, 2020). Mentorships can also be a negative experience when little effort is provided from the mentor and school district (Whalen et al., 2019). It has been found that mentors are rarely prepared and under compensated for their training of novice teachers (Burger et al., 2021). Mentors have reported struggling with knowing the amount of guidance to provide, balancing their role as a mentor and a teacher, and how to apply effective counseling techniques (Jaspers et al., 2014; Lejonberg et al., 2018). Mandatory mentor training needs to be in place to reach the full potential of mentoring novice teachers (Jaspers et al., 2014).

Summary

Teacher attrition has been a growing problem for school districts worldwide (Mafora, 2013). Teacher attrition is an issue that is felt globally (Van den Borre et al., 2021). This issue has been researched widely. Research has shown that attrition rates are higher at the beginning of educators' career than later in their career (Shankar & Nayaken, 2020; Yang, 2021). Attrition rates have been found to be especially high throughout the first five years of the teaching career (Arnett-Hartwick & Cannon, 2019; Van de Boore et al., 2021). Teacher attrition has been researched extensively with a focus on factors that are causing attrition (Shankar & Nayaken, 2020; Sutcher et al., 2019; Van den Boore et al., 2021; Yang, 2021). Additional research is needed to understand why high numbers of novice teachers are leaving the field within the first few years with a focus on reviewing how teacher-education programs and professional development/support programs are preparing these individuals.

Teacher burnout caused by the number of demands placed on educators has been found to be a factor contributing to teacher attrition (Shankar & Nayaken, 2020; Yang, 2021). With technological advances and online learning that are becoming a growing trend, there are even more demands being put on educators in the 21st century (Ibrahim et al., 2019; Spiteri & Change Rundgren, 2018). The COVID-19 pandemic has greatly impacted the educational environment and increased the number of educational technologies being incorporated into daily instruction and academic activities (Yang, 2021; Zadok-Gurman et al., 2021). Teacher-education programs need to evolve their coursework and practicums to keep up with constantly changing educational environments (Spiteri & Chang Rundgren, 2018; Starkey, 2019).

A gap in the literature exists pertaining to novice teacher perceptions of their preparedness from their teacher education program and also throughout professional

development provided within their district during their first few years of teaching in the primary grade level. By examining novice teachers' sense of preparedness for incorporating educational technologies into instruction, administrators and professors can better equip and support these new teachers with the knowledge, training, and skills needed to create a more positive and effective school environment.

CHAPTER THREE: METHODS

Overview

The purpose of this transcendental phenomenological study was to understand novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. This chapter begins with a description of the research design and approach utilized in this study. The research questions that are guiding the study are then disclosed. Next, an in-depth description of the setting is provided. Detailed descriptions of the researcher's positionality including interpretive framework, philosophical assumptions, and the researcher's role in this study are incorporated. The next section included is the procedures. Within the procedures section, permissions and the recruitment plan for the participants are listed. Various forms of data will be collected and analyzed such as individual interviews, focus group discussions, and letter-writing to identify the essence of the participants' lived experiences with the phenomenon. The ethical considerations that are incorporated throughout the study to increase the trustworthiness, integrity, and reliability of the study and its findings are also disclosed within the final sections of this chapter.

Research Design

The research design for this study is qualitative. The qualitative research approach is appropriate for exploring a research problem in-depth in a study (Creswell & Poth, 2018). This qualitative research method allows myself, as the researcher, to be the human instrument for data collection and analysis (Conrad & Serlin, 2006). This research method provides the researcher an opportunity to understand a phenomenon from the participants perspectives (McMillan & Schumacher, 2006). In this study, the qualitative research method is used to understand the phenomenon regarding the sense of preparedness novice teachers experience with incorporating

technology into instruction.

A phenomenological approach was chosen in this study because as the researcher, I was seeking to describe and understand the experiences of novice elementary teachers. Phenomenology is a qualitative approach that allows the researcher to identify the essence of previous experiences with a phenomenon as described by the participants (Moustakas, 1994). Phenomenology found its beginnings in the late 1800s and continued developing into the 1900s by Edmund Husserl (Laverty, 2003). Edmund Husserl defines phenomenology as the essence of pure experiences without interpreting, explaining, or theorizing (van Manen, 2018).

As for the specific type of phenomenology, transcendental phenomenology was utilized. This type of a phenomenological study was chosen because the research will be focused on the participants' interpretations of their lived experience with the phenomenon. As Moustakas (1994) explained, transcendental phenomenology begins with identifying a phenomenon and collecting data from various individuals that have experienced the phenomenon. In this approach, the researcher disregards their own experiences and prejudgments with the phenomenon (Creswell & Poth, 2018). My own experiences were bracketed promoting objectivity which allowed me to identify the essence of the participants' lived experiences with the phenomenon (Moustakas, 1994).

Research Questions

To better understand the lived experiences novice elementary teachers have with incorporating technology into instruction the following central research question and sub-questions guided this study:

Central Research Question

What is novice elementary teachers' sense of preparedness for incorporating technology into instruction?

Sub-Question One

How do novice elementary teachers describe their experiences with technology in the field of education?

Sub-Question Two

How do novice teachers describe experiences in teacher-education programs to prepare them for implementing technology in the classroom?

Sub-Question Three

How do novice teachers describe experiences with professional development opportunities to support incorporating technology into instruction?

Setting and Participants

This transcendental phenomenological study included participants that have lived experiences with the phenomenon. The setting chosen has numerous individuals that are novice teachers and have had previous experiences with the phenomenon. Surveys were used to ensure only individuals that have experienced the phenomenon were selected and included in the study.

Setting

This transcendental phenomenological study was conducted within South-Central Pennsylvania school districts. The South-Central Pennsylvania region includes Cumberland County, Harrisburg, Hershey, Gettysburg, Lancaster, York, Reading, and Chambersburg (CAEDC, 2015). There are three Intermediate Units that make up this area and 77 school districts (PDE, 2023). This setting was chosen because the researcher is familiar with the area and because of the opportunity for a large sample group of novice teachers throughout the

surrounding school districts. The typical leadership structure of these school districts is a hierarchical leadership starting at the top with the superintendent. Although these school districts are within the same region, they have a variety of differences in size, diversity, technology initiatives, and funding.

Participants

Participants in this transcendental phenomenological study included elementary teachers with five or fewer years of experience in the teaching field. Participants were only eligible for the study if they had experience with the phenomenon. There were 11 participants in this study. The participants were employed within a South-Central Pennsylvania school district. The participants were employed within six different school districts. The teacher-education programs that the individuals completed prior to being hired with the district were from five different institutions. The participants ranged from 22-27 years of age and were all female.

Researcher Positionality

There are various interpretive frameworks that a study can be conducted with. In this transcendental phenomenological study, I have identified social constructivism as my research paradigm. Philosophical assumptions act as key parts that are incorporated into interpretive frameworks within qualitative research (Creswell & Poth, 2018). The philosophical assumptions that are tied in my interpretive framework include ontological, epistemological, and axiological.

Interpretive Framework

Social constructivism is the lens through which this study was conducted. Individuals explore a deeper understanding of the world they live in within the social constructivism approach (Creswell & Poth, 2018). As the researcher, I focused on the participants' experiences and views of the phenomenon. I used this information to generate and develop theories and

patterns of meaning (Creswell & Poth, 2018).

Philosophical Assumptions

Philosophical assumptions help the reader to understand the researcher on a deeper level. By including my philosophical assumptions, the reader gains an understanding of my views and how the research was approached. The philosophical assumptions that are further described in detail include ontological, epistemological, and axiological.

Ontological Assumption

In this transcendental phenomenological study, I reported how the participants view their experiences differently (Moustakas, 1994). In qualitative research, the researcher embraces the view of multiple realities by studying a variety of participants using numerous forms of evidence (Creswell & Poth, 2018). As the researcher, I believe and understand that there are multiple realities that will be constructed through the lived experiences and interactions with the participants. I analyzed the different participants' perspectives to develop themes throughout the findings.

Epistemological Assumption

Within the epistemological assumption, reality was co-constructed between myself and the participants and was shaped by the individual experiences (Creswell & Poth, 2018). I attempted to get as close as possible to the participants to gain new knowledge (Creswell & Poth, 2018). Knowledge was formed through the lived experiences of the participants. I used subjective evidence from the participants' individual views as the overall knowledge for this study. As the researcher, I used quotes from the various data collection methods to gain knowledge about the phenomenon. I also collaborated with the participants to better get to know them and formulate a deeper understanding of their lived experiences.

Axiological Assumption

The axiological assumption describes the researcher's acknowledgment that research is value-laden and that biases are present (Creswell & Poth, 2018). As the researcher, I have lived experiences that have created biases in this study. I am an educator that did not feel prepared to incorporate technology into my instruction at the completion of my initial educator program. I have my own thoughts and biases on what professional development opportunities and teacher-education program curriculum would have helped me be better prepared for incorporating technology into instruction when entering the teaching profession. I put aside my own experiences, prejudgments, and biases to understand and identify the phenomenon from the participants' perspectives.

Researcher's Role

As the researcher in this qualitative study, I am the human instrument (Creswell & Poth, 2018). After the completion of my teacher-education program, I felt underprepared to incorporate digital resources into my instruction. After beginning in the field of education, I had minimal professional development opportunities to deepen my sense of preparedness with educational technologies. I often found myself learning educational technology and resources required to be used at the same time my students were. Since I have previous lived experiences with the phenomenon my own thoughts, feelings, and biases were bracketed using epoché to accurately identify the essence of the phenomenon (Moustakas, 1994).

I am currently a public school educator. I am employed in one of the South-Central Pennsylvania school districts. I will not have a supervisory relationship with any of the participants. I am also a doctoral student at Liberty University. Throughout this study, I will be singularly responsible and actively involved in all aspects of the research and data collection.

Procedures

The first step to conduct this transcendental phenomenological study was to obtain all necessary permissions. Once permissions were secured, I was able to reach out to potential participants. Purposeful sampling was utilized to finalize the participants.

Permissions

I first needed to secure Institutional Review Board (IRB) approval through Liberty University (Appendix A). Once IRB approved the proposal, I sent out an e-mail explaining the study to novice elementary teachers in South-Central Pennsylvania school districts (Appendix C). The e-mail informed potential participants of a breakdown of the study and what they would be asked to do if they chose to volunteer. This e-mail also included a screener survey (Appendix E).

Recruitment Plan

I began recruiting by posting on social media to find potential participants (Appendix B). I then sent an initial e-mail and screener survey to potential participants to ensure that the selected participants are novice educators with less than five years of experience in the field and are currently working in a South-Central Pennsylvania school district. The survey also ensured each of the participants selected have previously experienced the phenomenon (Creswell & Poth, 2018). Once participants were selected, a consent document for them to sign was sent in an e-mail, explaining the purpose of the study and that their participation is voluntary (Appendix D).

The sample pool consisted of all novice elementary teachers in South-Central Pennsylvania school districts. Purposeful sampling was used to select the participants because those individuals can inform a deeper understanding of the phenomenon (Creswell & Poth, 2018). Snowball sampling was then utilized to find additional participants by having participants

identify other individuals that have experienced the phenomenon (Creswell & Poth, 2018). The sample size was 11 participants that have indicated in the questionnaire having experience with the phenomenon and have less than five years of teaching experience. Participants for interviews should range from five to 25 people (Creswell & Poth, 2018). The number of participants can vary and increase until saturation is met. I knew saturation was met when new information that contributes to the understanding of the phenomenon is no longer found (Creswell & Poth, 2018).

Data Collection Plan

Creswell and Poth (2018) noted the importance of numerous methods of data collection in qualitative research studies. The primary form of data collection in a qualitative study is interviews (Creswell & Poth, 2018). Data collection in phenomenological studies are typically also observations or written descriptions of lived experiences (Wang et al., 2021). For this study, I included individual interviews, focus groups, and letter writing in my data collection process to get a clear understanding of the participants' experiences with the phenomenon. In a phenomenological study, the participants must have all experienced the phenomenon and can describe their previous lived experiences with that phenomenon (Moustakas, 1994). No data was collected from the participants until I gained all necessary approvals.

Individual Interviews

Open-ended, in-depth interviews were conducted with the participants to understand their lived experiences with the phenomenon. Interviews are a conversation between the researcher and the participant where questions are posed related to the purpose of the study (Merriam, 2009). Both formal and informal interviews are designed to explore the experiences of individuals through first-person accounts (Moustakas, 1994). Throughout the interviews, researchers should focus questions on the participants' experience and the factors or scenarios

that have impacted those experiences (Creswell & Poth, 2018). Interviews are beneficial for this study because it allowed the researcher to gain firsthand experiences and perceptions that the participants have with the phenomenon.

Interviews were given to the 11 participants selected through the screening survey. The interviews took place via face-to-face, Zoom, or Microsoft Teams. The interview mode depended on what is most convenient for the individual participant. Each interview was scheduled for one hour but the schedule was adjusted as needed. Open-ended interview questions (Appendix F) allowed for more of an interactive form of data collection to deepen the researchers' understanding of what the participants were feeling and their perceptions as they began their teaching career. The interviews were semi-structured in nature allowing for follow-up interview questions to be added as needed to ensure clarity and understanding of the participants' responses. I recorded the interviews and transcribed at a later date. All participants had knowledge of the recording prior to the interviews taking place.

Individual Interview Questions

1. Please describe your educational background. Icebreaker
2. Describe your teaching experience thus far (positive and negative). Icebreaker
3. Please describe your overall sense of preparedness when you began your first teaching assignment. CRQ
4. Describe your perceptions regarding your preparedness to incorporate technology into instruction. SQ1
5. Describe the challenges you faced when incorporating technology into your instruction. SQ1

6. Explain the experiences the teacher-education program provided you with to prepare you for 21st-century teaching. SQ2
7. What else would you like to add to our discussion regarding your experiences with preparation from teacher-education programs that we have not discussed? SQ2
8. What professional development opportunities have you had that prepared you to incorporate technology into instruction? SQ3
9. Describe professional support opportunities that were provided that you found to support your preparedness with educational technology. SQ3
10. Explain successful practices you found when implementing technology into your instruction. SQ1
11. What else would you like to add to our discussion regarding your experiences with professional support opportunities that we have not discussed? SQ3

The first two interview questions will act as a grand tour question to build rapport and help the participants feel comfortable with the researcher (Marshall & Rossman, 2015). These questions will act as an icebreaker for the interview. The interviews will be compromised of nine open-ended interview questions, not including the icebreaker questions. The questions connect back to my central research question and sub-research questions. Question 3 tied directly back to the central research question and seek to understand the sense of preparedness the teacher had with technology when beginning their career. Questions 4 and 5 sought to understand experiences the teacher had with technology in their classroom. Question 6 allowed the participant to share how teacher-education programs prepared them for the field of education in the 21st-century. Questions 8 and 9 sought to understand the experiences of technology training. Question 10 sought to understand the successful strategies and practices that teachers feel are

successful in technology integration. Questions 7 and 11 provided the participants with an opportunity to share additional information about their experiences that they have not yet had the opportunity to share.

Individual Interview Data Analysis Plan

To begin the analysis process, all individual interviews were recorded and transcribed. The interviews were video-recorded so that non-verbal cues and facial expressions were able to be reviewed to provide additional information. I ensured epoché took place by setting aside my own preconceived experiences to develop a deep understanding of the participants' experiences (Moustakas, 1994). I then completed preliminary jottings after the interviews to identify phrases and words that can be used for coding (Saldaña, 2016). Once the interviews were complete, I reviewed the transcribed interviews coding the significant statements and drawing themes from those statements. I began coding by using the preliminary jottings. The phrases and words identified served as my first set of codes. As Saldaña (2016) explained, coding is not just labeling, it is linking ideas together. The identified themes were then used to develop a textural description including the thoughts and feelings the participants had with the phenomenon (Moustakas, 1994). The structural descriptions which include the underlying factors that led to the experience were then created incorporating how the phenomenon was experienced to reveal the essence of the participants' experience and form it into a cohesive narrative (Moustakas, 1994).

Focus Groups

Following the interviews, focus group discussions took place. Focus groups can stimulate feelings, perceptions, and beliefs among participants through interactions that may be difficult for them to express if they are by themselves (Gall et al., 2007). Focus groups allow the

participants to discuss previous experiences with others who have lived experiences with the phenomenon (Rosenthal, 2016). The focus groups provided a deeper conversation where the participants were able to build off one another's experiences and thoughts.

After the interviews, all of the participants were asked to participate in a focus group discussion (Appendix G). The participants were divided into three different groups according to their availability. The focus groups took place in person, via Zoom, or on Microsoft Teams depending on what worked best for all the participants.

Focus Group Questions

1. What are your thoughts on the use of technology in schools? Icebreaker
2. What is your comfort level using technology? CQ
3. What types of educational technology tools do you use in your classroom? SQ1
4. How do you teach your students to use new technology? SQ1
5. What challenges do you find are common when teachers are using educational technology in the classroom? CQ, SQ1
6. How do you feel about your ability to incorporate technology into your instruction? CQ
7. Describe the challenges you had when initially incorporating educational technology into your instructional practice. SQ1
8. How have you overcome those challenges? SQ1
9. What experiences from teacher-education programs were most helpful in preparing you for using technology in the classroom? SQ2
10. Describe professional supports that have been helpful in building your sense of preparedness with educational technology. SQ3

These questions were closely related to the questions asked in the individual interviews as a way to build off of the participants' initial responses. These questions connect back to the central research question and sub-research questions. Question 1 acted as an icebreaker to get the participants talking about the use of technology in their schools. Question 2 provided the participants an opportunity to share their perceived comfort level with technology. Question 3 and 4 sought to understand how the participants utilize technology in their classrooms. Question 5 allowed the participant to voice the challenges and barriers that they have encountered that may impact their self-efficacy in technology integration. Question 6 provided the participant a time to share their thoughts on their ability to utilize technology in their teaching. Questions 7 and 8 sought to understand technological challenges that the participants have experienced and how they have overcome them. Questions 9 and 10 allowed the participant to voice what experiences and supports have been most helpful to assist them in the successful implementation of technology into their teaching.

Additional questions were asked in the focus groups because of the themes and patterns discovered in the individual interviews. The questions focused on the similarities uncovered between the participants' experiences to get a deeper understanding of the sense of preparedness and lived experiences they have had with the phenomenon. Focus groups provide an opportunity for the participants to reflect and contribute to others' thoughts and ideas (Patton, 2015). As the researcher, I ensured that the conversation continued flowing and posed questions that enabled deep conversation and connections with the phenomenon.

Focus Group Data Analysis Plan

Similar to the individual interviews, the focus group discussions were recorded with video and audio and were transcribed. Just like in the first data collection method, as the

researcher, I ensured my own preconceived biases were bracketed. Throughout the focus group discussions, I took the opportunity to pre-code the data. Pre-coding took place by circling, bolding, and underlining significant statements while the data collection was occurring (Saldaña, 2016). This pre-coding was used to connect the data with the coding from the individual interviews and identify new themes that emerged. The newly emerged themes were incorporated into the textural description and structural description to further reveal the essence of the phenomenon.

Letter-Writing

Following the focus group discussion, participants were asked to write a letter to their former teacher-education programs. The purpose of this data collection method was to provide the participants with the opportunity to reflect on past and current feelings and experiences regarding their sense of preparedness. Letter writing allowed participants to express themselves without the added pressure of being in the presence of someone.

The participants were emailed a letter-writing prompt (Appendix H). The participants were directed to address the letter to their former teacher education program. The letter was set to be 1-2 pages in length. The participants had two weeks to complete the letter and email it back.

Letter-Writing Prompt

Write a letter as if writing to the department chair of your teacher-education program. Use the following questions to guide your writing:

- What is your perception of the gaps you had when you began your first teaching placement?
- What was your sense of preparedness with incorporating technology into instruction?

- Tell about a challenge with technology and how your teacher-education program could have helped you.

Letter-Writing Data Analysis Plan

Like the other two data collection methods, I ensured phenomenological reduction took place. Transcription was not needed to analyze this data collection method. Instead of transcription, I analyzed each letter and coded the responses utilizing predetermined codes from the previous data collection methods. Additional codes were added as needed as new patterns emerge. Since this is the final data collection method, the analysis of the participant letters were compared to the other data collection methods to triangulate the data to develop a comprehensive understanding of the phenomenon.

Data Synthesis

Analysis began when the data began being collected. The multiple sources of data were used to triangulate and develop a thorough understanding of the phenomenon being studied (Creswell & Poth, 2018). Member-checks were completed and the findings were taken to the participants to see if it accurately portrayed their lived experience with the phenomenon (Saldaña, 2016). The member-checks consisted of emailing the participants the themes that were found to ensure that they are an accurate representation of their experiences. The member-checks took approximately 15 minutes for the participants to complete. Constant comparison occurred throughout each of the data collection methods. The process was to collect data, reflect, analyze the data, and repeat those steps until saturation occurred and no new themes emerged (Saldaña, 2016). I made reflexive notes throughout the data collection to reflect on the data and note emerging themes and relationships between the themes and patterns. Reflection continued occurring throughout the analysis process to provide logical, systematic, and coherent

information that was utilized to synthesize the information and identify essential descriptions of the experience (Moustakas, 1994).

Once all the data is collected, the methods were examined for significant statements (Creswell & Poth, 2018). Significant statements are statements that are common throughout participants' experiences. A procedure called horizontalizing the data then occurred where the patterns that are found were compared across all of the collection methods (Moustakas, 1994). The statements were then listed and clustered into common categories and themes which were used to develop textural descriptions of the perceptions the participants had with the lived experiences (Moustakas, 1994). Structural descriptions then were developed which include the essence of the experience (Moustakas, 1994). The textural descriptions along with structural descriptions were integrated and written in a comprehensive narrative to portray the essence of the phenomenon (Moustakas, 1994).

Trustworthiness

Trustworthiness and transparency in qualitative research were key to the integrity of the study and its findings (Connely, 2016). Trustworthiness in a study is the level of confidence in the data collection, analysis, and methods utilized to establish the quality of the study (Polit & Beck, 2014). The researcher can create conditions to establish credibility, transferability, dependability, and confirmability but the reader is the one that ultimately determines the trustworthiness of the study.

Credibility

Credibility is the confidence in the findings of the study (Polit & Beck, 2014). I achieved credibility by incorporating triangulation and member-checking during the data collection and analysis process. Triangulation occurred by various forms of data such as individual interviews,

focus group discussions, and letter-writing being collected and analyzed to corroborate the findings. Triangulation occurred to provide further insight into the phenomenon and understanding of the participants' lived experiences (Creswell & Poth, 2018). Member-checking also took place to see if the data and findings accurately depict the participants' experiences with the phenomenon (Saldaña, 2016).

Transferability

Transferability focuses on the extent that findings are useful to individuals in other contexts (Polit & Beck, 2014). Detailed descriptions of the context, location, and participants studied were included to create conditions for transferability (Connelly, 2016). Being transparent throughout the data collection and analysis process also created favorable conditions for transferability.

Dependability

Dependability encompasses the stability of the data and conditions used throughout the study over an extended amount of time (Polit & Beck, 2014). To ensure dependability, inquiry audit and process logs were used. Process logs were my notes including all the activities and processes that occur throughout the study. An inquiry audit also occurred where a detailed review of the process of the research was conducted by the dissertation committee.

Confirmability

Confirmability is the extent that findings are consistent and could be replicated (Connolly, 2016). The use of triangulation ensured that the findings are consistent across all of the data collection methods. An audit trail was used to retrace the process to arrive at the final findings. The use of an audit trail increases the credibility of the study because it tracks the development of the thought process and understanding (Creswell & Poth, 2018).

Ethical Considerations

All participants were informed of the purpose of the study and that their participation was voluntary (Creswell & Poth, 2018; Moustakas, 1994). Prior to the study beginning, participant consent forms were obtained. An informed consent agreement was signed ensuring confidentiality and stating the responsibilities of the researcher and the participants (Moustakas, 1994). Site permissions were not needed because I was recruiting participants through a region and not a specific school district. Throughout the study, pseudonyms were used for all identifiable information including the participants and districts to preserve confidentiality (Ross, 2012). Participants were asked to use an alias to protect their privacy (Creswell & Poth, 2018; Ross, 2012). The risks involved in this study were minimal, which means they were equal to the risks that participants encounter in everyday life.

All electronic data was stored as password-protected files and physical data was stored in locked filing cabinets. Data will be kept for three years following the completion of the study. At that time, all physical data will be shredded and electronic data will be deleted.

Summary

This transcendental phenomenological qualitative study aimed to discover the essence of novice teachers' sense of preparedness with incorporating technology into instruction. Participants were selected through a questionnaire to ensure they had lived experiences with the phenomenon. Individual interviews, focus group discussions, and letter-writing were conducted. The data from these collection methods were coded and triangulated to create a comprehensive narrative revealing the essence of the phenomenon. Triangulation incorporated key themes from one data source to another to identify the essence of the phenomenon from the participants' lived

experiences. Ethical considerations were taken into account throughout the entirety of the study to ensure participants' privacy and protection.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this study was to understand novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. This chapter includes descriptions of each participant and their experiences incorporating technology into instruction. Next, themes that developed throughout the data collection process are discussed along with outlier data. Chapter Four concludes with a description of the themes and how they address the research questions.

Participants

This study included 11 novice elementary teachers that are currently employed in a South-Central Pennsylvania school district with five or fewer years in the field. The participants were from six different school districts and had been part of five different teacher-education programs. Out of the 11 participants, eight were in their first year of teaching. The participants completed a one-on-one interview, a focus group discussion, and letter-writing.

Amber

Amber is 23 years old and is in her first year of teaching. She graduated with a Bachelor of Science in early childhood Pre K-4. She student taught in kindergarten. Amber started the year at a different school district as a building substitute. She was hired in her current school district as a fourth-grade teacher in September, after the start of the school year. Because of this, she did not participate in the induction program.

Amber's class is one-to-one with Chromebooks meaning that every student has their own district provided Chromebook to use. She has a set of five iPads in her room as well as a document camera that was district provided but she does not use them due to not having

instruction or directive on how and what to utilize them for. The biggest challenge Amber finds in her classroom with technology is connectivity for the Chromebooks and her Smartboard. She also struggles with her students taking care of the devices and using them correctly. Amber uses iReady, Class Dojo, Kahoot, Google Forms, Google Classroom, Generation Genius, and Remind.

Cassandra

Cassandra is 22 years old and is in her first year of teaching. She began teaching halfway through the 2022-2023 school year and is teaching in third grade. Cassandra received her bachelor's degree with an early childhood Pre K-4 and special education K-8 certification. Since she did not begin teaching at the beginning of the school year, she has not completed an induction program but does have a mentor.

Cassandra explained her sense of preparedness with technology when beginning in the field of education as not at all prepared. She often finds herself using trial and error with technology or asking her students to show her the applications from their devices so she can see it from their view. In her classroom, students are one-to-one on iPads. She uses an iPad, laptop, and Smartboard. Cassandra uses PowerPoint, Microsoft Office, Teams, Seesaw, Clever, Amplify, Imagine Literacy, Imagine Math, Book Creator, and Epic.

Danielle

Danielle is 23 years old and is in her first year of teaching. She graduated with a Bachelor of Science in Early Childhood Pre K-4. She student taught in first grade and is currently a third-grade teacher. Danielle believes her sense of preparedness incorporating technology into instruction can be accredited to growing up in a technologically advanced time.

Danielle's students are one-to-one on Chromebooks. She uses a laptop, Smartboard, and document camera for teaching. A challenge Danielle sees when utilizing technology in her classroom is accountability. Ensuring that her students are on the applications they are supposed to be on while she is teaching and not just playing games has been challenging. Danielle uses Imagine Math, Imagine Learning, Reading Eggs, McGraw Hill, Think Central, ClassDojo, Math Playground, and Cool Math.

Heather

Heather is 23 years old and is in her first year of teaching. She graduated with a Bachelor of Science in early childhood Pre K-4. She student-taught in first grade and is currently a second-grade teacher. Heather explained her sense of preparedness with technology when beginning in the field of education as not at all prepared. She does not believe she was trained well enough to know how to incorporate technology into her classroom in different ways.

Heather's students are one-to-one on iPads. She uses the Smartboard, a laptop, and an iPad to screen mirror to her board. A challenge Heather has in her classroom with technology use is the number of ELLs she has in her classroom. Some of her students have never seen an iPad before and she has had to find different apps that meet the needs of those students. Another technological challenge she has encountered is connectivity problems and ensuring students are on appropriate applications and games. She uses Mastery Connect, Google Slides, Google Classroom, Seesaw, Clever, Blooket, Imagine Literacy, Imagine Math, Epic, Raz Kids, 99 Math, Math Town, and Math Bingo.

Julia

Julia is 27 years old and is in her fourth year of teaching. Before getting her current position as a third-grade teacher, she was a long-term substitute in a different school district for

half the school year. She graduated with a bachelor's degree in early childhood Pre-K-4 and special education K-8. She is currently working towards her master's degree in early childhood with a focus in differentiated instruction. COVID-19 occurred during her first full year of teaching, so the second half of the year was taught virtually.

Julia's biggest technological challenge has been getting her students acclimated to Chromebooks because in second grade they use iPads. Another challenge she has had is her Smartboard and using it to its fullest potential. In her classroom, she uses the Smartboard and a laptop. Her students are one-to-one on Chromebooks and have access to a class set of five iPads. Julia uses Remind to contact parents. She also uses Google Classroom, Clever, and all of the applications that the district has selected and added to the Clever accounts.

Kelsey

Kelsey is 23 years old and graduated with a Bachelor of Science in early childhood Pre K-4 certification and a Special Education K-8 certification. She is in her first year of teaching and is in a second-grade classroom. She has previous experience substituting in a Pre-K classroom and student teaching in Kindergarten Autistic Support.

Kelsey described herself as not being "very tech savvy" so she finds herself asking her colleagues for assistance with technology. She believes exposing children to a lot of technology in the world we live in today is important but there should be more technology training for teachers. One of the biggest technological challenges Kelsey is having is with her promethium board. Another challenge is with her students being so young it is challenging for them to be able to navigate their Chromebooks successfully. Kelsey uses Google Classroom for school assignments and Class Dojo for parent communication.

Lauren

Lauren is 22 years old and graduated with a Bachelor of Science degree in early childhood PreK-4 and special education K-8. She student taught in a second-grade classroom. Lauren got hired for a fifth-grade position halfway through the school year this year. She does not currently have a mentor and is not part of an induction program due to not beginning at the start of the school year.

Lauren's students are one-to-one on Chromebooks. She sees one of the biggest challenges utilizing technology in her instruction as the students' devices not being charged. Another challenge is keeping the students safe and on appropriate websites when they are using devices. Lauren uses Google Forms, Google Drive, Prodigy, Imagine Learning, and Kahoot with her students. She also uses Seesaw to communicate with parents and Mastery Connect daily for grading.

Morgan

Morgan is 22 years old and is in her first year of teaching. She graduated with a Bachelor of Science in Early Childhood Pre K-4 certification and a minor in Children and Youth Services. She also got the fifth and sixth-grade add-on to her certification this past summer. She is currently teaching 3rd grade. Her school district has provided her with a mentor and enrolled her in an induction program for this year since she is a first-year teacher.

Morgan thinks technology engages the children but can also be a distraction to them. Her students are one-to-one on Chromebooks. She uses a document camera and laptop for teaching but struggles using the Smartboard. Morgan's greatest difficulties with technology are learning all the programs and applications along with difficulties navigating her smartboard. In her classroom, she uses Clever and Google Classroom, for online reading she uses Epic and Storyline Online, and for review games she uses Blooket, Quizizz, and Kahoot.

Nicole

Nicole is 24 years old and is in her first year of teaching. She graduated with a Bachelor of Science in Early Childhood Pre K-4. She student taught in second grade and is currently a kindergarten teacher.

Nicole's students are one-to-one on Chromebooks. Nicole uses a laptop, a Smartboard, and a document camera. Nicole's perception is that being raised with technology has helped her feel more prepared to incorporate it into her classroom. The main challenge Nicole has with technology in her classroom is how young her students are. She explained that in kindergarten the students do not have number and letter recognition yet so even typing their passcode in is a struggle for them. Nicole uses Seesaw to communicate with parents. She also uses Google applications, ST Math, Zearn, Epic, Raz-Kids, BrainPop Jr., PBS Kids, Starfall, and Blooket.

Stephanie

Stephanie is 26 years old and has been teaching for three years. She graduated with a Bachelor of Science in Early Childhood Pre K-4. She student taught in a third grade classroom and currently teaches fifth-grade. She student taught during the beginning of the COVID-19 pandemic shutdown. After being hired as a fifth-grade teacher, she was emergency certified for her first year and then received an add-on to her certification for up to grade 6.

Stephanie's classroom is one-to-one with Chromebooks. She also has a district-provided set of five iPads for the class to share. She shared it is challenging to utilize the iPads to their fullest extent due to needing administrative approval to add applications. In her classroom, Stephanie uses her laptops and Smartboard. Along with these technology tools, Stephanie uses Google Classroom, Epic, Clever, CommonLit, Storyline Online, iReady, and Scholastic Story

Starters. In fifth grade, Stephanie finds one of the main challenges with technology use is how technologically savvy the students are, so it is hard for her to monitor their technology usage.

Tara

Tara is 25 years old and has been teaching for three years. She graduated with a Bachelor of Science in early childhood PreK-4 and special education K-8. Her first teaching job was as an emotional support teacher for grades K-4. After two years, she switched school districts and became an autistic support teacher for grades K-1.

Her first school district was an Apple Distinguished School so during her time there, she utilized all Apple products including a laptop, iPad, and Apple TV. She tends to veer away from utilizing technology in her classroom due to her teaching population. She creates learning opportunities and activities that engage her learners more than on a device. As a teacher, she uses her laptop for IEPs, progress monitoring, IEP Writer, and Seesaw for parent communication.

Table 1

Teacher Participants

Teacher Participant	Age	Years of Experience	Current Grade Level	Gender
Amber	23	1 year	4th grade	Female
Cassandra	22	1 year	3rd grade	Female
Danielle	23	1 year	3rd grade	Female
Heather	23	1 year	2nd grade	Female
Julia	27	4 years	3rd grade	Female
Kelsey	23	1 year	2nd grade	Female
Lauren	22	1 year	5th grade	Female
Morgan	22	1 year	3rd grade	Female

Nicole	24	1 year	Kindergarten	Female
Stephanie	26	3 years	5th grade	Female
Tara	25	3 years	K-1 Autistic Support	Female

Results

Analysis of the individual interview transcripts, focus group transcripts, and letter-writing provided the results for this study. Individual interviews and focus group discussions were transcribed using Otter.ai. I began analyzing the data by hand-coding. I went through all interview transcriptions, focus group transcriptions, and letter-writing pieces and highlighted all significant statements. I then completed the first-cycle coding where I used in vivo coding. I used focused coding as the second-cycle coding to organize and group the data into the four themes discussed in this section. The themes that emerged from this study were (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4) need for professional development support.

Table 2

Themes

Theme	Subthemes	Contributing Codes
Barriers of Technology Use	Reliability Student Ability & Accountability	Disconnects, not working, freezes, reset, no monitoring, not enough devices, damaging devices, amount of time, age of students, not on task, instruction time lost, lack of experience
Relevant Coursework	Courses Provided Technology Used	Bare minimum of technology, apps and devices don't match, no experience, one technology course, no training, disconnect from coursework to districts, not taught how, lack of meaningful detailed technology instruction

Student Teaching and Practicum		Access to applications and resources, accredit success, comfortable, great experience, a lot of practice, sharing resources
Need for Professional Development Support	Being Hired Late Lack of Adequate Preparation and Trainings	No induction program, no technology professional development, lack of exposure, felt unprepared, don't know how to connect, trial and error, never got trained, figure it out myself

Theme 1- Barriers of Technology Use

Many participants in this study mentioned barriers that impact technology usage in their classrooms. There were many barriers discussed throughout the data collection process including connectivity issues, device complications, and student concerns. However, the three main barriers that were repeatedly mentioned were reliability, student ability, and accountability.

Reliability

The educators in this study explained daily challenges with the reliability of their own devices and technology tools that they use to teach. Heather noted, "When the Wi-Fi is down or the routers aren't working, everything I have planned for that day just goes out the window." Three teachers discussed reliability issues with their Smartboard or Promethean boards. Kelsey explained that her Promethean board disconnects, some cords do not work, and connectivity issues. Overall, just "some days it works and some days it doesn't". Amber recalled, "My smartboard sometimes freezes completely. When that happens, I have to completely shut it off. I have to clear my computer. It's a task to get back to what I was teaching." Morgan added, in the middle of a lesson she will be writing on the smartboard with a marker and it will start drawing on the other side of the screen. She discussed how her kids begin getting distracted and she has to work on figuring out how to restart everything because the eraser does not work.

Student device reliability was also discussed as an issue. Amber explained, “At least twice a day, I have kids telling me that they got disconnected from the Wi-Fi”. Five teachers explained that devices not being charged is a great challenge. Nicole discussed the struggle that she has in her classroom with ensuring devices are charged and ready to use:

> Charging is still a hassle. My room didn’t have a charging station like the other two classes have. Apparently, they are expensive because I asked the school district about getting one, so I had to try and create one. It somewhat works but it still isn’t efficient.

Lauren also discussed the struggle of asking her students to get their devices out to use them for an assignment and they forgot to charge them the night before. While Amber described the challenges she has with devices not being charged is that half of the chargers in her laptop cart do not work.

Student Ability and Accountability

A barrier that was mentioned consistently throughout the data collection process was student ability and accountability. Eight of the participants’ classrooms are one-to-one on Chromebooks. All eight of these participants shared that a major challenge when utilizing technology in their classroom is that they cannot monitor their students while they are on their devices. Stephanie explained that this is most challenging when she is at the small group table working with a group and she cannot see what they are doing. Danielle mentioned, “They have so many opportunities to go on a game quick while I’m not monitoring them. Then they get off if I walk by and get right back on again.” Lauren explained some challenges with not having a way to monitor her student’s technology usage:

> Some kids are able to work independently on their devices, but some cannot. I walk around some students are playing a game and not doing what they’re supposed to do.

> Safety is a concern. It is hard to just make sure that they're not using websites that are not safe for them.

Lauren continued to explain how much of a concern this is because of the age her students are, they do not understand what is safe right now.

Heather's students are one-to-one on iPads and she has access to Apple Classroom to monitor her students but she also explained this as a struggle because not all of her students are connected to her Apple Classroom and she is unsure how to get them all on there. Cassandra also has Apple Classroom to monitor her student's usage on their iPads. She explained, "Even after getting assistance from the IT department, I only have six out of my 27 students connected to Apple Classroom so it is not helpful."

Another difficulty brought up was student ability. Six of the teachers explained that students struggle with using their devices in the classroom due to how young their students are and their inexperience with devices. Kelsey recalled how difficult it is getting her students on their Chromebooks because they do not have letter and number recognition yet. Nicole also noted this as being an issue for her young students:

> They are kindergarteners so when they first came in, I had to teach them everything, even how to turn on the computer. I had to teach them how to use the keyboard and how to use their passcode. In our school, they have a long code that's two letters and 12 numbers and at the beginning of the year the kids don't even know their letters and numbers. So, I had to color code and put stickers to match the colors and numbers which was a whole process.

Nicole continued to explain the difficulties she has using technology with kindergarteners. When she is trying to do small groups, she gets interrupted two or three times to just show them how to exit out of something or use their camera.

Morgan and Julia described similar challenges with having to teach their students a completely new device. Both of their classes had iPads the year before but now have Chromebooks, so those students needed explicit instruction on their new devices which took away from instruction time. Morgan noted the difficulty the students have even trying to capitalize on the Chromebooks since they were used to the iPads. She said, "I had to explicitly teach how to capitalize because they just click shift but they actually have to hold it down to capitalize the letter."

Theme 2- Relevant Coursework

A theme that emerged from the second sub-question identified ways that teacher-education programs are ill-equipping aspiring educators for technology use in their classrooms. Data gathered throughout the data collection process identified areas where teacher-education programs have lacked in technology preparation for their students. These areas are courses provided and technology that is being used.

Courses Provided

Ten of the participants noted throughout their individual interviews that there was only one technology course provided to them throughout their teacher-education program. Cassandra had mentioned during her teacher-education program, "the bare minimum of technology was taught". Another common trend that the participants mentioned was that the one technology course they took did not assist them in learning and diving deep into the technology they would

be using in their classroom. Morgan discussed details of the one technology course that was provided in her teacher-education program:

> The only course I had was problem-solving with computers. We learned how to code and do Adobe photo editing. All of the education majors were required to take that freshman or sophomore year and I remember thinking how is this going to apply to my classroom.

Morgan went on to explain that technology instruction with computers and technology that will be used in the classroom is more the type of technology courses that are needed but there was none of that provided to her. Like Morgan, other participants described details about the one technology course they had. Lauren described her technology preparedness from her teacher-education program:

> I wasn't necessarily prepared because I was in college over COVID. I felt like I didn't learn a lot of technology that's meaningful for in-person teaching. The one class that I did have, we learned how to use Screencastify and Zoom. But those are things that aren't really being used anymore because we are in-person.

Lauren went on to describe the limited technological preparedness she had was due to growing up with technology. Heather added to this idea by noting despite only having one technology class, "My preparedness comes from me being raised in that generation where there is a lot of technology in my life".

Technology Used

Although the participants had access to applications, websites, and devices throughout their teacher-education programs, a theme that repeatedly came up with the participants was the technology did not match what their school district currently uses. Four of the participants explained that in student teaching, their students had iPads but their current students have

Chromebooks. Morgan noted technological differences that she encountered from her student teaching placement to her current school district:

> In student teaching, my mentor gave me access to Seesaw and I got experience communicating with parents through Seesaw. When I came to this district, I found out all parent communication happens through email. Also, in student teaching, I did everything with the student iPads and now my students have Chromebooks.

Julia shared about struggling with some differences between her teacher education program and her current school district as well:

> I learned many new applications and websites in college, but I feel like when I was actually put into the position, I realized a lot of those things don't work or don't mesh well with what the school already uses.

Julia went on to describe that it was a challenge because she was so excited to try the different resources she had learned, but then she could not use them and had to learn a new set of applications and programs that her district uses.

Theme 3- Student Teaching and Practicum

Throughout the individual interviews and focus group discussions, the participants shared the positive impacts of their student teaching placements and practicums. Morgan stated, "Student teaching was a great experience. The school district I was in had a lot of resources and it was very helpful in preparing me." Nicole also shared how student teaching prepared her for technology use in her classroom, "I actually took a lot of the stuff that I used in student teaching into my own classroom because I was comfortable with it and like it." Heather recalled her student teaching placement:

> Without my student teaching mentor, I probably wouldn't know half the things I do now. I honestly accredit a lot of my success right now to my student teaching just because of the amount of schooling I lost because of COVID. So, actually being in the classroom and fully experiencing it and learning from her. I've taken a lot and applied it to my classroom.

Teachers also mentioned their comfort with using certain applications and resources because they had experience with them in their placements. Nicole and Morgan both mentioned that their student teaching mentor gave them access to Seesaw to gain experience uploading resources and posting them for the class. Stephanie recalled her student teaching placement:

> My student teaching was actually over COVID. So, I got a lot of practice using Zoom and Seesaw. My cooperating teacher and I were with the rest of the world trying to navigate what teaching would look like virtually. I got a lot of practice with posting things on Seesaw, Zoom, and even Google Slides and different things like that.

It became evident student teaching provided these teachers with experiences that impacted their preparation for their first teaching placement.

Theme 4- Need for Professional Development Support

Although the participants were from six different school districts all the participants agreed that there is a need for technology professional development support. Among all participants, it was noted that there were no explicit technology professional development opportunities provided to them. Being hired late and lack of preparation and training were among the topics that were repeatedly mentioned.

Being Hired Late

Four of the participants were hired after the start of the school year and they were not a part of the induction program. Cassandra and Lauren came halfway through the school year. Heather was hired after the induction program had already begun and Amber was hired a month into the school year. Each of these participants will be part of the induction program next year. Cassandra describes her experience with preparation when getting hired, "I came in halfway through the school year so I have not had any professional development opportunities that were based around technology or really any professional development at all." She went on to describe the only training that she was required to take was child abuse training. Amber echoed this same feeling of unpreparedness:

> I got hired and signed papers on Monday and then started on Tuesday, so I felt very unprepared. I didn't have very many resources. I didn't have any training. The only thing I was prepared with was a computer and lesson plans.

Amber continued to explain that there still feels like there are things that she is missing and does not know about.

Not only was Lauren not a part of the induction program this school year due to starting late, she was not provided a mentor. She explained, "I will not have a mentor until next school year when I am a full-time teacher. I am always bugging the other teachers to help me when it's not their job to mentor me." Although Lauren is a contracted employee, her official title until next school year is a long-term substitute, so she was not provided a mentor for the duration of this school year.

Lack of Adequate Preparation and Training

Although each of the six school districts provided a mentor and an induction program to new teachers, there were no trainings to do the basic tasks that are needed to be completed

electronically as a teacher. Danielle explained not knowing how to do some of the basic tasks until the first day of school:

> I did not know how to take attendance online until the first day of school when I figured it out myself. I even had to learn on my own how to get to our district applications. The district just assumed I would know how but I would have no possible way of knowing if they wouldn't have told me themselves.

Danielle went on to explain that it would be helpful to provide support on how to complete the basics of what they do every day. Heather agreed and added:

> It was challenging to learn all of the platforms like Skyward for attendance and Mastery Connect for grading. Providing trainings at the beginning of the year would be more beneficial. If I was taught all of that prior to just being thrown into it and expected to know it already.

Heather recalled how challenging it was to have to learn all of these new resources on top of having to help her students with things that she was unfamiliar with.

Another challenge that was discovered was school districts are providing devices for teachers to use without providing them with the proper training or directive on how to effectively utilize them in their classrooms. Four of the teachers mentioned that they have a class set of five iPads in addition to their one-to-one Chromebooks but they do not know how to utilize them to their fullest potential without guidance. Stephanie explained, "I honestly think I underutilize the iPads because I am not even sure why we have them." Julia agreed:

> We don't really use them because I feel like I don't know how to best incorporate the iPads, I don't really know what applications are on there and the students have to log on to their accounts so that's extra confusion and stress.

Julia continued to explain that they are slow and she finds them to be more of an inconvenience. Amber added, “I have no idea what they’re here for and honestly have never heard of other teachers using them.” Another device that Amber noted not knowing how to use is her document camera, “I have not used my document camera yet. I have no idea how to use it. I got no training on it so it just sits in the corner and gets dust on it”.

These educators discussed the need not only for trainings on devices but also on different educational software to feel comfortable incorporating it into their instruction. Cassandra explained, “I am pretty comfortable with regular technology use when it comes to PowerPoint, Google Docs, and Google Slides but when it comes to specific educational software and applications, I tend to not use some of the games and applications because I still don’t know how to use it.” Heather agreed and added, “There’s so much out there that I don’t know how to use. But if I was introduced to it, I feel like I would be good with it and love to incorporate it into my classroom.” Lauren shared this concern by explaining, “I only use what I am comfortable with because I don’t know what is all out there.” Morgan even went on to describe herself as feeling guilty that her class does not get to play the same games as other classrooms. The reason is simply because as a teacher, she has had no experience with games and resources and does not feel comfortable incorporating them into her daily instruction.

Outlier Data and Findings

One participant qualifies as an outliner in this study. Her perspective was different from all of the other participants since she is a Special Education teacher. Tara is a verbal behavior Autistic Support teacher. Due to her position, she was able to provide a differing view since she does not incorporate technology into her daily instruction due to her population.

Tara utilizes Seesaw for parent communication and uses IEP Writer for her progress monitoring but in her day-to-day activities with her students she does not incorporate technology. Tara explained, “I think it is good to have technology incorporated but it’s just something that I tend to steer away from”. Tara explained her concerns that she does not want to just stick her students on iPads and not have them get anything out of their instruction. She also shared that professional development trainings need to be more geared to her population of students. Having the trainings provided be more structured and geared specifically towards special education teachers would be beneficial. This would be a great opportunity to teach different technology and programs that would be effective for her specific students instead of requiring her to go to trainings that are either not appropriate or applicable to her setting.

Research Question Responses

This study was driven by a central research question and three sub-questions. The three sub-questions were formulated to address the central research question: What is novice elementary teachers’ sense of preparedness for incorporating technology into instruction? Sub-question one asked the teachers to describe their experiences utilizing technology within their classroom. Sub-question two sought to understand the experiences teacher-education programs provide that are successful in preparing aspiring teachers to incorporate technology into instruction. Sub-question three sought to understand the professional development opportunities that were provided to these novice educators to support the incorporation of technology into their instruction.

Central Research Question

The central research question for this study was: What is novice elementary teachers’ sense of preparedness for incorporating technology into instruction? All four of the themes

presented in this study addressed the central research question. Out of the 11 participants in this study, not one of the participants stated that they were “completely prepared” to incorporate technology into their instruction when they began their first teaching assignment. When asked how prepared the participants felt to incorporate technology into their instruction when they began in the field of education, seven out of the 11 participants said they were somewhat prepared and four out of the 11 participants said they were not at all prepared. When asked what their current perceived sense of preparedness is incorporating technology into instruction, ten out of the 11 participants said they were somewhat prepared. Not being completely prepared was explained to be from a lack of relevant technology courses in their teacher-education programs and a lack of professional development support provided from their current school districts.

Some participants shared that the slight sense of preparedness they have incorporating technology into instruction stems from their own technological savviness. Seven out of the 11 participants accredited their ability to incorporate technology into their instruction due to growing up in a generation familiar with technology. They believe having had a lot of exposure to technology throughout their daily lives have helped them feel more comfortable incorporating technology into their classrooms.

Sub-Question One

The first sub-question was: How do novice elementary teachers describe their experiences with technology in the field of education? The theme barriers of technology use addressed this sub-question. The participants described their experiences with technology in the field of education as somewhat challenging. The challenges the participants mentioned included device and network reliability. Participants experienced issues with their devices and student

devices disconnecting from the Wi-Fi and freezing. When this happens, instructional time is lost and students get distracted and unfocused.

All participants mentioned struggles when it comes to monitoring student technology usage. The eight participants that have Chromebooks in their classrooms have no application to monitor their students' usage. The three participants that have iPads, have access to Apple Classroom for monitoring, but all of them have reported it not being reliable and an inability to monitor all students from it. This was reported as a struggle to ensure that the students are getting their work completed and a struggle to keep them safe when they are on their devices. Julia noted, her students need a certain amount of time on iReady a day. Without being able to monitor what they are doing, many of her students just move their mouse around on their Chromebook to accumulate the time required and get nothing out of the activities they are to be completing.

Sub-Question Two

Sub-question two was: How do novice teachers describe experiences in teacher-education programs to prepare them for implementing technology in the classroom? Two themes addressed this sub-question, relevant coursework and student teaching and practicums. Ten out of the 11 participants in this study only had one technology course throughout their teacher-education program. Jordan described having numerous courses in her teacher-education program that were centered around technology, but they were not hands-on. Many of the participants described the single technology course they were required to take as ineffective and not beneficial. The courses that were provided and required for education majors included brief overviews of applications and resources but limited actual exposure on how to implement them into daily instruction. Some participants explained that the course was having them use resources that are not at all applicable

to their teaching or instructional practices.

An experience from the teacher-education programs that did help these educators in preparing for technology use in their classroom was their student teaching placements. The participants discussed how this was a time that they learned about technology usage and how to implement it into their lesson plans. This exposure to educational technologies has assisted them in being more comfortable with technology use in their classroom. Nicole explained that she is still using what her student teaching mentor used because “I am comfortable with it and like it”.

Sub-Question Three

Sub-question three was: How do novice teachers describe experiences with professional development opportunities to support incorporating technology into instruction? The final theme, need for professional support addressed this sub-question. The educators that participated in this study expressed not having many, if any, professional development opportunities to support incorporating technology into instruction. The professional development opportunities that were provided were not something they were able to easily apply in their classroom. Morgan discussed her experience with the one technology portion that she had as part of her induction. She explained, “I think there was one time we talked about technology, but it was brushed over quickly and I don’t even remember it being super helpful, to be honest.” Other participants expressed similar thoughts about the lack of professional development support that has been offered to them. The participants shared challenges that they had to overcome because of this including not knowing how to work their Smartboard and document cameras, not knowing how to effectively use student devices, not knowing how to complete basic requirements like taking attendance or lunch count, and not feeling comfortable implementing educational games and resources.

Summary

The purpose of this transcendental phenomenological study is to understand the novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. Eleven novice elementary teachers participated in this study. Data was collected through one-on-one interviews, focus groups, and letter-writing. Four themes emerged from this study and tied together portray the experiences of the novice educators' sense of preparedness incorporating technology into instruction. The themes were (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4) need for professional development support.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this transcendental phenomenological study was to understand novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. In this chapter, I provide a summary of the interpretation of the findings. Next, implications for policy and practice are discussed along with theoretical and methodological implications. The chapter concludes with limitations and delimitations of the study and recommendations for future research.

Discussion

Throughout this study, I explored the lived experiences and sense of preparedness novice elementary teachers in South-Central Pennsylvania school districts have incorporating technology into instruction. Data was collected through individual interviews, focus group discussions, and letter-writing. Four themes emerged from analyzing the data (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4) need for professional development support. Each of these themes addressed the central research question or a sub-question. The findings are supported with empirical and theoretical sources throughout this section.

Interpretation of Findings

The intent of this study was to understand novice elementary educators' sense of preparedness incorporating technology into instruction. Four main themes emerged through analyzing individual interviews, focus group discussions, and letter writing. The themes (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4)

need for professional development support each addressed the central research question and sub-questions.

The first theme that emerged throughout the data analysis process was barriers of technology use. The educators' main barrier to their technology use is not having a way to monitor their students while they are on their devices. Teachers have no ability to know what the students are on when they are on devices besides walking past them. When the students see the teacher coming, they tend to quickly exit the game or website they were on. Wi-Fi and device reliability were also main topics of discussion for being a barrier to technology integration. When the Wi-Fi disconnects or when devices are not charged, there is a disruption to the learning environment.

Since the educators in this study teach elementary school, they were able to provide a perspective on technology use with younger children. Teachers discussed the many challenges of technology integration with young children including not knowing how to use the device or keyboards and not having letter and number recognition which makes logging in difficult. A participant even brought up how challenging it is for her students in kindergarten to use cap lock because their hands are too small to press the shift button and a letter at the same time. The educators expressed that these barriers impact their experiences with technology in the classroom.

Another theme that emerged was relevant coursework within teacher-education programs. Participants described their technology sense of preparedness from their teacher-education program as lacking. Ten out of the 11 participants shared that their teacher-education program only had one technology course. All of the participants explained the course that was provided was not helpful in preparing them for integrating technology into their classroom. Most

participants described their course as providing a brief overview of applications and resources but never gave the aspiring teachers opportunities to have hands-on experience. Participants expressed feelings of confusion and a lack of understanding of how to effectively incorporate the resources into their instruction.

Student teaching and practicum placements were mentioned as being the most helpful and valuable part of their teacher-education program. Participants reported gaining experience with applications and resources in their student teaching placement that they utilize in their own classroom. Educators expressed how comfortable they felt with the resources available in their placements and accredit the success they have using them now back to those experiences. Participants also recalled positive experiences with their student teaching mentor giving them access to applications and websites, so they were able to view them from a teacher's perspective. Experiences in these placements positively impacted the sense of preparedness with technologies that the educators had when entering the field of education.

The need for professional development support was repeatedly a topic of discussion throughout the data collection process. The participants also shared having little to no professional development support provided by their school districts to increase their preparedness incorporating technology into their instruction. Induction and mentoring programs were offered in all six school districts. However, the participants that did not start at the beginning of the school year did not have the opportunity to be a part of some of these programs. Participants expressed frustration with not knowing how to use devices or what educational resources they should use. Not having a directive or guidance from their school district was a common topic discussed. The educators mentioned how they are to use their Smartboard daily to teach but never received training on it and there is no manual to go with it. Some teachers shared

that in their first year of teaching, they did not use the Smartboard at all because they did not know how and felt overwhelmed.

Summary of Thematic Findings

The purpose of this study was to understand novice elementary teachers' sense of preparedness incorporating technology into instruction. Based on the four themes that emerged after analyzing the data, three significant interpretations surfaced. These significant interpretations are administrative support is tied to success, educators help educators, and hands-on experiences deepen understanding.

Administrative Support is Tied to Success. The educators in this study provided examples of numerous challenges that they encounter daily with the incorporation of technology. These challenges can be decreased if the educators were properly equipped and trained. Educators need administrators to provide them with the necessary trainings, resources, and directives to be able to incorporate technology successfully and effectively into their instruction.

Educators Help Educators. Many of the educators in this study mentioned the support and guidance they received, especially at the beginning of their careers from their mentors and colleagues to be extremely beneficial. The participants that did not have a mentor accredited their success to the help they received from their colleagues and grade-level teammates. Educators need to continue helping other educators and create a positive supportive system where they can rely on each other.

Hands-On Experiences Deepen Understanding. Many of the participants explained having a positive student-teaching experience due to the hands-on experience they gained with different technologies and resources. The participants described the technology course in their teacher-education program as not effective because of the lack of hands-on opportunities. The

same was said for professional development opportunities that gave a brief overview of resources or lectures instead of allowing educators to interact with the resources. Educators need to have opportunities to dive deep into the resources they are going to be implementing in their classrooms if they are to be expected to teach students how to use them.

Implications for Policy or Practice

This study provides implications for both policy and practice. These implications were formed from the data and themes presented in this study. Policy implications include a state-wide initiative. Practical implications include monitoring applications, mentoring programs, and technology professional development trainings.

Implications for Policy

State-wide initiatives should require teacher-education programs to utilize the same devices that are found in the public schools that aspiring teachers are going to be working in. Legislation could provide funding to equip these teacher-education programs with devices that are currently being used in school districts. Teacher-education programs and school districts should have a partnership to ensure that the teacher-education programs are effectively training and equipping aspiring educators with the programs and technologies that are currently being used (Ibrahim et al., 2019). If these partnerships were created, aspiring teachers could have opportunities to gain experience and build their self-efficacy with the educational technologies they will be using and be more prepared to incorporate technology into their instruction. Chromebooks, iPads, and Smartboards are utilized heavily throughout all the participants' school districts. These are three devices that teacher-education students should have exposure to and be familiarized with throughout their program. Teacher-education programs should revise their technology courses to incorporate hands-on experiences with these resources. Exposure to these

resources will increase aspiring teachers' self-efficacy and comfort with utilizing them in their own classrooms.

Implications for Practice

School districts must equip their teachers with resources to make utilizing technology a beneficial and safe experience for the learners. Monitoring applications must be accessible to teachers for them to hold their students accountable when they are on their devices. For schools where students are one-to-one on iPads, Apple Classroom should be used and ensured that it is working correctly. For schools where students are one-to-one on Chromebooks, a monitoring application provided to the teachers would be beneficial.

Mentor and induction programs have been noted to be valuable in preparing novice educators for success. Mentoring and induction programs can build confidence and teach best practices (Ingersoll & Strong, 2011). Some of the participants did not get a mentor or were not a part of the induction program due to not starting at the beginning of the year. School districts should provide new teachers with these programs as soon as they get hired and not wait until the next school year to support them.

Technology trainings should be provided to educators. Professional development programs are effective in integrating technology into the educational environment (Bowman et al., 2022; Ross, 2020). Many of the participants described not having many if any, technology professional development trainings. The trainings that were previously provided throughout the school year were brief overviews given as a lecture. Participants mentioned the need for in-depth hands-on experiences to learn and explore technologies. These trainings should include hands-on experience with devices, educational software, and resources that the educators are expected to be using in their classroom.

Theoretical and Empirical Implications

This current study discovered findings that have theoretical and empirical implications. Findings from the study align with previous findings from research and reinforce the need for more focused technology teacher preparation. These findings suggest the need for more technology preparation from both teacher-education programs and school districts.

Theoretical Implications

Albert Bandura's (1977) self-efficacy theory guided this study. This study expands upon the self-efficacy theory by focusing on teacher self-efficacy incorporating technology into instruction. Previous research on educators' self-efficacy stated that it can be strengthened through training and education (Ketelhut et al., 20202; Shabani, 2016). The participants in this study had limited opportunities throughout their teacher-education program and professional development trainings to develop their technology self-efficacy. Most of the participants in this study only had one technology course throughout their teacher-education program. All participants described having limited technology professional development opportunities from their school districts as well. Many participants had increased self-efficacy with technology due to growing up in a technological generation.

Previous research has been extensive in the field of education but limited in how to effectively build teachers' self-efficacy with educational technologies (Menon et al., 2020; Paulus et al., 2020). This study contributed to the research in this area by discovering support opportunities that can be provided to increase educators' technology self-efficacy. These support opportunities include hands-on technology trainings, mentorships, and relevant coursework and field placements. Understanding novice teachers' self-efficacy towards technology can help

teacher-education programs and school districts with ways to support and build their self-efficacy.

Empirical Implications

Empirical significance was found in several areas throughout this study. Field placements throughout teacher-education programs are critical in the preparation of aspiring teachers and can build their confidence (Bawani & Mphahlele, 2021; Livers et al., 2021). Many participants accredited their student teaching mentor for their current comfort level with educational technologies and overall success in the classroom. It would be beneficial to provide preservice teachers with similar technologies that they would be using in their own classrooms (Menon et al., 2020). Participants in this study described positive experiences from their student teaching placements when they had an opportunity to use the same devices and applications that their current school district uses. These experiences helped build their self-efficacy with specific educational technologies. Participants that had exposure to different devices that are not the same ones used in their current school district described the experience as challenging and not beneficial.

This study confirmed the literature on connectivity and reliability issues. Connectivity and reliability are challenges that teachers face when using educational technology in their classrooms (Francom et al., 2021; Galway et al., 2020). Throughout this study, the participants described one of the biggest barriers to technology use in the classroom as issues with the Wi-Fi and teacher and student devices. Teachers reported having challenges with their Smartboard disconnecting and freezing in the middle of their lesson. Student devices not being charged or being disconnected from the Wi-Fi were also reported as barriers that negatively impact learning.

Another connection between the literature and this current study was with mentor and induction programs. Induction and mentoring programs have been successful in supporting novice educators and have impacted their effectiveness (Bawani & Mphahlele, 2021; Van den Boore et al., 2021). Participants described their mentoring experiences as contributing to their success throughout their first year of teaching.

Literature states the importance of school leaders to support the implementation of educational technologies through professional development activities (Paulus et al., 2020). That is an area that this study uncovered as a need. Participants in this study revealed a lack of technology professional development trainings. Many of the participants reported not having any explicit technology professional development.

This study has attempted to fill a gap in research that existed about how to effectively build teachers' self-efficacy with educational technologies. Examining the experiences novice elementary teachers had from both their teacher-education program and current school district provides a new perspective. Stakeholders can use this new perspective and findings to enhance their programs and support opportunities to better equip educators with educational technologies.

Limitations and Delimitations

Limitations are potential weaknesses of the study that are not able to be controlled. There were limitations in this study regarding gender and ethnicity. The sample population of the study was not diverse. All the participants in the study were Caucasian females. Another limitation of the study was that the COVID-19 Pandemic took place during eight of the participants' teacher-education programs which impacted their field placements and coursework. During this time, participants were not able to attend in-person field placements. Some of the participants had

virtual student teaching, while others had their field placements cancelled and were required to record mock lessons.

Delimitations are purposeful decisions that a researcher makes to define the boundaries of the study. One of the delimitations of this study was that all participants had five or fewer years of experience in the teaching field. This was a purposeful decision because the study focused on educators' recent preparedness from the teacher-education program. This study took place in South-Central Pennsylvania, so the results of the study may not be generalizable to educators in other areas. This study was conducted using a transcendental phenomenology research design. This design was selected to portray the essence of the participants' lived experiences. Another delimitation was limiting this study to elementary (K-5th grade) teachers. This was to uncover experiences teachers have when implementing technology with young students. Additionally, the study took place in one region, South-Central Pennsylvania due to the accessibility of large amounts of novice educators.

Recommendations for Future Research

Based on the information that emerged from this study and the limitations and delimitations that were present, there are recommendations for future research. First, this study was conducted using a transcendental phenomenological design. Future research should be conducted using a quantitative research design. A quantitative research design could incorporate a larger number of participants and uncover additional areas of support. Future research should expand the participant criteria to teachers in middle and high school. Research across all grade levels could provide a deeper understanding of the needs and challenges that teachers are feeling with technological integration school wide. Future researchers should also focus on selecting more diverse participants. I used snowball sampling to find my 11 participants. Researchers in

future studies should try a more randomized sampling to gather more diverse participants. Another focus future research should have is on the needs of the students and not just teachers with the implementation of technology. Since this study was conducted in one region, South-Central Pennsylvania, future research should be conducted in other geographical areas. Additionally, the COVID-19 pandemic occurring throughout the participants' teacher-education programs impacted their learning experience. Future research taking place when universities and colleges are not shut down due to a pandemic can uncover differing experiences and results.

Conclusion

The purpose of this transcendental phenomenological study was to understand novice elementary educators' sense of preparedness incorporating technology into instruction in South-Central Pennsylvania. Albert Bandura's (1977) theory of self-efficacy served as the theoretical framework for this study. Eleven novice elementary teachers were asked to participate in individual interviews, focus group discussions, and letter-writing. Data was collected, transcribed, and analyzed. First-cycle coding was conducted using in vivo coding. Focused coding was the second-cycle coding used to organize the data. Four themes emerged: (1) barriers of technology use, (2) relevant coursework, (3) student teaching and practicum, and (4) need for professional development support. From these four themes, three significant interpretations were developed: administrative support is tied to success, educators help educators, and hands-on experiences deepen understanding.

The findings of this study confirmed previous research on how to build teachers' self-efficacy with educational technologies. The findings indicated that novice elementary teachers need more technology exposure and experiences. These added experiences need to be

incorporated into their teacher-education programs and school district professional support opportunities to build their technology self-efficacy.

Future research should be conducted with teacher participants throughout middle and high school. Research across all grade levels could provide a more detailed, in-depth description of the needs and challenges that teachers are feeling with technological integration school wide. Having more research and information can supply stakeholders with the necessary data to create support opportunities that can better equip educators for incorporating technology into instruction.

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Appendix A
IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

April 20, 2023

Amanda Margiewicz
Christine Saba

Re: IRB Exemption - IRB-FY22-23-1260 Novice Elementary Teachers' Sense of Preparedness Incorporating Technology: A Phenomenological Study

Dear Amanda Margiewicz, Christine Saba,

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

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

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

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

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

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

Sincerely,
G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

Appendix B
Social Media Recruitment

ATTENTION FACEBOOK FRIENDS: I am conducting research as part of the requirements for a Doctor of Education degree at Liberty University. The purpose of my research is to better understand novice elementary teachers' sense of preparedness for incorporating technology into their instruction. To participate, you must currently be an elementary teacher in a South-Central Pennsylvania school district who completed a teacher education program at a college or university, have five or fewer years of experience in the field of education, and have at least some experience with incorporating technology into your instruction. Participants, if willing, will be asked to take part in a recorded, virtual and/or in-person interview (60 mins), a recorded, virtual and/or in-person focus group (60 mins), respond to three letter prompts (30 mins), and complete a verification step to discuss the accuracy of the transcripts (15 mins). If you would like to participate and meet the study criteria, please click here to complete a screening survey. A consent document will be e-mailed to you separately if your eligibility is confirmed. The consent document will need to be e-signed and e-mailed back to me prior to the start of the procedures.

Appendix C
Participant Recruitment Letter

Dear potential participant:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to understand the phenomenon of novice educators' sense of preparedness with incorporating technology into instruction, and I am writing to invite eligible participants to join my study.

Participants must currently be elementary teachers in the South-Central Pennsylvania region who completed a teacher education program at a college or university, who have five or fewer years of experience in the field of education and must have at least some experience incorporating technology into their instruction. Participants, if willing, will be asked to participate in a recorded, virtual and/or in-person individual interview (1 hour), a recorded, virtual and/or in-person focus group discussion (1 hour), a letter-writing activity with three prompts (30 minutes), and a member-checking step, during which I will ask you to review my written account of your described experience and provide feedback on the accuracy of my interpretations (15 minutes). Names and other identifying information will be requested as part of this study, but participant identities will not be disclosed.

To participate, please click here to complete the screening survey. You can contact me at [redacted] or [redacted] for more information.

A consent document will be sent to you in a separate email once your eligibility has been confirmed. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me before participating in any of the procedures.

Sincerely,

Amanda Margiewicz
Doctoral Student
[redacted]

Appendix D

Consent Document

Title of the Project: Novice Elementary Teachers' Sense of Preparedness Incorporating Technology: A Phenomenological Study

Principal Investigator: Amanda Margiewicz, Doctoral Candidate, School of Education, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must currently be an elementary teacher in the South-Central Pennsylvania region who completed a teacher education program at a college or university and who has been in the field of education for five or fewer years. You must also have at least some experience with incorporating technology into your instruction. Taking part in this research project is voluntary.

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

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

The purpose of the study is to understand the phenomenon of novice elementary teachers' sense of preparedness incorporating technology into instruction within South-Central Pennsylvania school districts. The understanding learned from this study can be used to assist teacher-education programs and school districts to design coursework and professional development opportunities that increase novice educators' self-efficacy, background knowledge, and skills to effectively incorporate technology into their instruction.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Participate in a virtual and/or in-person one-on-one interview. In the interview, you will be asked 12-15 questions about your background in the field and your sense of preparedness for utilizing technology in instruction. The interview will be video and audio recorded and will last approximately one hour.
2. Participate in a virtual and/or in-person focus group discussion. In the focus group, you will collaborate together to respond to questions regarding the inclusion of educational technologies in the classroom. The focus group will be video and audio recorded and will last approximately one hour.
3. Write a sample letter describing your sense of preparedness with technology integration. You will have two weeks to complete and submit this letter. After completion, you will email the letters to me. The letter-writing will take approximately thirty minutes.
4. Complete a member-checking step, during which I will ask you to review my written account of your described experience and provide feedback on the accuracy of my interpretations. This step should take approximately 15 minutes.

How could you or others benefit from this study?

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

Benefits to society include identifying resources and opportunities for novice educators and aspiring teachers to deepen their sense of preparedness with incorporating technology into instruction. These recommendations can assist teacher-education programs along with school districts to better prepare aspiring teachers when entering the field of education.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be kept confidential through the use of pseudonyms.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews and focus groups will be recorded and transcribed. Recordings will be stored on a password-locked computer for three years and then erased. Only the researcher will have access to these recordings.

Is study participation voluntary?

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

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

If you choose to withdraw from the study, please contact the researcher at the email address or phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

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

The researcher conducting this study is Amanda Margiewicz. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] or [redacted] You may also contact the researcher's faculty sponsor, Dr. Christine Saba, at [redacted]

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

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is

Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515; our phone number is 434-592-5530, and our email is irb@liberty.edu.

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

Your Consent

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

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

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

_____
Printed Subject Name

_____
Signature & Date

Appendix E
Online Participant Screening Survey

1. Are you at least 18 years of age? [Yes/No]

    1a. How old are you? _____

2. Are you currently a teacher in the South-Central Pennsylvania region? [Yes/No]

    2a. What grade levels/content areas have you had experience teaching? _____

3. Did you complete a teacher education course at a college or university? [Yes/No]

    3a. What is your educational degree in? _____

4. Do you have five or fewer years of experience in the field of education? [Yes/No]

    4a. How many years have you been working in the field of education? _____

5. Do you have at least some experience with incorporating technology into your instruction? [Yes/No]

    5a. What was your perceived sense of preparedness with technology when beginning in the field of education? (Not at all prepared, somewhat prepared, or completely prepared)

    5b. What is your current perceived sense of preparedness for incorporating technology into instruction? (Not at all prepared, somewhat prepared, or completely prepared)

    5c. What digital technologies are you currently utilizing in your classroom? _____

6. What is your ethnic background? _____

7. What is your gender? _____

8. Name: _____

9. Email: _____

Appendix F
Individual Interview Questions

Interview Questions	Research Questions
Please describe your educational background.	Icebreaker
Describe your teaching experience thus far (positive and negative).	Icebreaker
Please describe your overall sense of preparedness when you began your first teaching assignment.	CQ
Describe your perceptions regarding your preparedness to incorporate technology into instruction.	SQ1
Describe the challenges you faced when incorporating technology into your instruction.	SQ1
Explain the experiences the teacher-education program provided you with to prepare you for 21st-century teaching.	SQ2
What else would you like to add to our discussion regarding your experiences with preparation from teacher-education programs that we have not discussed?	SQ2
What professional development opportunities have you had that prepared you to incorporate technology into instruction?	SQ3
Describe professional support opportunities that were provided that you found to support your preparedness with educational technology.	SQ3
Explain successful practices you found when implementing technology into your instruction.	SQ1
What else would you like to add to our discussion regarding your experiences with professional support opportunities that we have not discussed?	SQ3

Appendix G
Focus Group Questions

Focus Group Questions	Research Questions
What are your thoughts on the use of technology in schools? Icebreaker	Icebreaker
What is your comfort level using technology? CQ1	CQ
What types of educational technology tools do you use in your classroom? SQ1	SQ1
How do you teach your students to use new technology? SQ1	SQ1
What challenges do you find are common when teachers are using educational technology in the classroom? CQ1, SQ1	CQ, SQ1
How do you feel about your ability to incorporate technology into your instruction? CQ	CQ
Describe the challenges you had when initially incorporating educational technology into your instructional practice. SQ1	SQ1
How have you overcome those challenges? SQ1	SQ1
What experiences from teacher-education programs were most helpful in preparing you for using technology in the classroom? SQ2	SQ2
Describe professional supports that have been helpful in building your sense of preparedness with educational technology. SQ3	SQ3

Appendix H
Letter-Writing Prompt

Write a letter as if writing to the department chair of your teacher-education program. The letter should be 1-2 pages in length. E-mail your letter to me at [redacted] within two weeks.

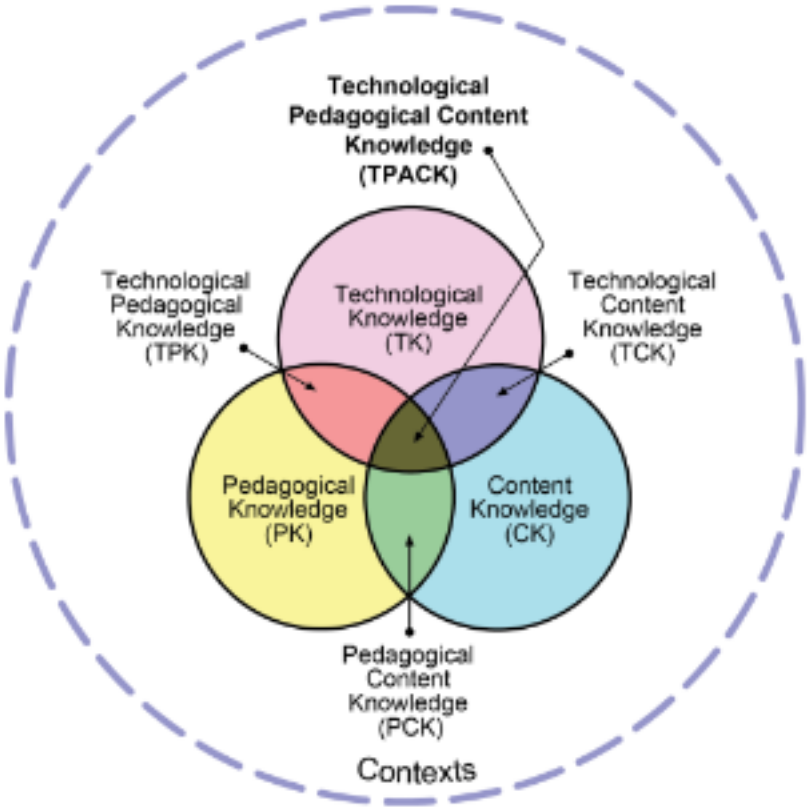
Use the following questions to guide your writing:

- What is your perception of the gaps you had when you began your first teaching placement?
- What was your sense of preparedness with incorporating technology into instruction?
- Tell about a challenge with technology and how your teacher-education program could have helped you.

Appendix I

Using the TPACK Image

Published on May 11, 2011 by mkoehler



The TPACK image (rights free). Read below to learn how to use the image in your own works. Right click to download the high-resolution version of this image.

Using the image in your own works

Others are free to use the image in non-profit and for-profit works under the following conditions.

- The source of the image is attributed as http://tpack.org
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