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Novice Teachers' Perceptions of Liminality in Building Self-Efficacy Through Technology During COVID-19 Closures

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Abstract

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by

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MA, Walden University, 2009

BA, Pacific Lutheran University, 2006

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The COVID-19 pandemic created a social-educational problem in understanding how novice teachers developed self-efficacy through technology amidst distance learning. Exploring the social-educational problem of novice teachers' liminality and construction of self-efficacy during COVID-19-related school closures is an emerging issue that justifies further research because a gap in research and understanding currently exists regarding this topic. The purpose of this qualitative study was to explore how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. To explore this topic, three concepts were used: the theory of self-efficacy through mastery experiences, the theory of liminality, and the theory of innovation. The research questions addressed how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. To collect data for this study, 10 novice teachers in a Pacific Northwestern state were recruited through professional networking to take part in a semi structured interview. Data was analyzed by conducting three rounds of coding and drawing conclusions in relation to the research questions. Results of this study affirmed that novice teachers developed self-efficacy via technology in innovative ways amidst COVID-19 school closures and confirmed that examining the liminal experiences of novice teachers can provide insight into educational improvements for preservice teachers. This study could have a positive impact on social change by better preparing new teachers to use technology innovatively to serve students both in the classroom and via digital instruction. .

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Dedication

I would like to dedicate this dissertation to my daughter, Mayzie Noelle. Mayzie, you are the most amazing person and have an incredible future of limitless possibilities. You can become anything and anyone you desire to be. By completing this degree, I hope to show you that women can do great big things. We can be mothers, professionals, pet parents, students, scholars, dreamers, and doers. I hope you chase after your goals and dreams with relentless passion.

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Chapter 1: Introduction to the Study

In January 2020, Washington State confirmed the first COVID-19 case and the first national casualty by February (Kennedy, 2020). U.S. schools began closing to slow the spread of the virus, impacting over 55.1 million students in K–12 education (Kennedy, 2020). This unprecedented global pandemic led to significant changes for teachers and students by replacing classroom-based learning with digital lessons (Kennedy, 2020). COVID-19-related school closures are so recent that little research exists to address systemic changes and impacts on education in general. Exploring the social-educational problem of novice teachers' liminality and construction of self-efficacy during COVID-19-related school closures is an emerging issue that justifies further research.

Background

The COVID-19 pandemic resulted in massive adjustments, including an overnight pivot to emergency remote instruction, that were a call to act for teachers to adjust their mindset about teaching with technology (Miller et al., 2020). As districts and state legislatures determine how to move forward with COVID-19's new realities, it is essential to explore how novice teachers were able to develop self-efficacy amidst the liminal first-time experiences of distance learning (see Bandura, 2000).

In a qualitative case study, Khalid and Husnin (2019) conducted semistructured, individual interviews with three female teachers with 3 years of experience or less to explore how novice teachers overcame obstacles and what resources they used to solve problems. Their findings revealed obstacles originated from internal and external sources,

such as self-esteem and school culture, while significant support systems were identified as veteran teachers, family members, and technology resources. Their study provided relevant insight into novice teachers' self-efficacy and liminality with technology during school closures because it examines novice teachers' ingenuity and problem solving as well as the need for continued professional development. Their study aligns with the current study because it deals with the problems faced by novice teachers during the development of their careers.

Thomas et al. (2019) surveyed 446 primary education graduates about their networks of support, relationships with colleagues, and self-efficacy, finding that most beginning teachers receive emotional, social, and professional support from an average of six colleagues each week and that having these relationships typically indicated moderate to high levels of self-efficacy. Their study was relevant to the current study focused on understanding how novice teachers developed self-efficacy during COVID-19 closures because new teachers are often held to the same standards as more experienced teachers and often rely on experienced teachers' guidance and support to build self-efficacy, which is a skill-based component in performance evaluations.

Northcote et al. (2019) conducted a mixed-methods longitudinal study to design guidelines for professional development that could bolster the capabilities of novice online teachers. They found professional development curriculum needed to be customizable to the age of the learner and learning environment context and foster student-to-student interactions. Their study helped me understand how novice teachers developed self-efficacy while applying technology innovatively because they shared

guidelines for improving the capacity of novice online teachers while providing guidance for pedagogy and instruction in online learning.

In a qualitative pilot study, Hughes and McCartney (2019) applied grounded theory and conducted focus groups, interviews, and surveys to identify the unique experiences of nine first-year elementary teachers as related to their self-efficacy. Key findings revealed that the realities of teaching were very different from the teachers' expectations of teaching and the teachers struggled with feeling disconnected and in survival mode. Hughes and McCartney's research is relevant because the liminal experiences of these teachers' first year in the profession and their self-assessments of self-efficacy can be compared to those who completed a first year during the COVID-19 school closures. Because of the shared focus on first-year teachers, the information embedded in their study was helpful in establishing the guidelines for the current study.

Arnett-Hartwick and Cannon (2019) examined the challenges encountered by novice and veteran teachers in technology education by conducting a qualitative study with 179 instructors across Illinois. Their findings showed low job satisfaction for novice teachers in response to numerous challenges and discrepancies between job expectations and the realities of digital teaching. This study was relevant to the current study because of the shared focus on the same category of teachers and because it illuminates key issues facing novice teachers who rely on technology to perform their job, including preservice preparation with technological software, knowledge of procedural policies, and the lack of funding for proper 1:1 device use.

Pollock et al. (2019) conducted a qualitative study over two summers with multiple college preparatory courses using focus groups, observations, and interviews with the purpose of learning which in-person teacher roles are still essential when transitioning to online learning. The key findings of their study included that online interaction between students and teachers is necessary for comprehension, that technology-based curriculum is not designed to be teacher-free, and that supporting students' learning and comprehension "fundamentally requires teachers" (Pollock et al., 2019, p. 2). The perspective of blended learning in their study was relevant to my understanding of how novice teachers developed self-efficacy while facilitating online learning during COVID-19 closures because the roles of teachers will continue evolving and new teachers will need to utilize pedagogy to make continuous adjustments to their technological integrations as they begin their careers in a postpandemic setting.

In qualitative, semistructured interviews with 10 Swedish compulsory school educators, Nordlöf et al. (2019) examined the teachers' perceptions and attitudes toward teaching technology. The key findings were that teachers with technology interests and extensive training had higher self-efficacy ratings and that without specific certification, it takes up to 8 years for teachers to develop the same confidence and self-efficacy. This study was relevant to the topic of novice teachers' use of technology to develop self-efficacy during COVID-19 school closures because not all teachers elect to focus on technology; however, the demand for proficiency in this area is growing, leading to negative attitudes and low self-efficacy for novice teachers with little previous training in technology education.

Problem Statement

The COVID-19 pandemic created a social-educational problem in understanding how novice teachers developed self-efficacy through technology amidst distance learning. Existing literature exemplified that the shift to online instruction is a monumental undertaking, even more so for those just starting their career (Campbell, 2020). The physical location change of classrooms, moving to digital learning at home, provided novice teachers with an opportunity to think differently about how using technology innovatively could engage remote learners (Campbell, 2020). State officials command emergency scheduling flexibility and transitioned from traditional to distance learning models (Miller et al., 2020). A gap in research and understanding currently exists regarding novice teachers' establishment of self-efficacy and liminal experience as first-year professionals during COVID-19-related school closures.

Even before the COVID-19 pandemic, it was hypothesized that face-to-face lessons might not be adequate to serve future students in K–12 education (see Ayo et al., 2019). Sparse literature existed on novice teachers' use of digital tools to build self-efficacy while simultaneously facilitating distance learning through the innovative use of technology. Evaluations for most teachers include self-efficacy and integration of technology in classroom learning, yet novice teachers have not formed mastery experiences to have confidence in their teaching (see Ayo et al., 2019). Novice teachers' self-efficacy development is often studied, but how they managed the liminal circumstance of COVID-19 school closures could lead to insight about all teachers' beliefs and perceptions about technology integration because it directly connects to

student learning and potential implications for experienced teachers (see Ayo et al., 2019). Most novice teachers only have one technology course before beginning full-time teaching positions, which is not enough authentic experience to build a sense of efficacy (Ottenbreit-Leftwich et al., 2018). Researchers have suggested the need to conduct further studies to examine novice teachers' self-efficacy as a professional competence (Gudmundsdottir & Hatlevik, 2018). How novice teachers modified their approaches to student engagement, despite a lack of training or experience, could support veteran teachers with low self-efficacy for technology integration (Ottenbreit-Leftwich et al., 2018). Only a few previous studies have looked in-depth at this acute and currently essential problem in education because the issue is not well researched or fully understood (Petersen, 2017). I conducted this qualitative study to promote positive social change by providing support to novice teachers so they may stay in their careers longer, have more confidence because of their bolstered self-efficacy, and have adequate undergraduate preparation for their careers.

Purpose

The purpose of this basic qualitative study was to explore how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. One compelling reason to understand novice teachers' nontraditional first-year experiences was the global COVID-19 pandemic's effect on teaching and education lacked informative literature (see Ackesjo et al., 2019). COVID-19-related school closures impacted traditional experiences for novice teachers, such as receiving in-person support and mentorship. In this study, I investigated how school closures changed

the creation of novice teachers' professional identity and the development of self-efficacy because both are essential rites of passage socially and occupationally (see Petersen, 2017). My intentional focus on examining novice teachers' self-efficacy in this study could reduce hesitations about online or hybrid learning models that use technology (see Joksimovic et al., 2019). By completing this study, I learned more about how available technology was used innovatively to provide effectual learning experiences and purposeful instruction, which may help educators and novice teacher mentors prepare for the new realities of teaching. Deepening the understanding of how novice teachers used technology during COVID-19-related closures was an opportunity to learn from the liminal experiences of this teaching cohort.

Research Questions

Central Research Question: How did novice teachers develop self-efficacy through technology amidst the liminal first-time experiences of distance learning?

RQ1: How do novice teachers describe the factors that helped them to develop self-efficacy in using technology innovatively during the COVID-19 pandemic period?

RQ2: How did novice teachers' liminal first-year experiences amid COVID-19 closures contribute to the development of self-efficacy by using existing technology innovatively?

RQ3: How did novice teachers perceive the development of their self-efficacy through liminality in their transition between in person classrooms and distance learning during the COVID-19 pandemic?

Conceptual Framework

The conceptual framework used in this study was a combination of Bandura's (2000) theory of self-efficacy through mastery experiences, van Gennep's (1910) liminality theory based on social "rites of passage," along with informative components of Rogers's (2003) theory of innovation. Bandura's emphasis on building self-efficacy through mastery experiences was the foundation for my exploration of how novice teachers applied technology innovatively until reaching proficiency or mastery by the end of the 2020 school year. The modern interpretation of Gennep's liminality theory was articulated by Turner (1969), who illustrated the existence in a transitional social state. In this study, I used liminality to refer to novice teachers' first year of teaching amid COVID-19 school closures, and their lived experiences in transition from student-to-teacher during the pandemic. These theories were combined to guide the conceptual exploration of how novice teachers developed self-efficacy by using technology innovatively. This framework was distinctly justifiable because it concerned the unprecedented liminal experience of novice teachers who completed their first year of teaching during COVID-19-related school closures.

Nature of the Study

In this study, I employed a basic qualitative study design. Semistructured interviews were conducted to collect data in the form of participants' detailed explanations of their experiences, which rendered the results relevant to the purpose of the study (see Egbert & Sanden, 2014). I selected voluntary participants who responded to an emailed request from a colleague within my professional network or from me

directly. Ten novice, public school teachers from a state in the Pacific Northwest were the participants, and they answered questions about their experiences as first-year teachers dealing with COVID-19-related school closures and detailing their realities of the liminal phase. Additionally, participants shared how they applied existing technology in different ways or for different purposes, which constituted an innovation as described by Rogers (2003).

Definitions

Innovation: Any concept or idea that is new, whether by creation or by designated use (Rogers, 1983).

Liminality: The term "liminal" comes from the Latin root "limen," meaning "threshold" (Turner, 1969). Originally, the concept of liminality stemmed from van Gennep's (1910) theory for "rites of passage," as being between social and/or psychological states. A contemporary definition for a person's liminal existence is the "in-between who they used to be (a former identity) and who they might become (a future identity)" (Ybema et al., 2011, p. 22).

Novice teacher: A teacher with very few years in the field of teaching (Kim & Roth, 2011; Plecki et al., 2017). For this study, novice teachers were those who were serving their first year as full-time teachers during initial school closures due to the COVID-19 pandemic.

Self-efficacy: One's personal judgement about how they are able to perform a duty given their experience, skills, and belief in themselves, as conceptualized by psychologist Albert Bandura (1977).

Assumptions

During the COVID-19 school closures, teachers faced many different experiences. One assumption that was critical to the meaningfulness of this study was that teachers of all backgrounds and experience levels were challenged to redesign their instructional delivery with very little notice. I assumed that this situation applied to almost all global educators of novice and veteran status because no one was immune to the pandemic's effects. It was also assumed that this pandemic created a personal and professional upheaval that generated an urgent need for additional professional learning to utilize platforms and learning management systems. It was, therefore, assumed that teachers had to adapt to remote instruction with fewer resources than they had at their school site. For example, many school sites had access to technological resources, such as computers, a white board or chalk board, student desks or tables, and internet connectivity. It is important to note that without the central access to a school building, the common resources were eliminated for both teachers and students. This related directly to the experiences of novice teachers during COVID-19-related school closures.

I assumed that all these factors influenced the teacher performance. Moreover, it was assumed that working from home, many teachers were isolated from peers and colleagues, so collaboration and the coaching of novice teachers were not continued in the same manner as before quarantine. Therefore, another assumption was that without collegial support, novice teachers might have had dramatically different experiences during COVID-19-related school closures than if their first year of teaching had occurred 1 year earlier. This assumption directly aligned with the basic qualitative study because

without collegial support, novice teachers may not have developed their professional self-efficacy in the same way.

Scope and Delimitations

The scope of this study was limited to novice teachers who completed their first year of teaching and who used technology during initial COVID-19-related school closures in the spring of 2020 in a single state in the Pacific Northwest. The scope included all full-time, novice teachers who were first-year teachers in spring 2020 when schools transitioned to remote distance learning due to COVID-19. The scope also included all content areas and grade levels of educators who met the criteria.

The scope's delimitations narrowed the field of eligible educators, but it necessarily did so to answer targeted research questions. For instance, it was necessary to exclude teachers who were teaching for 1 or more years prior to the COVID-19 pandemic because I sought to understand the liminal experience of these novice teachers in some of the research questions.

Limitations

To take part in this study, participants had to be public school educators because this variable determined whether a school followed government orders to cease in-person instruction. To align the research questions with results from the participant pool, a delimitation to exclude teachers from other states was necessary (see Kennedy, 2020). Additionally, in connection to the research questions, particularly referencing the possible transferability of the results, keeping the recruitment of study participants from within a single geographical area could guide teacher preparation programs in the state to better

prepare candidates for emergency remote situations or influence the inclusion of more technology courses to equip future teachers.

One limitation of this study was that I only interviewed novice teachers in a single state in the Pacific Northwest. The selection of a single state limited the transferability of the results, but I applied this limitation to provide consistency in the amount of time novice teachers were facilitating remote instruction because the governor of one northwestern state ordered all schools to be closed in March 2020. Another possible limitation was the type of voluntary participants who responded to the call for interviews. Seeking participants statewide via known contacts and social media limited which teachers received the notification of the study as well. Social distancing and physical distance among participants also required using online conferencing, limiting in-person interviews.

Significance

This original qualitative study could contribute to the identified gap in literature by exploring novice teachers' development of self-efficacy by using technology innovatively amid COVID-19-related or other school closures. Findings from this research may further the development of an innovative preservice teaching curriculum, guide the creation of emergency shutdown and distance learning pedagogy, and improve school districts' support of mentorship for first-year teachers. Examining how novice teachers cultivated self-efficacy via innovative technology use during COVID-19 school closures may provide postsecondary institutions with a more comprehensive understanding of how to prepare preservice teachers for their future careers in education.

Summary

In this basic qualitative study, I explored the perceptions of novice teachers who developed their self-efficacy by using technology innovatively amid the initial COVID-19-related school closures. Bandura's (1977) theory of self-efficacy was combined with van Gennep's (1910) theory of liminality, modernized by Turner (1969), to construct the conceptual framework. Informing how these components were influenced by COVID-19 was Rogers's (2003) theory of innovation. Understanding how novice teachers built their self-efficacy through experiences with technology could inform preservice teaching programs and influence further research specific to novice teachers' experiences while in a liminal phase moving from "student" to "teacher." To explore these experiences, I interviewed 10 novice teachers to capture their stories as they related to using technology innovatively during COVID-19 school closures. In Chapter 2, I provide information on the literature search strategy and a detailed review of the literature related to the topic for this study.

Chapter 2: Literature Review

Introduction

The purpose of this qualitative study was to explore how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. The COVID-19 pandemic created a social-educational problem in understanding how novice teachers developed self-efficacy through technology amidst distance learning. In this chapter, I first discuss the literature research strategies I used to find articles and related studies to inform my study. Next, the conceptual framework created to form the basis of this study, including self-efficacy, liminality, and components of innovation, is explained. Following that, I examine literature establishing self-efficacy through mastery experiences as well as liminal experiences as the foundation for this literature review. Then, key components related to the conceptual framework are reviewed, including educational innovation during COVID-19, innovative technology, innovative support, and innovative experiences.

Literature Research Strategy

The keywords I used to discover articles and resources were organized into four groups based on the type of word. One group was *COVID-19*, *coronavirus*, *pandemic*, and *novel coronavirus*. Another word list was *liminality*, *liminal experience*, and *cohort*. The third grouping of terms included *technology*, *innovation*, *self-efficacy*, and *attitude*. The final word grouping used was *novice teachers*, *new teachers*, *preservice teachers*, and *first-year teachers*. I applied these word groups to searches in Thoreau, Google Scholar, and other databases accessible through the Walden University Library. As more

research became available, sifting through types of educational experiences related to COVID-19 required additional filters and word combinations, including *innovation*, *beginning teachers*, and *technology during COVID*. Most of the studies about innovative technology were completed prior to the COVID-19 pandemic. Eventually, I had to broaden my searches to include *preservice teachers* and *faculty* to gather relevant information on how emerging educators were developing self-efficacy during the COVID-19 school closures. The most fruitful research strategy was mining research articles from newly generated publications, such as highlighting references that could be related to the study and searching for them the Walden University Library's holdings. This citation chaining strategy was efficient in obtaining the most current collection of information related to the social-educational problem in understanding how novice teachers developed self-efficacy through technology amidst distance learning.

Conceptual Framework

The conceptual framework for this study was a combination of Bandura's (1977) theory of self-efficacy through mastery experiences, van Gennep's (1910) theory of liminality, and Rogers's (2003) theory of innovation. Bandura (2000) theorized that one builds self-efficacy through mastery experiences, requiring the individual to establish resilience by "overcoming obstacles through perseverant effort" (p. 212). Bandura's (1992) emphasis on building self-efficacy through mastery experiences is the foundation for how novice teachers applied technology innovatively until reaching proficiency or mastery by the end of the 2020 school year. The liminality theory of van Gennep, with a modern interpretation by Turner (1969), was used to explore social existence in a

transitional state; specifically, I used the theory of liminality to examine novice teachers' first year of teaching amid COVID-19 school closures as a unique experience in between positions of "student" and "teacher" while also using technology innovatively to develop their self-efficacy. I applied these combined frameworks to guide the conceptual exploration of how novice teachers developed self-efficacy by using technology innovatively and extended the application of liminality into education in a new way (see Neumann, 2012). This framework was justifiable because it concerned the unprecedented liminal experience of novice teachers who completed their first year of teaching during COVID-19-related school closures.

Part of the conceptual framework also required an understanding of how the first-year teachers adapted to innovation in developing a new sense of role as teacher. Innovation, as Rogers (2003) described, is an "idea, practice, or object that is perceived as new by an individual or other unit of adoption," (p. 12). The "something new," such as an app or tool, can also be something that already existed but is being used for a different purpose, such as Zoom video conferencing becoming a vehicle for classroom instruction. Rogers identified teachers as often being "change agents" because they often serve as a connection between an innovation and a client base (p. 368). Educators became resources for many colleagues, families, and students at the onset of the global COVID-19 pandemic, regardless of their perceived self-efficacy with technology, because teachers were expected to "bridge" the two systems of education (i.e., face-to-face instruction and remote learning) in a matter of days (see Rogers, 2003, p. 368). When schools closed to reduce COVID-19 transmission, the virus became the "need for change" for instructional

innovation (see Rogers, 2003, p. 369). While teachers were used to lead the shift from in-person instruction to online learning, their innovative solutions were diverse and creative. Although innovation was an informative component for the literature review and analysis of this study, it was not an independent third piece of the conceptual framework.

Self-Efficacy Through Mastery Experiences

The most effective way for teachers to build professional self-efficacy is through experience (Bandura, 1977). For novice teachers, their experiences using technology innovatively during COVID-19-related school closures may have changed how they developed self-efficacy. Due to the rapid spread of COVID-19, little research existed connecting Bandura's (1977) theory of self-efficacy through mastery experiences to the liminal experience of first-year teachers amidst COVID-19 school closures in Spring 2020. In addition, Bandura and George et al. (2018) suggested that self-efficacy beliefs are "malleable" at the start of one's career and exploring how the unprecedented global pandemic might have impacted the development of novice teachers' self-efficacy is necessary for providing support and training in years to come. Given the unique circumstances of society's rapid switch to emergency remote learning, novice teachers' ability to obtain mastery experiences was impacted, which jeopardized their development of self-efficacy (see Tsui, 2018). Bandura (2000) confirmed the theory for mastery experiences, adding that self-efficacy can influence additional factors, such as a teacher's willingness to implement new strategies. A teacher's sense of self-efficacy can predict not only the longitude of their career but also their ability to persist through challenges, including coping with teaching through a pandemic (Kostic-Bobanovic, 2020).

Khalid and Husnin (2019) determined that novice teachers built professional identities via experience, similar to Bandura's theory of mastery experiences. While traditional experiences for novice teachers included some type of mentorship or cohort support to brainstorm solutions to common challenges, Khalid and Husnin found that authentic problem-solving experiences were useful in developing professional identities. Cooke and Faez (2018) agreed that external support plays a critical role in developing a professional sense of self-efficacy. The foundation of Bandura's (1977) theory of mastery experiences pointed to repeated opportunities to experience success. However, COVID-19-related school closures removed traditional avenues, such as veteran teachers, families, and the internet, for novice teachers to obtain support and practice through mastery experiences (see Khalid & Husnin, 2019, p. 198). Similarly, as noted by Thomas et al. (2019) and Qadeer et al. (2018), the relationships generated between novice teachers and more experienced colleagues are significant in informing how individuals build self-efficacy. Without sufficient support and mentorship, novice teachers developed anxiety about their capabilities, which generated lower levels of self-efficacy (Cooke & Faez, 2018, p. 4). Collegial networking is imperative for novice teachers, yet amid COVID-19 school closures, these opportunities for mastery experiences and reflection to build self-efficacy were halted (see Thomas et al., 2019). I used the information gained from these studies to narrow the focus of current research regarding novice teachers and their development of self-efficacy amidst COVID-19 school closures.

Although no current research studies were available at the time of this study that specifically detailed how novice teachers in a state in the Pacific Northwest developed

self-efficacy as new professionals, Northcote et al. (2019) found that teachers who were new to teaching online faced many professional challenges. For instance, Northcote et al. emphasized that new online teachers needed customized professional development opportunities rather than recorded webinars. Furthermore, novice teachers needed increased guidance for fostering student interactions and applying effective pedagogy in a digital learning space (Northcote et al., 2019). In addition to the need for targeted support, Nordlöf et al. (2019) also found that because teacher self-efficacy is built from experience, one's attitude toward instruction that uses technology can be defeating, especially without prior experience or mentorship to guide their instructional planning and pedagogy. Their key finding was that teachers who want to avoid technology might prohibit their professional growth and stunt the development of their self-efficacy (Nordlöf et al., 2019). For novice teachers whose first year ended with the COVID-19 pandemic, little research was available that addresses how this group fared while developing professional self-efficacy through technology amidst school closures.

Prior to the school closures caused by COVID-19, 92% of U.S. educators had no prior online teaching experience (Bjork Gundmundsdottir & Hathaway, 2020). While many districts offered online tools, such as Microsoft Teams, Google Classrooms, Moodle, and Edmodo, little training had been mandatory (Nur Hidayat et al., 2020). After the school closures in March 2020 came into effect, researchers discovered that training and support for novice teachers shifted focus from pedagogy to use of various technological tools (Bjork Gundmundsdottir & Hathaway, 2020). While Cocca et al. (2018) determined that the greatest influencing factor on teachers' perceived self-efficacy

was resource support, researchers did not explore the development of self-efficacy with online training exclusively, such as watching a webinar instead of attending an in-person cohort session. Although both Bjork Gundmundsdottir and Hathaway (2020) and Cocca et al. conducted studies at different times, both studies offered insight into how novice teachers may have developed self-efficacy through technology, albeit not a comprehensive perspective.

Sciuchetti and Yssel (2019) also examined self-efficacy through Bandura's framework, but with preservice teachers, finding that not only do mastery experiences influence self-efficacy, but also "vicarious experiences" through mentorship impact novice teachers (p. 21). George et al. (2020) concluded that while it is likely beginning teachers will "recover" from any sentiments of perceived low self-efficacy, there are still many unknown factors that might have contributed to developing it during COVID-19-related school closures (p. 228). In fact, prior to the pandemic, Kul et al. (2019) suggested that additional training and an individualized approach to preservice teacher instruction garnered a positive impact on the development of self-efficacy beliefs (208). Connecting themes across literature that revealed commonalities about liminality for novice teachers and examined their self-efficacy was difficult; however, the lack of resources addressing this emerging concern was further evidence of the need for this type of study.

The unique liminal phase of initial school closures for the end of the 2020 school year challenged novice teachers to find effective methods for engaging students via distance learning. Globally, over 90% of students began learning from home with the beginning of the COVID-19 pandemic (Santi et al., 2020). In their research examining

how teachers related to the uses of mobile technology in the educational process, Santi et al. (2020) found that most of their 125 participants derived perceived self-efficacy in competence with the technology first, followed by their ability to communicate difficult concepts related to technology, and then their ability to use technology to stimulate student interest (p. 161). Additionally, the researchers concluded that multiple factors interrupted teachers perceived self-efficacy, including a lack of familiarity with the mobile technology, unreliable internet connections, and restricted access to support (p. 164). Most participants ended the 2020 school year with lower perceived self-efficacy, and this contrasts with Gamborg et al.'s (2018) findings, where the authors claimed that most novice teachers ended their first year with higher senses of self-efficacy. Even with extensive prior research, the understanding of how novice teachers developed self-efficacy during the liminal experience of COVID-19 school closures remains unanswered, and the long-term effects on these educators are yet to be understood.

Liminal Experiences

Little relevant literature exists that connects the theory of liminality with the social-educational problem in understanding how novice teachers developed self-efficacy through technology amidst distance learning. Researchers have not often applied van Gennep's (1910) theory of liminality to the field of education, though it is often used for psychological studies. Ackesjo et al. (2019) defined the liminal phase of novice teachers as new professionals moving from the social group of "students" to "teachers" (p. 894). Ackesjo et al. also noted how "rare" investigations are that address the "betwixt and between" status of novice educators (p. 885). In fact, Petersen (2017) argued this juncture

of where novice teachers' transition is "insufficiently understood" (p. 6). However, Hughs and McCartney (2019) published a convenience sample pilot study focused on first-year elementary teachers' liminal experiences, which they used to understand what improvements could be made to a local preservice teaching program. The researchers concluded that understanding novice teachers' self-efficacy during their first year of teaching was key to ameliorating preservice teaching preparation because the realities and challenges encountered by new teachers could shape and influence the expectations and curriculum. With education continuing to change in the aftermath of COVID-19, it is possible that many changes have continued to take place in how novice teachers are prepared for teaching. In the liminal phase of moving from student to teacher, participants reported feeling disconnected from resources and emphasized the value of administrative support and collegial mentorships (Hughs & McCartney, 2019). Examining the liminal experience of novice teachers prior to the COVID-19 pandemic helped answer the need for more information regarding first-year teachers' development of self-efficacy through innovative experiences with technology.

Teachers were impacted by COVID-19 school closures through the shared experience of transitioning to distance learning, qualifying as a liminal piece. Roman (2020) explored how specific instructional strategies could support a participant group of 15 preservice teachers during the shift to online instruction. While the initial focus of the study was to apply formative assessment tools, Roman's conclusion was how important it was to equip teachers to support students' emotional needs during times of trauma. Roman found that it was critical to "acknowledge, normalize, and discuss difficult

feelings about trauma" as a means of providing emotional support, concluding that in doing so, student engagement improved with online instruction (p. 474). Also focused on online instruction, Scull et al. (2020) found that even college-level teachers changed their approaches as a result of the pandemic; faculty emphasized the importance of "access, participation, and engagement" above basic content (p. 499). Eisenbach et al. (2020) investigated the teacher preparation course changes during the COVID-19 pandemic and also found that candidates appreciated a safe place to share their unique experiences (p. 2). Though the faculty in Scull et al.'s study were not novice educators, they too, had a unique shared experience transferring college-level courses for teacher preparation, which are traditionally all done face-to-face, into online learning. Eisenbach et al. and Roman offered insights into the experiences of preservice teachers during the COVID-19 pandemic.

Similarly, Thomas et al. (2019) examined the liminal experiences of first-year teachers in Belgium, before the pandemic. The key finding was that the role of collegial support greatly influenced the perceptions of first-year teachers' experiences, including how the size of a new teacher's support network related to job satisfaction and intrinsic motivation (p. 173). The authors also concluded that the "quality not quantity" of support played a role in the development of self-efficacy for new teachers (p. 176). This research also detailed how the average number of collegial supports for new teachers was six mentors, most with over 16 years in education, but did not account for the unplanned transition to online learning where new teachers would no longer have the same access to numerous mentors (Thomas et al., 2019, p. 174). Little information was available on how

the interruption of traditional in-person schooling affected novice teachers' self-efficacy, but the research from Thomas et al. provided useful insight into the complexities of the teaching experience.

Because educational research applying the theory of liminality was so rare, I expanded my literature search to include new academic faculty members and preservice teachers, in addition to beginning teachers. In doing so, I discovered only a few additional studies addressing liminal experiences in an educational setting. First was a study where "concentric storytelling" transcribed the liminal experiences of new academic educators who were "betwixt and between" the roles of "professional" and "professor" (Smart & Loads, 2017, pp. 134-135). Smart and Loads concluded that new academic professionals struggled with their transitional phase, in addition to balancing the workload and learning how to develop their identities as professors. A key finding was that when enduring a liminal experience, participants benefitted from having a safe space to share "joys and successes" as well as a community of peers who could offer a "unique" form of support (Smart & Loads, 2017, p. 141). While the new academic professors are not the same as novice teachers, their liminal experiences and shared stories provided an interesting perspective that could be used to draw parallels while examining how one develops self-efficacy amidst dramatic changes. Secondly, an explorative study by Chang (2018) examined the liminality of preservice teachers who were transitioning from student teaching to becoming professional teachers. Chang asserted that while in the second stage of liminality, or *limen*, as described by Turner (1969), people are "neither one thing nor another," which contributed to novice teachers'

sentiments of inadequacy and ill-preparedness (p. 50). Another conclusion was the need for intentional, systemic support for preservice teachers as they handled the "glory and the gloom" of beginning their careers (Chang, 2018, p. 58). Furthermore, support needed to be ongoing for novice teachers while they simultaneously built the necessary "resilience" from multiple opportunities and experiences to grow as educators (Chang, 2018, p. 58). Chang is one of the few available research studies connecting liminality and education, and as such offers a type of anchor to building a study that explores self-efficacy in a time of liminality for novice teachers.

Arnett-Hartwick and Cannon (2019) conducted a qualitative study that examined the challenges of novice teachers in Technology Education (TE) and had similar findings to Chang (2018). However, 8% of the novice TE teachers claimed they were unprepared to face the challenges of running a classroom (Arnett-Hartwick & Cannon, 2019). Many participants also experienced a "lack of support" from other faculty members, contributing to a sense of isolation (Arnett-Hartwick & Cannon, 2019, p. 8). The researchers found that novice TE teachers were more isolated due to the nature of their positions, which may have further implications for new professional TE teachers during the COVID-19 school closures (Arnett-Hartwick & Cannon, 2019, p. 3). The liminal experiences of Chang's participants and the first year for Arnett-Hartwick and Cannon's respondents concluded well before the COVID-19 pandemic, but parallels were drawn among the struggles for access to resources and mentorship, as well as the development of self-efficacy during a liminal experience.

Researching an intersection of liminality in education and innovation yielded just three pieces of relevant literature. Lorenzi and White (2019) produced an essay detailing liminality's relationship with innovation and creativity. Specifically, Lorenzi and White outlined the possibilities of fostering creativity between teachers and students when classrooms became a liminal space and explained that because of the "in-betweenness" of a liminal space, teachers were more likely to generate innovative lessons, and students were more playful without the common restrictions of conformity (p. 197). Lorenzi and White concluded that teachers were "at the heart of educational transformation," and connected the theory of liminality with instances of innovation (p. 203). When considering a teaching environment as a possible space for innovation, the unique liminal experience of novice teachers could also be interpreted as the epicenter for creativity and problem solving through ingenuity.

Though Lorenzi and White's study was conducted prior to the global pandemic, the concept of creating innovative solutions in a liminal space was found in a narrative research study with 32 Israeli novice teachers (Dvir & Schatz-Oppenheimer, 2020). Dvir and Schatz-Oppenheimer (2020) sought to understand how novice teachers created professional identities during the COVID-19 crisis and what their experiences were as beginning teachers. A key finding was that novice teachers faced three main challenges: technical knowledge, pedagogical knowledge, and understanding the educational system itself (Dvir & Schatz-Oppenheimer, 2020, p. 640). Dvir and Schatz-Oppenheimer also acknowledged that teachers made drastic changes to their practice almost overnight to serve the over 2.3 million Israeli students and developed new ways to reach the 17.5% of

students who did not have access to the internet (p. 640). Dvir and Schatz-Oppenheimer confirmed that additional research was needed to inform teacher preparation programs and universities so that innovative technology integration would become a skill for novice teachers and cited Voss and Kunter's (2020) longitudinal study as grounds for the claim. Novice teachers in Germany were surveyed for a longitudinal study, and one of the findings was that beginning professionals were emotionally exhausted yet optimistic about applying new and innovative instructional techniques in their first classrooms (Voss & Kunter, 2020, p. 292). However, the end of the study revealed that the novice teachers' optimism and innovation were met with friction, and without significant mentorship and other supportive resources, some of the teachers ended their careers (Voss & Kunter, 2020, p. 299). The emotional depletion experienced by the German novice teachers in their experiences of applying innovation may be similar to the potential struggles that novice teachers faced amidst the COVID-19-related school closures.

Literature Review of Key Components

The main components of the literature review anchored the conceptual framework into the search for recent articles and studies that reflected the intersectionality of self-efficacy development through mastery experiences, the liminal experiences of novice teachers, and innovation in education. In addition, several components related to innovation emerged that connect the overarching framework together. First, discussing the educational innovations during COVID-19, then differentiating into innovative technology uses during COVID-19 were the first two components to stand out. In this

section of the literature review, I examine literature on educational innovation during COVID-19, innovative technology during covid-19, innovative support offered to educators during COVID-19, and the various innovative experiences of teachers during COVID-19. The innovative support offered to educators and novice teachers during COVID-19 school building closures also became an independent section, as did the innovative experiences of educators throughout the initial phase of the pandemic. Finally, tying together the concept of self-efficacy through innovation, the final section shows links for how self-efficacy can be developed amidst innovation.

Educational Innovation During COVID-19

The COVID-19 school closures that began in March 2020 generated opportunities for innovation in all fields of work, but educational ingenuity became a prodigy of necessity in the wake of school closures. Dushkevych et al. (2020) labeled current students as "centennials" whose rich exposure to daily technology uniquely prepared them for emergency remote learning where they average 4-6 hours of schoolwork online daily (p. 72). Calinoiu (2019) even called this generation of students "digital natives" and characterized them as being accustomed to the "instantaneity" of technology access (p. 69). However, in accommodating the change from in-person to distance learning, novice teachers faced new challenges and opportunities to integrate technology in meaningful ways that enhanced student learning and engagement. While most teachers navigated these same obstacles, novice teachers lacked the prior experience to draw from to implement technology in innovative ways (Love et al., 2020, p. 115). Furthermore, novice teachers had less pedagogical experience to help them stay focused on

instructional outcomes rather than substituting engagement for amusement with some digital tools (Calinoiu, 2019).

Innovative Technology During COVID-19

While the search term *innovation* was used repeatedly to find relevant literature, it was found more frequently with studies done prior to the COVID-19 pandemic, and very rarely did a study capture the nature of an actual innovation; rather, many pieces claimed innovation was simply in the creation of a new educational technology component. However, the drastic shift to emergency distance learning did spur some authentic educational innovations. One exploratory study on a Belizean innovation during the pandemic included teachers, members of the Belize Ministry of Education, families, and radio station executives (Kirshner, 2020). The purpose of the study was to "examine the innovative response from Belizean educators in using their national radio to reach remote learners," (Kirshner, 2020, p. 90). Research suggested that the educational disruption caused by COVID-19 is greater than that caused during World War II. While providing an online instruction platform established a sense of normalcy during the crisis, teachers found "power in their shared dialogue" while creating radio lessons to be broadcast across the country (Kirshner, 2020, p. 95). The study's key findings included the teachers' increased intentionality in using descriptive language to help radio listeners "see" materials, an improved sense of teacher agency during the crisis, and improved sense of community because neighborhoods were working together with children to build a common vision for student success. This type of innovation serves as a lens for viewing

other innovative ways novice teachers might have applied technology during COVID-19-related school closures.

Similar to how Belizean educators found a way to circumvent obstacles, teachers surveyed in Bushweller's (2020) study used video streaming to deliver instructional that students could access outside of regular school hours. Bushweller concluded that the school closures were the catalyst for teacher innovation, citing examples such as teachers creating YouTube videos to disseminate instructional materials more equitably (Bushweller, 2020, p. 1). The novice teachers in Bushweller's study also noted the discrepancies in access to learning materials and quality instruction. In fact, some educators dedicated their efforts to finding innovative solutions to tech equity because there was a student need for support that was not being met (Bushweller, 2020). In fact, the global pandemic exposed a "digital divide" and preservice teachers and novice teachers alike sought to find innovative solutions for the "widespread, systemic nature" of technological inequities (Hall et al., 2020, p. 437). Dias et al. (2020) noted that students across the world felt the impacts of the digital inequities, and shared teacher observations from Mexico and Puerto Rico where children had no internet, computers for access, nor food or housing (pp. 39-40). Understanding the intricacies of the school closures' impact and learning to support students academically and emotionally may extend this study's applicability in determining recommendations for modifications to teacher preparation programs.

Another example of innovative technology was found in Dubreil's (2020) examination of how COVID-19 became an opportunity to combine language and culture

pedagogy with game design to enable students to think critically about content while contributing meaningful solutions. For this study, teacher participants were asked to develop a linguistically based game to "deploy instruction," (Dubreil, 2020, p. 256). Less experienced teacher participants reported consistent challenges with online correspondence, such as email, videoconferencing, and chat features, which complicated their perspectives on how to combine language and culture pedagogy with game design. As in the aforementioned study by Calinoiu (2019), Dubreil's focus on intentional innovation through videogame instruction had multiple applications for general instruction, yet neither piece of literature could articulate how novice teachers might have used gamification to develop self-efficacy. Ariessanti et al. (2020) studied game-based learning during the pandemic and focused on its innovative ways of "triggering [students'] attention," but did not address how teachers may have used it (p. 435). Conducting research to examine how technology was used innovatively during COVID-19 will help fill the gap in literature that exists.

Innovative Support During COVID-19

Due to the limited availability of literature related to novice teachers' development of self-efficacy amidst COVID-19 school closures by using technology in innovative ways, I extended my search to include examples of innovative educational support. This reach is justifiable because Bandura's (2020) theory of mastery experiences requires multiple opportunities for building self-efficacy, and novice educators across primary, secondary, and even higher education faced challenges within their liminal experiences. A South-African qualitative study by Majanja (2020), examined the

perceived self-efficacy of novice university faculty who were not only new to teaching at the higher academic level, but also new to facilitating e-learning. Majanja found that even as experts in their fields of study, new faculty needed more sufficient resources and support, citing a heutagogical approach as the best fit. The innovative application of the results of this study was how Majanja's findings could foster the development of a more "agile" and technologically savvy workforce of teachers at multiple levels (p. 337). These findings are aligned with previous work from Bazluki and Milman (2019), whose research also attempted to understand technology use and teaching. The new faculty had to build their self-efficacy as e-learning instructors, which would have required teaching the same class multiple times (Bazluki & Milman, 2019). The results of Majanja's study are illuminating for the original qualitative investigation proposed regarding novice teachers' liminal experiences and use of technology in innovative ways.

Enhancing the support available for educators and preservice teachers during COVID-19 closures demanded "deliberate, creatively driven change," at all levels (Ellis et al., 2020, p. 562). A small-scale study by Ellis et al. (2020) concluded that the cessation of traditional education provided new arrangements for at-home continued learning, and also that the pandemic fostered "willed invention" and "creative contribution", (p. 562). Ellis et al. also noted how teacher education programs, and education in general, were usually resistant to large-scale changes. However, McQuirter (2020) countered that concept by reporting participants were less apprehensive than usual when asked to switch delivery methods when COVID-19 began (p. 49). The key reasoning for the faculty's lower anxiety was cited as innovative applications of the

school's learning management system to disperse materials, and using familiar technology, such as Microsoft PowerPoint, to share slides online instead of being used only for live presentations (McQuirter, 2020). Although teacher participants reported feeling isolated, collegial sharing of resources and institutional support was well documented (McQuirter, 2020). As part of the qualitative study, it was imperative to learn about how innovative technology altered teacher education options and opportunities, which was useful for the transferability of my own research study.

Addressing teachers' need for technology support was a quantitative study that surveyed 325 educators via social media between April 3-May 10, 2020 (Trust & Whalen, 2020). According to participant responses, 68 percent had no prior experience with remote teaching at the beginning of the COVID-19 school closures (Trust & Whalen, 2020, p. 191). Researchers concluded that in order to address teachers' lack of digital experience, more professional development and training were needed, as respondents felt "unprepared" to teach in a digital forum (Trust & Whalen, 2020, p. 191). In this study, innovation was discovered in the variety of ways teachers accessed support for themselves and students, as some educators taught themselves through experimentation with different technological platforms, and others sought help from colleagues. In only a matter of weeks, the majority of teacher respondents had revolutionized their teaching practices in order to meet the online demands of emergency remote teaching. Trust and Whalen (2020) noted that what was needed was professional development that was "learner-centered" and flexible for a variety of circumstances, as opposed to the informal, self-directed modules most teachers received (p. 191). This

study offered information that will be useful in understanding the challenges novice teachers faced during their liminal experience amidst COVID-19 school closures and will thus guide my approaches to understanding context during interviews with study participants.

Innovative Experiences During COVID-19

In a study that began prior to COVID-19 closures but finished during the pandemic, researchers sought to understand the perceptions of 66 Scottish educators in regard to the innovative learning spaces (ILS) designed in new construction school buildings (Campbell, 2020, p. 91). The ILS designs included features such as state-of-the-art technology, modified physical space arrangements, and flexible features (Campbell, 2020). The ILS design changed the approach used to design schools so that teachers and students have access to high-quality technology and authentic collaboration. The assumption behind the ILS designs was that "teaching and learning will occur as a result of new spaces," but did not take into account teachers' responses to the use or function of the new technology (Campbell, 2020, pp. 185-186). Also prior to the global pandemic, Powers et al. (2020) had started researching the SPARK program where elementary education had been reimagined to include mindfulness coaching, inquiry into "socially-relevant questions," and even project-based learning (p. 316). Although both studies conducted just prior to the COVID-19 outbreak, teachers shared their eagerness to collaborative and observe each other in the nontraditional spaces, while building their confidence in new surroundings, technology, and innovative spaces. Some teachers interviewed also expressed concern regarding training with how to best utilize the new

learning spaces and wanted more practice and observation. When considering these studies' relevancy to how novice teachers may have developed self-efficacy through technology during a liminal experience, parallels can be drawn that connect the assumption of how learning should naturally occur in a different setting, although meaningful instruction requires teacher competency and appropriate training.

In an attempt to understand how COVID-19 disrupted field experiences for preservice teachers, and what, if any, benefits may have existed for online-only field experiences, Cirillo et al. (2020) examined the impact on teacher candidates (p. 357). Preservice teachers were placed in middle grades classes as inquiry leaders and online tutors, where the candidates got to practice teaching in real and meaningful ways (Cirillo et al., 2020, p. 357). Researchers concluded that the preservice teachers' presence was "beneficial" to all involved stakeholders, as students gained confidence in asking questions and participating in remote learning, while the experience provided opportunities for the candidates to reflect on the pedagogy of inquiry in an online forum (Cirillo et al., 2020, p. 357). In fact, learning to utilize Zoom breakout rooms gave preservice teachers experience with navigating multiple platforms with parallel communication while students had the opportunity to "collaboratively create meaning and presence," (Henriksen et al., 2020, p. 204). Similar to Cirillo's study, Kier and Clark (2020) also implemented an innovative approach to provide field experience to preservice teachers by assigning them as virtual tutors to small groups of elementary. Even before the COVID-19 pandemic, universities and teacher education problems had begun investigating flexible and remote models of learning, such as livestreaming lessons and

self-paced distance learning (Kidd & Murray, 2020, p. 545). The use of preservice teachers to act as inquiry facilitators in Zoom breakout sessions was an innovative use of preprofessionals in a classroom setting, and researchers encouraged further studies to examine the potential benefits of online field experiences.

Developing Self-Efficacy Through Innovation

Efficiency with computer systems is not a prerequisite for being a teacher, and the instant shift to online learning in the days following quarantine orders exposed a weakness in the educational preparation system: experience with online instruction. Part of educational innovation during the COVID-19 school closures involved the adoption of digital learning platforms and the cultivation of technological prowess to provide high quality digital instruction to students across billions of devices (Ayo et al., 2019). Ayo et al. (2019) connected the trepidation of adopting virtual learning systems and the perceived confidence of educators. Ayo et al. also emphasized the need to study the 'human factors" that influenced mobile learning and the quality of the online instruction (p. 125). Novice teachers, thrust into distance learning during school closures, faced complications with "anxiety, self-efficacy," and problem-solving technological issues while teaching live (Ayo et al., 2019, p. 136). With no clear understanding of the path forward in post-COVID-19 education, it may be likely that "classroom-based lessons… may not suffice…" (Ayo et al., 2019, p. 125). This information is relatable to the proposed study because novice teachers faced many uncertainties during COVID-19 and understanding their perspective could he help other preservice teachers and candidate programs.

While most teaching programs only require one semester of technology education, Ottenbreit-Leftwich et al. (2018) found that amount of time is insufficient for building "authentic experiences" and developing self-efficacy as novice teachers (p. 285). Though any relationship between self-efficacy and technology applications has not been well-documented, Ottenbreit-Leftwich et al. claimed mentorship resulted in "high self-efficacy resulted in more and better technology integration," among preservice teachers (p. 292). In another study with preservice teachers, Sullivan et al. (2020) explored the impact of an online simulation experience for preservice teachers during COVID-19 school closures. Sullivan et al. used Teacher Moments to guide preservice teachers in identifying potential outcomes in challenging situations and completed decision-making scenarios with the ability to reflect on impacts on equity (p. 304). The innovation is this study is in the alternative use of an existing technology, the Teacher Moments program, and its unique application to preservice teachers who lost the capacity to be in real classrooms during COVID-19-related school closures. Information from this study will be used to guide understanding of how results from the proposed research study cold influence existing teacher education programs.

In an innovative sample by Stringer Keefe (2020), preservice teachers were mentored using Darling-Hammond's (2020) virtual coaching model. Stringer Keefe noted that mentor coaching of preservice teachers was "an essential element" but due to COVID-19 closures, in-person mentorship could not exist (p. 227). The program held sessions over a 6-week period and candidates examined self-reflection, feedback, and synchronous practices. A key finding was the reflective cycle of the online coaching

model produced improved technological skills and improved self-efficacy of the preservice teachers (Stringer Keefe, 2020, p. 227). Stringer Keefe concluded that teacher education programs must address the need for digital competence in teacher preparation. By embracing this innovative approach to supplementing coaching for preservice teachers, candidates built their digital literacy skills and became better prepared for successful interactions with students (Stringer Keefe, 2020, p. 230). The article from Stringer Keefe provides new information on how virtual coaching may be used in future teaching candidate programs which may influence the way I write up the potential transferability of my study.

Prior to the COVID-19 closures, Pollack et al. (2019) explored which in-person teacher roles were still essential when transitioning to online learning. The key findings of the study included that online interaction between students and teachers is necessary for comprehension, that technology-based curriculum is not designed to be teacher-free, and that supporting students' learning and comprehension "fundamentally requires teachers," (Pollock et al., 2019, p. 2). This study's perspective of blended learning is relevant to understanding how novice teachers developed self-efficacy while facilitating online learning during COVID-19 closures because the roles of teachers will continue evolving, and new teachers will need to utilize pedagogy to make continuous adjustments to their technological integrations as they begin their careers in a post-pandemic setting. This assumption is confirmed by Backfish et al. (2020), and their investigation of teacher self-efficacy with delivering online instruction. Backfish et al. discovered advanced teachers designed lesson plans with higher instructional quality and higher levels of

technology exploitation than novice teachers, which indicated the technology was applied differently with advanced teachers than novice teachers. This information is relevant for understanding how novice teachers may have developed self-efficacy with technology during quarantine.

In Norway, most students had access to 1:1 devices well before the global pandemic (Bjork Gundmundsdottir & Hatlevik, 2018). Regarded as a global leader for innovative approaches to educational improvement and dedication to the enrichment of children's early experiences, technology equipment and teacher training have been consistent areas of focus (Bawaba, 2020). Not only did researchers gather information about novice teachers' self-efficacy in understanding the available technology available, but also, they sought to understand how the technology could be applied to support student learning in their own classrooms (Bjork Gundmundsdottir & Hatlevik, 2018, p. 216). However, even with the technology access and professional development offering, many educators reported a lack of digital competence in domain-specific self-efficacy (Bjork Gundmundsdottir & Hatlevik, 2018, p. 218). While these were about self-efficacy and technology with preservice teachers, innovation was not addressed. Using information from recent studies on COVID-19's influence on education, as well as studies that measure self-efficacy in teachers, were insightful as the plan to conduct research evolved.

Summary and Conclusions

After reviewing over 70 resources, clearly defined gaps were identified in the available literature that addressed the liminal experience of novice teachers and how they

described developing self-efficacy during COVID-19 school closures by using technology in innovative ways. Exploring self-efficacy during the early years of the teaching career was mainly focused on preservice teachers. Still, more research is needed to comprehend the challenges faced by first-year teachers during COVID-19 (Bushweller, 2020; Kier & Clark, 2020; Stringer Keefe, 2020). Especially with the ongoing effects of COVID-19, it is imperative that the educational community explores the liminal experiences of novice teachers across all content areas to gain insight as to how programs may better prepare their candidates for the work of supporting students academically, socially, and even primordially (Dias et al., 2020; Roman, 2020). While numerous studies reviewed the impact of teacher self-efficacy, a limited number of studies were transferrable.

Although the domain of self-efficacy varied by position, experience, and location, the pandemic was a time of learning and growth for many educators around the globe. Most educators were thrown into new and unfamiliar circumstances during the COVID-19-related school closures; novice teachers may have been particularly at risk for missing opportunities for mentorship support and developing self-efficacy through mastery experiences (Bandura, 2000; Cocca et al., 2018; Santi et al., 2020). Very little research detailed the experiences of novice teachers amidst the pandemic school closures, so the need for further investigation was clear. Even though very few studies applied liminality to education, the summative takeaway is that liminal exploration can offer meaningful and relevant insight into the personal experiences of professionals and students (Chang, 2018; Lorenzi & White, 2019). Applying liminality to educational investigations can

explore how conditions influenced individual perspectives. Educators across regions, countries, and situations looked for ways to utilize existing tools and technology to meet students' needs. And if the necessary technology did not exist, they created it. The innovation did not just focus on younger students but also applied to college students, preservice teachers, and even university-level faculty. To deepen understanding of the gap in literature, about how novice teachers used technology in innovative ways to develop self-efficacy, I created research questions and developed a method for conducting interviews with participants.

Chapter 3: Research Method

Introduction

The purpose of this qualitative study was to explore how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. In this chapter, I examine the qualitative research design and rationale for the approach, the role of the researcher, and the methodology I selected. Additionally, I explore the instrumentation and potential participant criteria.

Research Design and Rationale

Research Questions

Central Research Question: How did novice teachers develop self-efficacy through technology amidst the liminal first-time experiences of distance learning?

RQ1: How do novice teachers describe the factors that helped them develop self-efficacy by using technology innovatively during the COVID-19 pandemic?

RQ2: How did novice teachers' liminal first-year experiences amid COVID-19 closures contribute to the development of self-efficacy by using existing technology innovatively?

RQ3: How did novice teachers perceive the development of their self-efficacy through liminality in their transition between in-person classrooms and distance learning during the COVID-19 pandemic?

Central Concepts of the Study

The conceptual framework for this study was a combination of Bandura's (1977) theory of self-efficacy through mastery experiences, van Gennep's (1910) theory of liminality, and Rogers's (2003) concept of innovation.

Research Tradition and Rationale

The tradition for this study was basic qualitative research, rooted in the literature of Merriam and Tisdell (2016), because it is not a narrative or ethnographic study. Applying a basic qualitative framework for this study allowed for flexibility in data gathering and analysis, which was optimal for my experience as a research practitioner. In this study, I examined novice teachers' liminal experiences amid COVID-19-related school closures while also developing an understanding of how they developed self-efficacy through innovative uses of technology. The basic qualitative tradition utilizes interviews and recordings to comprehend a particular phenomenon, which was the unprecedented global COVID-19 pandemic in the case of this study.

The rationale for this tradition as a justifiable research method was that basic qualitative methods are used to examine a phenomenon by seeking to understand something new (see Merriam & Tisdell, 2016). Examining novice teachers' experiences during the COVID-19 pandemic required asking teachers a series of questions and gathering their responses, presenting a unique "collaboration" between the researcher and participant novice teachers (see Channa, 2015, p. 3). As a first-time practitioner, I did not have prior experience conducting a study, so selecting a basic qualitative research method was a more accessible type of inquiry and limited conflicts and limitations (see Channa,

2015, p. 10). Although I had considered applying a narrative inquiry approach, I wanted a more comprehensive collection of perceptions from novice teachers than that study style would allow (see Creswell, 2009). Additionally, I reviewed phenomenology as a possible design for this study because the COVID-19 pandemic was an unusual event with many lived experiences that could illuminate some parts of my research questions (see Patton, 2015). Ethnography was another possible research design to use in this study, where I could potentially observe novice teachers' use of technology since the integration of technology could be witnessed and described in a written product (see Merriam & Tisdell, 2016, p. 29). However, after careful consideration, I chose not to conduct an ethnographic study because I wanted to not only learn about the liminal experiences of novice teachers during the COVID-19 pandemic, but I also wanted to ascertain how these educators used technology in innovative ways to develop their self-efficacy. Furthermore, I considered conducting a case study for my project because I first thought of the pandemic as a "bounded system" with a specific beginning and ending points, but as time pushed forward, this option became invalid (see Merriam & Tisdell, 2016, p. 24). The combination of the utility of the basic qualitative design educational research and the need to gather novice teachers' experiences both add justification to my selection of basic qualitative research for this study.

Role of the Researcher

In conducting the research for this study, I apprised the role of the interviewer, administering the interviews as the "key instrument" for collecting information (see Creswell, 2009, p. 175). I asked semistructured interview questions and recorded the

responses of voluntary participants while maintaining objectivity. I am a practicing educator in a state in the Pacific Northwest where the research took place, so although I occupied the role of interviewer during the semistructured interviews, I was a practitioner by trade (see Connelly & Clandinin, 1990). My role as the researcher involved gathering contextual information about the COVID-19 pandemic phenomenon as it related to this study, handling any potential ethical concerns as indicated by the Walden University Institutional Review Board (IRB), and reporting the steps I took to access participants to ensure transparency and validity (see Creswell, 2009, p. 177).

While I am a full-time educator, I am not a novice teacher, so I was not part of the cohort of participants for the study. I have worked in two large school districts in the Pacific Northwest, and it was possible that I may have known or had previous professional connections to study participants. Furthermore, no question of researcher bias arose because I did not have any familiar knowledge of participants before the interviews. I had not served in an administrative capacity, so it was also unlikely I would have encountered any instances of supervisory relationships.

Methodology

In this section, critical information regarding the processes of gathering participants and data is provided. First, I explain the participant selection logic, then the instrumentation used with participants. Then, the procedures for recruitment, data collection, and the data analysis plan are detailed.

Participant Selection Logic

In choosing study participants, I gathered novice teachers who completed their first year of teaching 2019–2020 during the initial COVID-19 school closures, beginning in March 2020 in a state in the Pacific Northwest. Finding these voluntary participants required me to connect with the professional colleagues and school district liaisons to locate at least eight to 12 candidates who agreed to Zoom videoconference interviews with me. While it is customary to have six to eight participants in qualitative research, I hoped to obtain 12 participants to get a broader perspective from across the state (see Creswell, 2009, p. 181).

For this study, I used purposive sampling that was geographically homogenous because all participants were from the same state within the Pacific Northwest. Novice educators responded via email to a call put out on social media and by professional connections for voluntary participants to engage in semistructured interviews via Zoom videoconferencing because COVID-19 still impacted the ability to hold in-person interviews. My rationale for this choice in sampling strategy was because the focus of the study was to understand the experiences of novice teachers during COVID-19 and that exploration required gathering information from novice teachers who completed their first year of teaching during the initial COVID-19 school closures. Furthermore, as a basic qualitative study, the objective was to learn deeply from the small sample of participants and synthesize the findings to represent the participant pool's diversity (see Patton, 2015). While this type of sampling has been referred to as nonprobability sampling, it is also known as "representative sampling" due to its investigation of

individual characteristics within a set of participants (Patton, 2015, p. 265). Applying purposive sampling within a geographically homogenous participant pool ensured that the interview represented a variety of voices from the same state (see Patton, 2015).

Instrumentation

I collected participant data through semistructured, voluntary interviews with 10 novice teachers in their first year of teaching in 2019–2020. I created the interview questions, and they were directly related to the research questions of this study (see Appendix). Zoom videoconferencing was used to host interviews with the participants because this method allowed for a safe, face-to-face connection. The audio track was saved and transcribed for later analysis. The use of an interview protocol (see Appendix) served as a guide for both the participant and the researcher (see Creswell, 2009, p. 183). I sent the protocol to participants 24 hours before their scheduled interview.

The list of questions provided in the interview protocol was expected to be sufficient for gathering information from participants. By preparing extension questions ahead of time that aligned with the study's original research questions, I anticipated scenarios where eliciting more detailed responses was necessary (see Rubin & Rubin, 2012). To construct the interview protocol, I began by breaking down components of the research question into multiple subquestions for the interview, including asking participants to describe their first year of teaching during COVID-19-related school closures and asking which factors helped them develop self-efficacy.

As part of the beginning of the interview protocol, I discussed the definitions of self-efficacy, innovation, and liminality to provide support for participants while ensuring

that their responses aligned with the purpose of the study. I used the key terms to scaffold a series of questions for participants again. For instance, one of the interview questions asked participants to tell me how they used technology while facilitating distance learning. It built on earlier questions about the liminal experiences of the novice teachers and connected to the innovation component of the study. Finally, I wanted the participants to reflect on their experience transitioning from student to teacher and needing to adapt to new technology and distance learning by asking for their suggestions that should be included in the teacher education curriculum to help others face distance learning situations more confidently in emergency situations. There were three subquestions concerning student-teacher preparation with technology credits (see Appendix). This final component established the connection between the current study and its transferability to other data applications gained from the interviews and research. Asking participants what changes they would suggest for teaching preparation programs regarding emergency remote learning also provided valuable information and context.

Developing the interview protocol had inherent risks and benefits. First, I applied my 15 years of experience as a secondary educator to interview participants while eliciting a breadth and depth of data that could be extrapolated and analyzed. My 15 years of field experience as a teacher and leader gave me an awareness of how my personality, my presence, and my attitude can "[influence] data generation" (see Xu & Storr, 2012, p. 5). The benefit of using my personal experience was that I was aware of this undue influence and worked to minimize it while interviewing participants. I added a layer of protection to the data to remove bias. Furthermore, creating the protocol tool required

scaffolding the questions in a meaningful and purposeful way, which enabled a "more nuanced and complex view" of data (see Xu & Storr, 2012, p. 1). To establish that the interview protocol was sufficient, I verified that the interview transcripts yielded consistent responses that addressed the research questions, which was determined after analyzing the interviews.

Procedures for Recruitment, Participations, and Data Collection

Before beginning to recruit any participants, I waited for approval of my study from Walden University's IRB. After receiving permission to begin the study, I reached out to professional contacts within the state and recruited participants from various school districts via email. Before starting any further communication with potential participants, I shared Walden University IRB's informed consent via email. I also ensured that participants had not met me or worked with me directly before the research study. After the study was complete, each participant was sent a thank you card with a gift card in recognition of their time invested in my study.

While many adults in the Pacific Northwest have access to a vaccine that may protect them against severe cases of COVID-19 infections, it was still safer to collect data virtually. Each participant interview I conducted took place and was recorded via Zoom videoconferencing to follow the guidelines of basic qualitative methodology while maintaining social distancing. Invitations to the Zoom meeting were sent via email to individuals with at least 24 hours' notice and included a copy of the interview protocol for the participant to review. I asked all questions and semistructured, probing questions within the specified interview session. My predetermined probing questions were

included in the interview protocol. The interviews took place in 2021, approximately 1 year after the participants experienced the emergency transition into remote learning. I collected all data as the author of this study. The approximate length of each interview varied, but they all lasted between 30 and 60 minutes. Audio transcription via a Zoom recording feature on a MacBook laptop computer was used to collect the raw data.

I conducted participant recruitment and selection via email. The email request specified the criterion necessary for participation and originated from me and connections within my professional network. Partnering with professionals in my network ensured the participant pool was limited to one state and filtered potential volunteers by only sharing the information with currently certificated educators in the state. The participant selection was also limited to educators currently working in public schools, which was essential because private schools had different regulations to follow during COVID-19-related school closures.

To partner with professionals in my network, I emailed contacts who were district leaders and liaisons and explained my study and its potential relativity for positive change in education. Second, I drafted an email notice that my professional colleagues sent to all potentially interested participants. Third, I followed up with individuals who expressed interest by verifying they were second-year teachers who completed their first year of teaching during COVID-19-related school closures. Finally, the semistructured interviewing of participants began via Zoom, during which I audio recorded and then transcribed the dialogue (see Creswell, 2009, p. 182).

Basic qualitative research with interviewing as the primary source of data collection often defaults to a smaller number of individual participants, such as three to 16 (Robinson, 2014, p. 29). While the larger number of participants is suggested as the maximum for interview-based studies, the 10 participants from one geographical area included in the current study were acceptable because they illuminated the different stories and experiences of novice teachers from across the state (see Robinson, 2014, p. 29). Semistructured interviews are also common practice for novice researchers and yield valuable data for analysis (Creswell & Poth, 2016). The smaller sample size was also justifiable because I made generalities across participants while still maintaining the individuality of each voice as I collected information from them (see Robinson, 2014, p. 29). As I transcribed interviews and processed the data collected, I evaluated for data saturation, or when I saw no new information gained from additional interviews (see Merriam & Tisdell, 2016). Additionally, as I coded the transcriptions, I evaluated for saturation based on the "categories, themes, or findings" from the interviews (see Merriam & Tisdell, 2016, p. 199). Saturation was determined after analysis of the 10 transcripts.

If initial recruitment efforts had not have yielded enough participants to reach saturation, I would have asked my professional contacts across the state to reach out to district liaisons and post information about the study on school districts' social media pages. Through this digital sharing and getting word-of-mouth recommendations, or "snowball sampling," the number of participants should have increased, if necessary (see Naderifar et al., 2017). Had the methods not resulted in a satisfactory number of

participants, I would have asked district liaisons and representatives directly, which may have contributed to an increased number of participants.

After the interview, I read the final note from the Interview Protocol to the participants (see Appendix). This tool reminded participants in writing and via audio about the protocol and final sharing of the analysis at the end of the study. Participants exited the interview by ending the Zoom videoconference call. There was no need for additional interviews with participants. I also sent copies of the analysis and conclusions when I finished the transcripts for member checking.

Data Analysis Plan

For this basic qualitative study, I wanted to understand the perceptions of novice teachers who may have developed self-efficacy via technology during COVID-19 school closures, so my analysis aligned with this objective. The content validity of the protocol and subsequently collected data was subjected to scrutiny and analysis in multiple ways. First, a preliminary analysis was conducted after an interview was transcribed. According to Lincoln and Guba (1985), additional reviews and analyses can be effective for "establishing credibility" in qualitative research (p. 314). After transcribing the initial interviews, I shared a typed copy of the transcript with participants to verify their responses and provided the opportunity to make edits or add clarifications as desired (Thomas, 2017, p. 24). Thomas (2017) cited the process of sharing transcripts for participants to review as a type of validation and "an indicator of the quality of the analysis" due to the high level of transparency on behalf of the researcher (p. 24). Next, the collected data was analyzed and categorized by coding thematically to develop topics

aligned with the conceptual framework. A second sharing of the participant data occurred post analysis (Thomas, 2017). This additional step was voluntary but ensured the data captured a truly accurate depiction of the participant's liminal experiences during their first year of teaching.

As suggested by Saldaña (2016), I completed three rounds of coding by hand. For the first round of coding, I planned to begin with manual in vivo coding for the initial analysis of the interview transcriptions, using specific language and phrases the participants said. The first round of manual in vivo coding was useful for gaining a baseline understanding of novice teachers' first-year experiences, which contributed to Research Question #2. Once I established a preliminary understanding of each participant's experiences through In Vivo coding, I moved on to pattern coding to begin assigning my interpretation of the meaning of specific nouns and phrases, as suggested by Rubin and Rubin (2012).

For the second round of coding, I used pattern coding to zero in on the categories that emerged from the data, as suggested by Saldaña (2016). Pattern coding determined "repetitive, regular, or consistent occurrences" (Saldaña, 2016, p. 5) of data within the transcripts from my interviews. This coding style required that I carefully inspect transcripts and look for patterns and repeated concepts. By transitioning to pattern coding for the second round, I explored the answers to my first and third research questions, where Research Question #1 and Research Question #3 were examined through conceptual categories of the participant responses. In this second coding cycle, it was also

imperative to avoid overgeneralizing the data. Saldaña (2016) suggests allowing for variation and interpretation of data to encourage "rich theory development" (p. 7).

In the third cycle of coding, I refined the analysis by using thematic coding. Thematic coding guided my extrapolation of potential conclusions that can be made about the relationship between novice teachers' development of self-efficacy and their innovative use of technology. Understanding the possible relationship between self-efficacy and technology proved insightful in gaining an appreciation for the unique liminal experiences this cohort of novice teachers shared. Summarizing the themes from each interview and then comparing those to the themes emerging from all interviews strengthened my analysis, as indicated for researchers by Rubin and Rubin. Bernard (2011) also suggested that deducing patterns from data can "explain why those patterns exist" (p. 338), which was illuminating for my basic qualitative study. By finishing the iterative coding cycle with thematic searches, I answered my central research question.

Issues of Trustworthiness

Additional precautions and planning are essential for ensuring the data gathered during the study are trustworthy. Evaluating the credibility, transferability, dependability, confirmability, and reliability is critical because it promotes the scientific use of protocols to maintain accuracy in reporting and synthesizing themes from collected data. As a basic qualitative study, there are multiple options for managing trustworthiness issues, such as using transcript reviews and verifying the application of findings to other educational topics. Multiple strategies were employed during the study to ensure credibility, transferability, dependability, and confirmability.

Credibility

To establish credibility for my basic qualitative study, I employed strategies and methods that have been widely accepted. One way to bolster credibility was to validate the information gathered during the interview process by conducting transcript reviews (Patton, 2015, p. 675). Asking for analysis from my doctoral committee improved credibility and ensured that my findings or initial discoveries were interpreted correctly by the participants I interviewed (Merriam & Tisdell, 2016, p. 246). Another way I intended to attain credibility for the information and analysis of the study was to elicit peer review and examination of the transcript-to-findings process by asking my doctoral committee to examine my work. I made every effort to be transparent and reflective of my personal role in the study by acknowledging any biases, assumptions, or potential relationships as necessary. Using these steps to support credibility and regular evaluation by my Walden doctoral committee authenticated my data.

Transferability

Although it can be challenging to certify absolute transferability with a qualitative study because of its inherent interpretive nature, I made every effort to include elements of transferability in my basic qualitative study. Merriam and Tisdell (2016) indicated that making a direct connection to the transferability in the interview questions promotes reliability and validity while increasing the study's rigor. Furthermore, potential transferability is addressed during the final summation in Chapter 5 of this study.

Dependability

In qualitative research, dependability validates the procedures used in the study to replicate it with a different group of participants (Patton, 2015). The dependability of my study was achieved in a variety of ways. First, using an audit trail strengthened the accuracy of the results and supplemented additional context, as suggested by Merriam and Tisdell (2016). Second, continuing to be reflective and cognizant of my biases and personal influence during the data collection process ameliorated the dependability of my study. In addition, to interview protocol documentation, including written notes and memos, I included the email invitation I drafted to recruit participants as an added measure of dependability and other email templates used during the recruitment process. Adhering to transparent procedures also ensured this research study met high-quality research criteria (Patton, 2015, p. 679). These strategies were also utilized to enhance the overall trustworthiness of the study.

Confirmability

Qualitative studies focus on understanding people and how they are living through a phenomenon or are part of an ongoing event (Merriam & Tisdell, 2016, p. 238). Considering conformability for this study, I first thought of Lincoln and Guba's (1985) emphasis on the role of a researcher since the entire structure, design, data collection, and report of findings sits squarely on my shoulders. Addressing the multiple ways I paid "careful attention to the study's conceptualization" (Merriam & Tisdell, 2016, p. 238) as well as the variety of strategies I employed to maintain a scientific protocol, enhanced the confirmability. Ratcliffe (1983) reinforced this concept, stating,

"data do not speak for themselves; there is always an interpreter" (p. 149), signifying that even with acknowledgment of possible biases, the researcher impacts the data and phenomenon simply by studying it. To provide as much transparent information as possible for conformability, I provided clear reasoning for my study's selection and specific methods, such as my use of interviews and semistructured interviews. Additionally, it was important for me to provide detailed descriptions of the process I used to generate and interpret coding categories and themes, how I chose to present the findings, and how I have taken additional steps to seek out potential biases and errors.

Ethical Procedures

In this section on ethical procedures, I explain the agreements I used from Walden's IRB, which include informed consent of participants, with approval # 08-13-21-0069335. Next, I discuss the treatment of participants and how my plans align with ethical guidelines. Finally, I explain the plan for the treatment of data and the safeguards I employed.

Agreements

Following strict protocols established by all federal policies to protect the ethical assurances of the study is paramount for equitable and ethical significance. Before beginning any data collection, it was critical to receive the approval of Walden's IRB because their rigorous scrutiny will adhere to or be more strenuous than federal regulations regarding ethical considerations for the study. After obtaining the approval from IRB, I began recruiting by using an email letter requesting participants through my professional networks within the state. Next, I followed up with individuals who qualified

for the interviews with the Interview Protocol (see Appendix), which stated the voluntary and confidential nature of the study. This documentation was included in the informed consent required by Walden's IRB.

Treatment of Participants

As a veteran teacher, I have become cognizant of my influence on younger staff and students. My usually outgoing personality and large smile have significant impacts, as well, and make me seem friendly and approachable. During this study, I did not anticipate possible ethical conflicts, particularly with knowing the participants I interviewed. Casting the participant recruitment invitation across the state ensured there was no additional bias or coercion for participants, and I did not make contact until after receiving IRB approval. Additionally, I reminded participants that they were volunteers and could have chosen to end their session with me at any time, or they may have chosen not to remain part of the study. Before starting the interview, this information was read to them but was also shared in advance of the interview itself.

Treatment of Data

To protect the confidentiality and keep the trustworthiness intact of being a manually coded study, I collected and transcribed the interviews by hand. This method took longer, but I was able to control the documentation and ensure the security of the data. As is a standard expectation, I will keep the transcriptions and other identifying data from the study in a safe, password-protected digital space in my personal iCloud storage (Saldaña, 2016). After the requisite time of 5 years, I will safely and thoroughly destroy the records by deleting and erasing the deleted files completely. In addition to the extra

effort of analysis and a peer review, the safeguards fortified the ethical considerations of my study.

Summary

In this chapter, I illuminated how I conducted my basic qualitative study by explaining the research design, rationale, and methodology. I provided detailed descriptions of the conceptual framework and its alignment to this qualitative study within those sections. In discussing the methodology, I reviewed how I sought participation from novice teachers in a state in the Pacific Northwest and how I avoided bias. Finally, I shared my data analysis plan, including three cycles of coding. Finally, I demonstrated my awareness of the issues of trustworthiness and shared the steps I took to reduce threats to validity and ethics. Following this chapter, I began the data codification process. Furthermore, I discuss the methods I used to manage and interpret the data collected from interviews.

Chapter 4: Results

Introduction

The purpose of this basic qualitative study was to explore how novice teachers developed self-efficacy through innovative uses of technology amidst the liminal first-time experiences of distance learning. The following research questions guided this qualitative study:

Central Research Question: How did novice teachers develop self-efficacy through technology amidst the liminal first-time experiences of distance learning?

RQ1: How do novice teachers describe the factors that helped them to develop self-efficacy by using technology innovatively during the COVID-19 pandemic period?

RQ2: How did novice teachers' liminal first-year experiences amid COVID-19 closures contribute to the development of self-efficacy by using existing technology innovatively?

RQ3: How did novice teachers perceive the development of their self-efficacy through liminality in their transition between in-person classrooms and distance learning during the COVID-19 pandemic?

In this chapter, I provide a detailed account of the setting, demographics, data collection process, and the analysis completed in this basic qualitative study. Evidence of the trustworthiness of this study is addressed by elaborating on the credibility, transferability, dependability, and confirmability of the results and procedures.

Setting

I conducted the interviews to collect data for this study in August and September 2021. Interviews took place via Zoom to minimize the risk of COVID-19 transfer or infection. When the interviews were conducted, facial masks were a mandate in the state, and there was growing concern over the continued spread of the COVID-19 virus and its variants. Participants chose the time for their interview at their convenience to accommodate back-to-school planning and family responsibilities. Interview times varied from 9:00 a.m. to 5:00 p.m. All participants were teachers beginning their third year of teaching in four school districts within the same state. While each school district had different start days and professional development requirements, all participants were preparing to return to their classrooms for another school year. Some participants were also managing their children during the online interview. There was also growing local concern about the COVID-19 Delta variant at the time of the interviews, which could have been a contributing factor to increased stress or anxiety for the participants in addition to ordinary back-to-school preparations.

Demographics

All participants were from the western side of the same state and were employed as full-time teachers in public schools during the initial COVID-19 school closures in 2020. The 10 participants' ages varied from 24–50, of which six were female, three were male, and one was nonbinary (see Table 1). The participants worked in four different school districts across two counties and attended seven different universities to obtain their teaching credentials.

Table 1

Participant Age, Gender, and Teaching Experience

Participant	Age	Gender	Teaching Experience
1	25	Female	Elementary music
2	28	Female	Middle-level special education
3	36	Male	Middle-level English
4	25	Non-binary	Middle-level art
5	24	Female	Secondary science
6	29	Male	Secondary music
7	50	Female	Secondary English
8	25	Female	Elementary general education
9	27	Male	Middle-level science
10	38	Female	Elementary general education

Note. This table does not include school district information out of regard for participants' rights to maintain anonymity.

Data Collection

I conducted a total of 10 interviews. All 10 participants were asked the same questions in the same order as presented in the interview protocol (see Appendix). The Zoom interviews lasted in duration from 25 minutes to 47 minutes. The differences in times for each interview were because some participants gave thorough, detailed responses about their experiences, while others were more concise and straightforward. The recordings for each interview were made automatically through the Zoom platform. I

did not encounter any unusual circumstances during the interview process or were any sessions interrupted.

I first contacted participants via email with a recruitment letter. If the person responded with interest, I replied with the Walden University IRB informed consent notice. Once potential participants responded with "I consent," I shared the interview protocol containing the questions and a Zoom link for the interview. The day before the interview, the Zoom link and interview protocol were sent to the participant as a reminder of the scheduled appointment. I used an Apple MacBook computer to conduct the Zoom meetings. On a second connected monitor, I kept the interview protocol up onscreen for me to read to the participant, and they also had their copy sent via email. Additionally, a feature in the Zoom platform recorded the audio of each interview, which I discussed with each participant, and saved after each interview was completed. Using these collection strategies and having a clear plan in Chapter 3 helped me make a smooth transition from collecting to analyzing the data.

Data Analysis

Coding Round 1: In Vivo

In the first round of coding, I worked to understand the liminal experiences of my participants. In vivo coding was used by highlighting phrases in the interview transcripts that were actions or phrases that described the liminal experience. The themes generated for RQ1, shown in Figure 1, indicated that participants compared the initial school closures in the spring of 2020 to swimming in the dark, chaotic, bananas, and a mess. The in vivo coding also revealed how multiple participants were going through different life

transitions, such as moving out of a parent's house while teaching during the initial school closures of Spring 2020. The themes for RQ2, shown in Figure 2, were a willingness to try new technology and previous experience and exposure to technology, indicating what novice teachers described that influenced their use of technology in innovative ways. For RQ3, shown in Figure 3, the themes generated by participants were prior experiences, supporting others, liminal experiences as a first-year teacher, and open to new experiences with technology. These concepts were detailed by participants' experiences, such as helping veteran teachers with technology applications and experimenting with new technology tools. In addition to highlighting text segments on the transcripts, I also generated a document that outlined only the in vivo codes selected for three sections of the interview protocol (see Appendix). Reviewing the in vivo codes as lists made it easier to begin the second round of coding.

Figure 1

Research Question #1 With Themes From In Vivo Coding

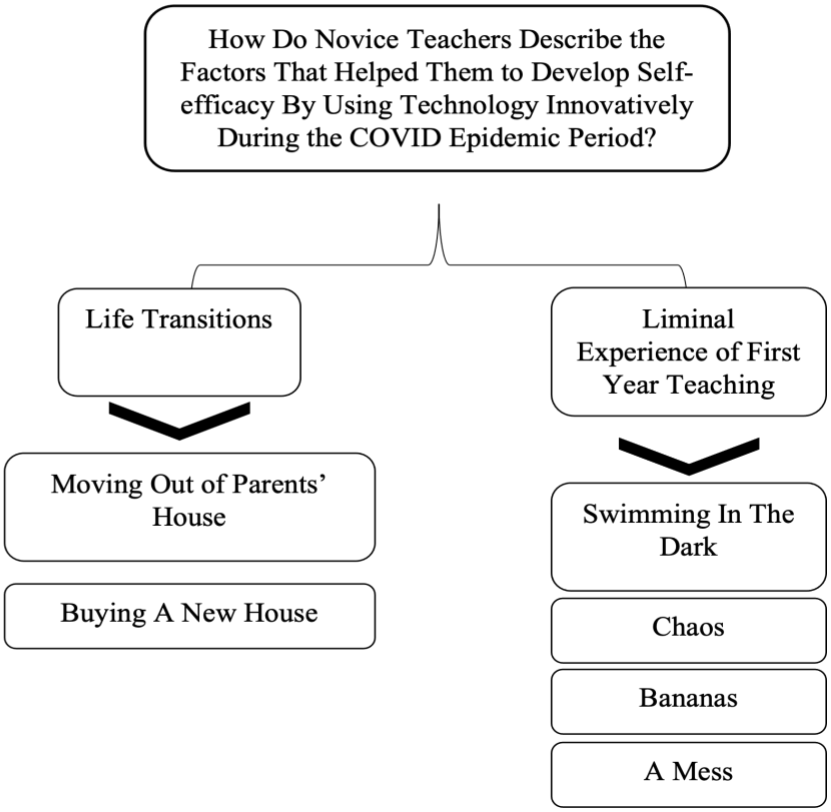


Figure 2

Research Question #2 With Themes From In Vivo Coding

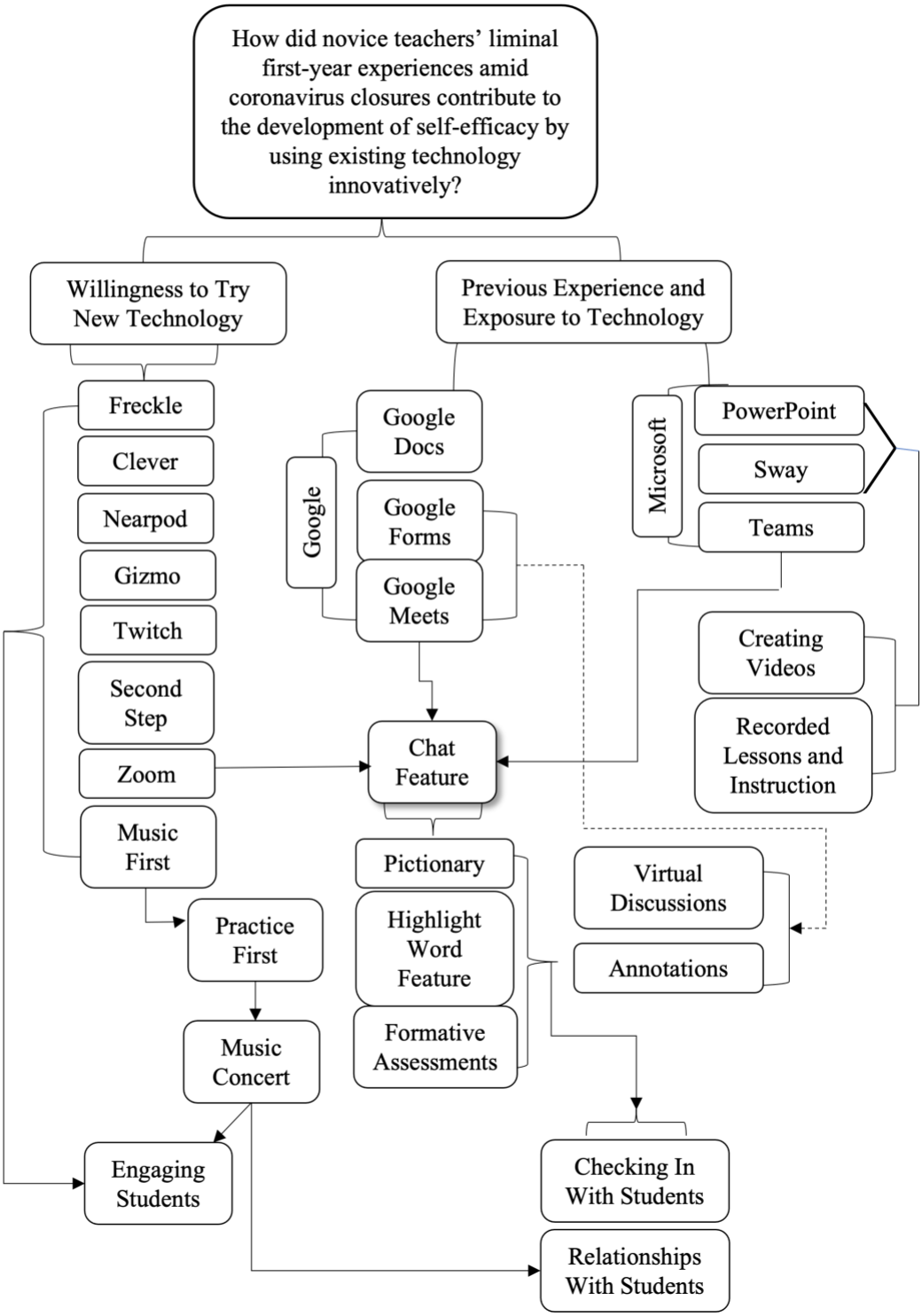
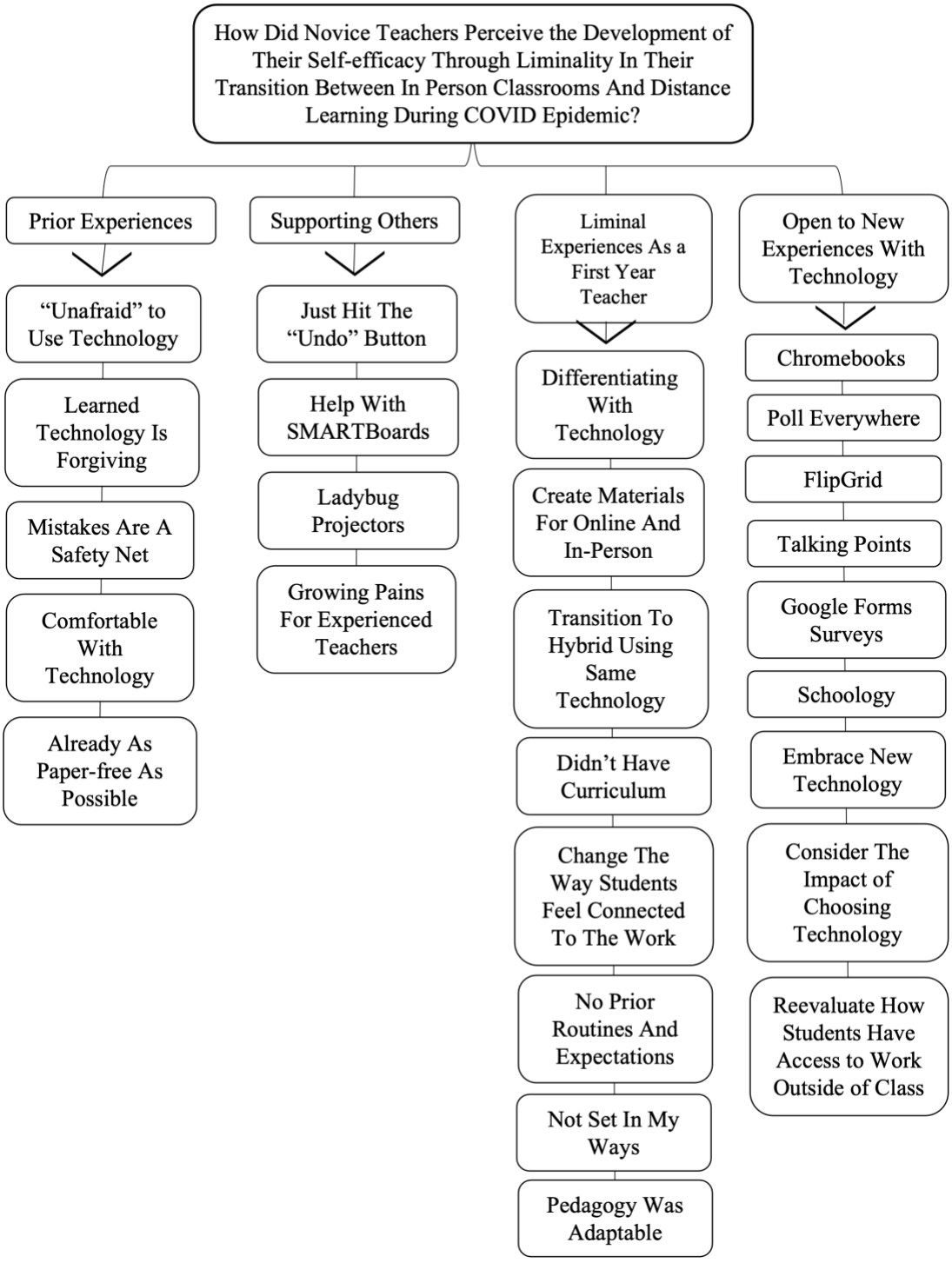


Figure 3

Research Question #3 With Themes From In Vivo Coding



Coding Round 2: Pattern

For the second round of coding, I went back to the transcripts to conduct pattern coding. To complete this round, I used a pink pen to write in the margins of the original transcripts. After reviewing the transcripts, the categories that became more pronounced included navigating change and silver lining, as each participant outlined their successes during COVID-19 school closures. The second round of coding, shown in Table 2, also yielded specific technology names that participants accessed during remote instruction. The coding revealed two systems used among the 10 participants: Google Suite and Microsoft Office. In addition, those who used Google also included the learning management system, Canvas, in their descriptions of accessible technology.

Table 2

Pattern Codes by Participant

Participant	Section B: Liminal Experience	Section C: Innovative Technology	Section D: Perspectives on Teacher Preparation
1	• Shock of shifting to online learning, navigating change, success with modeling, challenge of communication, silver lining, surprising relationships and bonding, professional development, new routines	• Innovative access for families, emails and videos to stay current, potential for reuse, trying new things	• No tech, need changes
2	• Navigating change, success in community building, setting own expectations, connection with mentor teacher, digital experiences, autonomy, and choices	• Canvas, Zoom, building community, Google Forms, build confidence, consistency	• Indirect platform access, tech fluency
3	• A mess, vague expectations, unclear, attendance, pivot from cooperative learning to teacher-focused, better engagement, student engagement, prior experience lens, mental attitude	• Google, student Chromebooks, YouTube, multiple ways to access material, chat in Google meets, removing barriers	• Irrelevant tech applications, student engagement deliverables
4	• Student changes, a COVID-19 silver lining for LGBTQ+, creating positive experiences, Microsoft and roommate, improving visual communication	• Microsoft Teams, silver lining to sudden change, making meaningful connections, formative feedback, being new was helpful	• No classes, technological communication
5	• Asynch work, learning, student success built efficacy, science team, independency	• Teams, Google, prior experience with Skype, office hours, highlight tool, Pictionary online, connecting via Teams, reflecting to improve intentionality	• Nightmare course, concrete applications
6	• Big shift, handle on tech, reflect to improve, partner and recovery from burnout	• Music first, diving into new tech, focus on student responses, online white board and a digital concert, tools to improve, flexible and a positive pivot	• Integrated, how to leverage different strategies

Participant	Section B: Liminal Experience	Section C: Innovative Technology	Section D: Perspectives on Teacher Preparation
7	• Every day was new, experimenting, mentor teacher, student relationships	• Variety, Google, student responses, Google Docs, student feedback built confidence, using less tech now	• Embedded tech, focus on building relationships first
8	• Overwhelming transition, 5th grade, mentor teacher, using Sway and Flipgrid, family, friends, and 5th grade team,	• District tech, Loom, Writing pad, Sway, helping experienced teachers, utilizing more tech resources	• None but Canvas, diversify, district-specific prep for local colleges
9	• Opportunity to be open-minded, unprepared for shift, 21st century skills, self-advocacy, parents and mentor teachers, meetings to access other teachers in district	• Google suite, Zoom, digital notebook, Google slides, build confidence and student advocacy, student access	• Minimal college tech prep, 21st century skills
10	• Exciting challenge, access was a challenge and connections were a success, creative freedom, mentor teacher, being a parent	• District software and Microsoft Teams, district tech liaison, sharing curriculum via district platforms, Microsoft Forms, transferring paper lessons to online slides, tech experience and learning new things, teacher and parent awareness	• None, need a tech course

Coding Round 3: Thematic

For the third round of coding, I opted for thematic coding. In my original study, themes that emerged largely came from novice teachers' experiences during a liminal transition amid the COVID-19 initial school closures. In Table 3, I show how I used thematic codes to generate highlights from participants' liminal experiences. Regarding the liminal experiences of the participants, relationships built and used during novice teachers' time in quarantine were the most significant theme identified in the data, with six participants citing their connections and relationships with others were crucial to building their self-efficacy. The second most common theme generated was navigating change, which was inferred from five of the 10 interviews. Initially, I had considered calling this theme, shifting; however, that term did not meet the diverse needs addressed through the vast spectrum of changes participants dealt with during their first year of teaching during the initial COVID-19 school closures. Next, four participants had examples of mental adjustment during COVID-19, with three of the four being male participants. Another theme identified by four participants was finding success, which did not always include the topic of challenges even though both were addressed in the same question in the interview.

One theme emerged with just three of the 10 participants, which was independence. The participants who shared this theme were also beginning adult life away from home, and this theme indicates a sort of subset of liminality due to the unique experiences all three participants shared. One theme that was unique to a single participant was that of a silver lining to the COVID-19 school closures. Specifically, one

participant identified how the school closures brought about more personal reflection for adolescents and enabled them to consider their unique identities. The participant, who identifies as nonbinary, suggested that for students who identify as Lesbian, Gay, bisexual, Transgendered, or Questioning (LGBTQ), the time spent in quarantine was a positive experience for defining themselves. The theme of silver lining was only paired with one participant; therefore, the results could be considered discrepant from the others. In factoring in the theme to the overall analysis, I justified its significance because it, too, could be examined as a potential subset of unique liminality amidst school closures and quarantine.

Table 3

Thematic Codes by Participant

Participant	Overall Themes	Prominent
1	Navigating change Finding Success Relationships	
2	Navigating change Independence Finding success	
3	Mental adjustment Navigating change	
4	Silver lining Finding success	Relationships (6) Navigating change (5) Mental adjustment (4) Finding success (4) Independence (3) Silver lining (1)
5	Independence Finding Success	
6	Relationships Navigating change Mental adjustment	
7	Relationships Mental adjustment	
8	Navigating change Relationships	
9	Relationships Mental adjustment	
10	Independence Relationships	

Evidence of Trustworthiness

Focusing on transparency and planning each interview with intention was imperative for collecting trustworthy data during the research process. To maintain accuracy and consistency while gathering data from participants, I reviewed protocols consistently. Evaluating the credibility, transferability, dependability, confirmability, and reliability is essential because it promotes the scientific use of protocols to maintain accuracy in reporting and synthesizing themes from collected data. To manage issues of trustworthiness, I sent transcripts for review to participants so they could verify their responses. This process improved the validity of responses and strengthened the

trustworthiness of the data collected. Multiple strategies were employed during the study to ensure credibility, transferability, dependability, and confirmability.

Credibility

Establishing credibility has been integral to this qualitative study. As stated in Chapter 3, I conducted transcript reviews to strengthen credibility and build validation. I first downloaded the interview audio recordings from Zoom and saved the original files to conduct transcript reviews. Next, I played the audio recording and transcribed the content into the text from audio. Before sending the raw transcript to the participant for member checking, I filled in blank copies of the Interview Protocol with the transcript data. I did this additional step to elicit participant validation of their transcript and help participants view their responses in the context of the questions I had asked. This strategy was useful because participants could read their responses and add information or clarify points if they desired.

Another way I have established credibility is by asking for a review of my work from my doctoral committee. To do this, I shared my transcript files and my coding results with my doctoral committee. This step bolstered my credibility and contributed to my transparency in the process, and the use of this method is commonly suggested as an effective way to authenticate results (Creswell & Miller, 2000). In Chapter 3, I stated my intent to be open and forthcoming about potential biases and assumptions that could influence my interpretation of data. By sharing the transcripts with my committee and having participants review their responses for verification, I have upheld my plans for

establishing credibility during the study. Furthermore, the steps I took to maintain credibility support my data's authentication.

Transferability

Qualitative studies inherently present challenges because of the interpretation and thematic analysis often used to process the data. In my study, I included components of transferability into the Interview Protocol (see Appendix) by asking participants about their undergraduate technology courses and eliciting their responses regarding changes to teacher candidate programs to better prepare potential teachers for remote instruction. The questions relating to transferability were asked at the end of the interview, which I did on purpose so that participants would have shared their successes and challenges before considering possible changes to teacher education programs. I did not make any changes or adjustments to the transferability strategies from Chapter 3.

Dependability

In my research study, I sought to achieve dependability in various ways. First, I kept an account of email interactions and participant confirmation in an audit trail log. Bowen (2009) suggested that audit trails increase the transparency of procedures and bolster the rigor of a qualitative study’s methodology. I continually reflected on my influence and bias during the data collection, as well, by sending the participants copies of their interview transcripts for verification and review. Following the strategies and steps outlined in Chapter 3 maintained the integrity of my work and augmented my capacity for dependability. Shenton (2004) suggested that the dependability and transferability of a study rely on a researcher’s ability to recreate the results with a

different group of people (p. 63). Using accepted methods for data collection, including an audit trail, recognition and awareness of bias, and transparency of steps taken, enhance my study's dependability.

Confirmability

Examining novice teachers' development of self-efficacy through innovative use of technology during initial COVID-19 school closures required developing an understanding of beginning teachers' experiences during that unique time. Qualitative methodology emphasizes that data is interpreted through human analysis (Nguyen et al., 2021). I took my responsibility seriously in the role of a researcher because all the steps taken from conceptualization to data analysis are original from me. Being intentional about decisions, resources, and protocols followed was part of my transparency as a researcher. I shared my progress bimonthly with my doctoral committee chair and submitted a list of documentation accomplishments following the collection of data. These components also augmented the study's confirmability because protocol was maintained throughout all interviews. Another example of my transparency is the generation of coding documentation I have included as appendices (Appendices D, E, and F). In Chapter 3, I noted how I would be using interviews to collect data, and I followed through with that strategy by conducting a total of 10 interviews to achieve saturation. By adhering to my original data collection and methodology plans, I have supported the confirmability for this qualitative study.

Results

The Central Research Question was designed to understand the experiences of teachers just beginning their careers when the COVID-19 pandemic forced schools to pivot to remote learning. Furthermore, this central question was developed with an inquiry into how these first-year teachers used technology in innovative ways while developing their self-efficacy as new professionals. The central question is broken into three separate research questions, and are addressed in order, with a final piece that answers the Central Research Question.

Research Question 1

In response to interview questions related to RQ1, each participant shared examples of using technology to build their self-efficacy. Participant 1 stated,

> I think everyone was like in that fight or flight type of deal. I really had to hone in on what I was good at, as well, to make myself feel successful. I think knowing that I knew how to do PowerPoint, and I stuck with that, made myself feel better about myself.

Additionally, Participant 1 noted that her self-efficacy was further developed by "prerecorded" professional development available online from her school district, stating she "relied on the prerecorded [professional development]." Similarly, Participant 4 also utilized "PowerPoint" to capitalize on "visual communication" during the pandemic and noted their use of PowerPoint "improved" communication. Participant 4 also shared that the improved visual communication benefitted themselves as professionals and improved

understanding of students “learning English,” which they would not have “honed in on” were it not for the pandemic.

Participant 2 shared that she entered teaching for the “autonomy” one can “gain in the profession,” yet quickly discovered that she and others, “wanted a little bit of guidance” during the initial COVID-19 school closures. Participant 2 also shared that the pandemic provided an opportunity “test the waters” with new technology,” and thus learned how to utilize “Zoom” to contact colleagues more directly even when sending email would have been “easier during remote times”. Ultimately, Participant 2 stated

> There wasn’t a lot at stake I guess to be able to try new things with kids. I also think it kind of forced me- it allowed me to do what I personally enjoy, which is talk…I feel like I learned how to use Zoom or get on my phone and call people more regularly because I think I love that more face-to-face conversation than sending emails. While email would have been, I guess, a lot more applicable and easier during remote times, I feel like my first reaction was to like Zoom call a colleague instead. So I think forcing myself to use certain technologies maybe also kind of helped build that self-efficacy.

Participant 5 stated she built her independence because there was a need to “be self-sufficient” while being in “meetings and running online classes” or offering “office hours” for virtual student support. Along with a similar concept, Participant 8 shared the intense learning she had to do to develop self-efficacy through technology during the pandemic. For example, by accessing more tools, such as a tablet and second screen, she felt “so accomplished” in becoming adaptive to the shift in teaching methods.

Specifically, Participant 8 noted that using Sway, Microsoft Teams, and online subscriptions supported her learning and growth when she "didn't know what to do". Similarly, Participant 9 shared that his science team made weekly online meetings "a priority" and that having access to those meetings and other professionals helped him gain "experience."

Three participants did not directly connect technology use and self-efficacy during the initial COVID-19 school closures. Participant 6 did not explicitly connect technology use to self-efficacy during the initial COVID-19 school closures. Participant 7 did not connect technology use to self-efficacy but noted she felt successful when "finding [her] practices to use for online teaching by being open and honest" with her high school students. Participant 10 shared that the online learning schedules dictated her time as a mother and a teacher but did not connect the use of technology to her development of self-efficacy. While these responses are not directly linked to self-efficacy, they are related to the overall topic.

Research Question 2

Participant 1 said she had to "record [herself] reading out loud" because her initial training had been for secondary education. Still, she looked for ways to "change" how she implemented her knowledge of Microsoft PowerPoint. Participant 1 also turned her PowerPoints into physical videos with audio tracks because parents accessing the materials said the PowerPoints were not "compatible" with their phones. Furthermore, she also stated that to "convert [PowerPoint] into a video… was something innovative

that [she] did to help with the ease of access" for all families during the initial COVID-19 school closures.

Participant 2 applied Google Forms innovatively by using it to conduct "informal assessments," which she stated was "outside of the normal" teaching practices for her and her mentor teacher. Participant 7 also commented on the innovative use of Google's suite of software, including Google Docs, when describing how she had an assignment "with links" to "choose your own adventure," which was an innovative strategy for engaging high school students. Participant #9 also stated that the "comment feature" in Google Docs was "basically an online conversation" so students could get clarification on instructions and respond to one another when reading the same article.

Participant 9 also discovered innovative uses for Google Slides and Google Docs, sharing his use of "digital notebooks," which enabled him to "interact with students and assess their progress." Another innovative piece he stated was that he copied and pasted content and text from the science textbooks that students could then scan or copy into a translator service. As a student who came to the United States from Mexico, this participant had empathy for students struggling to understand the challenging content and vocabulary in the scientific texts. He stated the "copy and paste of readings and using the translate on Google… changed the way I think," and commented that the ability to translate text quickly was "really cool" for students. Participant 10 used online PowerPoint slides to deliver content previously located in student workbooks similar to the digital notebooks. During remote learning, this participant also copied and pasted content into a digital, shareable format for students to access. The innovative application

of Google Docs, Google Slides, and Microsoft PowerPoint created by some participants provided unique opportunities for students to access learning during the pandemic.

A repeated concept that came up for innovation was the use of chat functions in online meetings. Participant 3 shared the information that he used the chat function in Google Meets innovatively by engaging students in classroom discussions during distance learning. This participant also stated he had to "quickly learn… innovative ways" for students to engage and respond to readings in language arts. Additionally, to help with issues of connectivity "intermittence," this participant had written directions and commentary in the chat to communicate what may have been lost or missed by students. Another participant who used the chat function is Participant 7. This participant indicated that they used the chat function innovatively by conducting brief social-emotional "check-ins" with students. Elaborating on her use of chat, Participant 7 stated, "on Zoom, the thumbs-up feature- you know, all those little features- I used for formative check-ins. I also got really creative with Google Docs." Participant 7 added later, "I had them (students) use the comment feature on Google Docs, and then that way they had basically an online conversation.

Some participants used chat and forms for innovative social-emotional connections. Participant 8 also commented that the chat function in Microsoft Teams was useful for doing a "zones check-in" regarding Zones of Regulation in elementary and middle school social-emotional learning. Participant 8 further developed the innovation by asking her primary students to comment on one another's "zone" and used the feedback to discuss empathy and relatable experiences, asking questions such as "Why

are you feeling green today?" or agreeing with others saying, "I'm feeling great today, too." Participant 10 used Microsoft Forms similarly, conducting social-emotional well-being checks and asking students for their input on their "zone" or "how they're feeling".

Participant 4 also noted the "powerful" application of chat in Microsoft Teams, because before the pandemic there was no use of such a tool in their classroom. Moreover, this participant further developed this innovation by attempting to make the chat in Microsoft Teams mimic the live stream of Twitch, which is a videogame discussion thread platform. Another idea that emerged from the interview with the same participant was about the likeness to Twitch was felt as relevant and innovative because it is "one of the most popular forms of entertainment," and many students are "literate" in online videogame streams.

Participant 5 also used Teams and chat innovatively to play games and engage her students during online meetings. Using the "highlight word" feature, she and her students would play games similar to "Pictionary or hangman." She revealed details of an innovative online science tool that she and her students used to run simulations in biochemistry. At first, she had used the simulation as instructed, but later she and her students used it to run a "disease spread simulation" that mimicked the COVID-19 disease. Though other participants were secondary science teachers, none described utilizing this tool or resource, so it is not determinable if the use was innovative in comparison to the practices of others, or if it was an existing tool used in a new way.

Participant 6 shared the innovative use of an online whiteboard for students, stating it was "pretty flexible" and unique in how it could be used for formative

assessments and believed it to be an “innovative tool because it wasn’t just direct instruction”. As a music educator, this participant had students “write in counts for different rhythms” or “circle a particular element” and see student results in real-time. Furthermore, in this instance, the music software platform was used innovatively by having students record individual performances and streamlining the audio to make a virtual concert. The software, Music First, and its subcontent, Practice First, were not originally designed to be used, but this participant had crafted a student concert digitally and then shared it with students, staff, and families by uploading it to Microsoft Stream. Participant 6 explained his innovative process of using Music First and Practice First:

> Under the Music First umbrella of software, there’s Practice First, where the typical way that its used is as a student assessment tool… But the way I used it is you can upload your own musical examples that you write yourself, and so I did that and had students play them back. But then what I did is I was able to download the student recording, and I used that as a way to collect recordings that I then edited together for a recording project. That was kind of like our concert, essentially.

Participant 8 stated that Microsoft Sway was previously “used to present [their] classrooms,” but the SWAY page became a place to put teacher videos during the pandemic. While both participants used Microsoft SWAY in innovative ways, both uses were entirely different and illuminated the diversity of the concept of “innovation.” Summary of responses to interview questions related to RQ2 are indicated in Table 4.

Table 4

Examples of Technology Used by Each Participant

Participant	Technology Resources Utilized
1	YouTube, PowerPoint, Word
2	Canvas, Zoom, Second Step
3	Google Classroom, FlipGrid, YouTube, Google meets, Google Drive, chat function in Zoom.
5	Microsoft Teams, chat feature, Twitch, Schoology, Nearpod, Kleki Paint Tool, PowerPoint
6	Microsoft Teams, PowerPoint, Nearpod, Quizlet, Explore Learning, Gizmos, Schoology
8	Microsoft Sway, Teams, Music First, Practice First
9	Screencastify, FlipGrid, Edmodo, Google Classroom, Google Docs
10	Microsoft Teams, Sway, Loom, large interactive tablet for writing/drawing, FlipGrid, Schoology, Google Translate
11	Canvas, Google Slides, Google Doc, Google Meets
12	Microsoft Teams, Microsoft Forms, FlipGrid, Mystery Science curriculum, Lucy Calkins phonics, Ready Math, I-Ready

Research Question 3

In the liminal phase of transitioning from student to teacher, first-year teachers who completed their first year of teaching during the onset of the COVID-19 pandemic shared a unique professional experience. Participant 1 stated she “was unafraid” to help more experienced teachers with their SMART Boards and projectors because she was willing to try new technology. She credits the positive mindset to growing up in an era when technology grew exponentially, and she had become used to adjusting to changes.

Participant 4, also a first-year teacher, stated, “being a first-year teacher during all this was it was pretty helpful,” as there were no hard comparisons between current and past expectations. As a beginning teacher, “everything was new,” and Participant 4 credits their growth to “being… more comfortable with technology,”.

Participant 5 reflected that her liminal experience as a first-year teacher during the initial COVID-19 school closures helped her improve professionally. First, she shared that she had “to create materials that would work for both online and then the potential that [they] would be in person,” which challenged previous assumptions she had learned during her undergraduate degree. Participant 5 stated,

> I really had to change the way I think about differentiation, because before I kind of just thought about, like, universal design for learning. Which would be great if it always worked, but one thing does not always fit all.

She also cited the lab simulation software as guiding her to question how to use the software differently. Though she did not specifically mention her self-efficacy, her reflections indicate an ameliorated sense of intentionality for student learning, which is paramount for professional growth.

Participant 9 mentioned that he had to “reevaluate how students have access to their work outside of school,” which collaborates with Participant 5 with a similar perspective on shifting access and lesson design. Additionally, he reflected on his development of self-efficacy as a growing piece of his professionalism, stating.

> We were able to use and create our own curriculum. I think that gives me the opportunity to advocate for students and say, “You know what? This information

> that we're talking about right now I think is not what students need. Let's figure out other ways for the students to be proficient in these standards in a way that is more meaningful to them.

Participant 9 added, "responsiveness is huge, and it's also kind of innovative," as he shared how innovative technology use contributed to his self-efficacy. Participant 6 also thought he benefitted from being a first-year teacher because his "pedagogy was a lot more adaptable than maybe some of [his] older colleagues,". He reflected that "not having any anything like deeply ingrained yet it just made it a lot easier," as he was able to "embrace new technology" and "pivot" to the new learning model. This opinion was further endorsed by Participant 10, who also agreed that as a recent student-turned-teacher, she was "not set in [her] ways" and was "willing" to learn and grow for her students.

Participant 8 reflected on her liminal experience as a first-year teacher by examining how she grew professionally with her technology use. She also shared the thought that she had improved communication with families, stating, "I feel like I use technology a lot more now, especially with communicating with parents that don't know how to speak English," after her families and students had shared their difficulties during the initial pandemic closures. She had participated in an English learner professional development course due to the feedback from families. She learned about an application called "Talking Points" that translates newsletters and information into different languages.

Participant 7 did not provide specific ways the liminal transition from student to teacher may have influenced her development of self-efficacy. However, she did recollect that after being "as paper-free as possible" during the initial COVID-19 school closures, she is "using less technology." Conversely, Participant 2 connected the first-year experience of being willing to try new methods to the potential versatility of some digital tools, "like FlipGrid or Poll Everywhere," which could be "very applicable in an in-person setting." In between these opposites, Participant 3 only commented that he is now using technology "as intended" but did not respond to how the liminal transition and use of technology may have developed his professional self-efficacy.

Summary

The Central Research Question was answered in the responses from 10 participants, which indicated that participants felt there was an advantage to being first-year teachers. Some participants attributed their development of self-efficacy to the fact that expectations were low, vague, or nonexistent during the initial COVID-19 school closures. Another commonality was that participants were novice professionals and did not have a regimented routine that had to be transformed from in-person to an online structure. Furthermore, most participants shared a general willingness and sense of comfort in applying new technology tools because of their generational exposure to evolving technology. An unexpected result of how first-year teachers developed self-efficacy through technology was noted when some participants imparted how they assisted their more-experienced teaching colleagues with new technology tools and resources. They were inclined to try anything and face challenges with an open mindset.

In Chapter 5, I provide detailed information and a description of the findings and my recommendations based on the information that has been collected. Finally, I expound on the potential implications of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this basic qualitative study was to explore how novice teachers developed self-efficacy through technology amidst the liminal first-time experiences of distance learning. The conceptual framework used in this study was a combination of Bandura's (2000) theory of self-efficacy through mastery experiences and van Gennep's (1910) liminality theory based on social "rites of passage," along with informative components of Rogers's (2003) theory of innovation. I categorized the key findings from the interviews conducted with novice teachers according to the following central research question: How did novice teachers develop self-efficacy through technology amidst the liminal first-time experiences of distance learning? In alignment with emergent educational innovation themes identified in the literature review in Chapter 2, my interpretation yielded both conforming and nonconforming data. The findings indicate that novice teachers used educational innovation to stay connected with students during initial closures. Innovative technology became essential as novice teachers sought to increase engagement and attendance. During the COVID-19 initial school closures, novice teachers received innovative support through prerecorded professional development and mentorship. The results also show how the pandemic cultivated innovative experiences for novice teachers. Ultimately, novice teachers developed self-efficacy by using technology in innovative ways by applying their prior knowledge of resources to distance learning.

Interpretation of the Findings

Educational Innovation

In Chapter 2, I identified educational innovation during COVID-19 as an emerging theme in literature. The results of the current study confirm that novice teachers applied educational innovation across content areas and grade levels during the initial COVID-19 school closures. Participants used educational innovation to host online meetings with students during the initial COVID-19 school closures. They used Google Meets, Microsoft Teams, and Zoom to host online meetings and communicate with students. The days, times, and purposes for meetings varied across participants. In the state where this qualitative study took place, the governor had recommended that no new content be given to students during those initial months in quarantine (Kennedy, 2020). However, multiple participants used Zoom calls, Teams calls, and Google Meets to stay connected to their students, deliver enrichment content, and reinforce building community while in distance learning. The use of teacher instructional time to connect with students during distance learning was innovative because it applied existing technology and frameworks in new ways.

Innovative Technology

The participants' responses showed that the innovative technology used during COVID-19 school closures varied. The technology used included Microsoft and Google programs and specialized software for content courses like music and science. In the results, YouTube was also shown to have served as an innovative resource because participants used it to explain how to access other software and teach students how to

become more technologically literate. Previously, YouTube had been used in most classes to show educational content videos but was used differently during the initial school closures. The findings of this study confirm Bushweller's (2020) research, indicating that COVID-19 school closures stimulated teacher innovations by using tools like YouTube to facilitate distance learning.

Novice teachers utilized some innovative, stand-alone technologies for content-specific outcomes. Second Step's social-emotional learning curriculum was described as an innovative resource for checking in with students' emotional well-being during the initial closures and transferred its formatting to a digital piece, thus empowering a participant to model thinking and problem solving for difficult emotional times. Another tool used innovatively was Kleki Paint. Although Kleki's intended use is to guide artists' creative development and experimentation, a participant used it with their classes to reinforce the learning and shared accountability.

Participants viewed the chat feature in Microsoft Teams, Zoom, and Google Meets as innovative. Participants utilized the chat function in virtual meeting software to stay connected to students. The chat feature also was used for check-ins regarding social-emotional regulation for all grade levels. Applying the chat feature became an essential way to communicate with students during the initial COVID-19 school closures and was used to engage, assess, and collaborate with students.

FlipGrid, a video-based student response platform, was applied by multiple participants in the study. Participants using FlipGrid asked students to respond verbally to reading passages and then respond to peers. Other participants used FlipGrid to engage

students in peer-to-peer conversations, such as book talks and topic-specific opinion sharing. While FlipGrid is intended for the sharing of video submissions, the program was used innovatively to elicit curriculum-based student responses to mimic regular student discourse that would have happened more naturally in a brick-and-mortar setting. The idea of using platforms like FlipGrid was to utilize technology that reflected interactions similar to videogames and live streams because students are more literate with these formats. Arriessanti (2020) confirmed this innovative approach, focusing on game-based learning being a priority during COVID-19.

Some other innovative technologies included Nearpod, Microsoft PowerPoint, and Microsoft Sway. Nearpod is an online classroom tool that allows teachers to create custom lessons, interactive activities, and game-like assessments, and multiple participants shared that using Nearpod to facilitate collaborative activities with students helped build community and generate virtual discussions. Microsoft PowerPoint also stood out as an innovative resource because participants used the program to digitize curriculum, stream lessons, and augment visual communication among students and families. Microsoft Sway was also used to disseminate information, including the video lessons created by teachers. The innovative technology approaches confirm findings from Dubreil (2020) that showed that teachers developed digital content to provide instruction during COVID-19.

Innovative Support

The traditional first-year teacher experiences often include self-reflection and growth alongside mentorship (Gamborg et al., 2018). During the initial school closures of

Spring 2020, novice teachers were asked to pivot from in-person teaching to distance learning in a matter of days. Not only was the significant change unprecedented, but it also modified the liminal experiences for novice teachers in a variety of ways. Despite the mandates to quarantine and social distance, novice teachers received innovative support from surprising sources.

One type of innovative support identified by participants in the current study was prerecorded professional development and tutorials for navigating new software. The professional development recordings empowered novice teachers to access the videos at their own pace and apply new learning as they were able to process the content. The trainings provided online for novice teachers included offerings for new learning management systems, digital tools, online resources, and district-specific technology support. Majanja's (2020) research confirms findings from the current study because even though participants were somewhat skilled, they needed additional innovative support to be adept at distance learning facilitation.

Mentorship is often a strong component of novice teachers' success in their first year (see Hughs & McCartney, 2019). During the initial COVID-19 school closures, mentoring changed to accommodate the virtual learning. Participants reflected on how mentor teachers supported them as they developed their skills and employed new strategies to engage learners. Participants also found collaborative mentorship with colleagues and teaching teams, such as professional learning communities, virtual book study groups, and retired administrators who volunteered their time to coach novice teachers. Some participants even noted that district-sponsored support programs were a

source of encouragement and support before and during COVID-19 school closures because the groups extended available professional networks for beginning teachers.

Innovative Experiences

Under traditional circumstances, novice teachers might have significant life changes as they shift from student to teacher during their liminal experience. These experiences might include the development of a teacher identity, confidence, autonomy, and more. During the initial COVID-19 school closures, participants in the current study had experiences that were a direct result of the COVID-19 pandemic and, simultaneously, a response to a need for innovation. For example, participants had personally delivered packets of work and technology equipment to students' homes because not all families could come to the school to pick up materials, which is an experience that is unique to the COVID-19 school closures. Participants reflected that the school closures required impromptu multitasking within their roles as a novice teacher, learner, and even as parent(s) because they had to navigate family needs with online schedules as well as their own virtual classes, which is atypical of a novice teacher's first professional experience. Confirming Santi's (2020) findings, the participants in the current study were able to have innovative experiences while building their confidence with technology and new expectations as professionals.

Other transcript data revealed that novice teachers had unique experiences connected to the COVID-19 school closures, but the data are nonconforming because they do not meet criteria for being innovative. For example, participants shared that they were concerned for students' well-being because there were no alternative ways to

connect with them. The concern and genuine investment in students is an experience often encountered by beginning teachers as they develop their identities as educators, but during COVID-19 closures, there were no recourses for getting ahold of students who were absent and nonresponsive to phone calls, emails, and home visits.

Another nonconforming experience was the flexible scheduling and expectations for novice teachers. Some participants were able to structure their own schedules while creating a sense of professionalism through office hours, virtual meetings, preparing for work by getting dressed appropriately, and having daily meetings with grade level teams. Other participants experienced the flexibility of navigating their time, such as attending a family event in another country, spending time reading for pleasure and professional development, and learning about new technology. These experiences are unique to the COVID-19 pandemic but nonconforming to innovative experiences for novice teachers.

Developing Self-Efficacy Through Innovation

Ottenbreit-Leftwich et al. (2018) and Santi (2020) implied that most novice teachers developed self-efficacy through technology and mentorship. Multiple participants from the current study confirmed that they developed self-efficacy through innovative use and the application of technology. Most participants in the study used their comfort with and exposure to technology to help them be more efficient and focused on student engagement. Furthermore, many participants used their technology skills to support veteran teachers who had less technological literacy. This reverse mentorship was echoed by most participants in the study and fueled by novice teachers' hope of being useful to others. For most experiences, a trial-and-error method of explorative problem

solving built novice teachers' confidence and self-efficacy over time. Furthermore, being less hesitant to make mistakes as they navigated the technology available during the initial COVID-19 school closures enabled participants to grow professionally while focusing on their strengths as individuals.

Other participants described their development of self-efficacy as being more related to how they used technology to support student learning. Participants indicated that student feedback was also a significant factor in developing self-efficacy because student success and engagement prompted personal reflection and formative assessment data. This finding confirms what Ellis et al. (2020) found regarding that the pandemic spurred authentic innovation and collaboration of teachers who responded innovatively to the COVID-19 school closures.

Limitations of the Study

One limitation of this original qualitative study was that all participants had to be full-time, public school educators. This limitation was necessary because all public schools in the state where research was conducted had to follow the same protocols during the initial COVID-19 school closures. The delimitation excluding teachers from other states kept this variable to a minimum while aligning with the research questions (see Kennedy, 2020). Additionally, by keeping the participant group in a geographically homogenous locale, recommendations for further research and suggestions for change can be shared with local universities and educator preparedness programs. The data are meaningful and relevant for possibly guiding teacher preparation programs to prepare

candidates for the possibility of remote instruction and could support the inclusion of additional technology courses for teacher candidates and professionals.

Another limitation of the study was the decision only to interview novice teachers from a state in the Pacific Northwest. While selecting a single state might have limited the transferability of the results, it provided consistency in the amount of time novice teachers were facilitating remote instruction because the governor of this one northwestern state ordered all schools to be closed in March 2020.

Another limitation of the study was that all respondents or study participants could be similar in personality style. People who may be more outgoing might be more open to being interviewed, which could have dominated the participant pool. Furthermore, seeking participants via known educational contacts on social media may have limited which novice teachers received notification of the study. After analyzing the results and speaking with all candidates, I determined that multiple personality types were represented in the participant pool, and there was a mixture of genders and ages. The study participants included six females, three males, and one nonbinary adult and covered an age range of 24–50 years old. Though social distancing protocols were viewed as a limitation at the beginning of the study, the protocol was changed to using Zoom to conduct the interviews because the entire state was still practicing COVID-19 safe distancing. Due to the state guidelines for COVID-19, all interviews were conducted on Zoom, so the perceived limitation became a way to eliminate discrepancies among data collection methods.

Recommendations

In the literature review in Chapter 2, there was a clear gap in existing research that indicated a need for understanding how teacher preparation programs could better prepare their candidates, especially as the long-term effects of COVID-19 continue to change the landscape of education. Trust and Whalen (2020) suggested that novice teachers needed more training and professional development in digital literacy to be fully competent in the current educational climate. The current study findings confirmed Trust and Whalen's finding because all participants suggested additional technology training for preservice teachers.

One recommendation that emerged from the responses of the study participants was the need for adding more technology courses in teacher candidate programs. Courses that specifically taught preservice teachers about the Microsoft Office suite and how to use the available programs for instructional delivery were prioritized. Utilizing Google Classrooms, Google Drive, and Zoom were also suggested as critical technology components to be introduced to preservice teachers.

Aside from recommending general technology courses, some participants had more specific ideas for local programs and universities and their inclusion of educational technology. In the state in which this study was conducted, some local universities partner with public school districts to place student teachers. As part of the collaboration between universities and districts, participants suggested technology courses that were specific to the software and programs they might be using upon employment. This type of recommendation aligns with the expectation that teacher candidates are prepared for

employment after graduation and could uniquely prepare new teachers for possible jobs as in-person or virtual educators.

Outside of suggesting teacher candidate programs increase the resources for and instruction on educational technology, additional ideas surfaced from the data. Adding courses on blended learning models, using low-tech strategies for quantifying student engagement in virtual learning, and a more thorough understanding of how to utilize learning management systems for classroom instruction and assessment were all recommendations. Moreover, emphasizing the importance of building relationships with students was repeatedly mentioned. Focusing on how novice teachers can develop flexibility, patience, and authentic connections with students is imperative to cultivating a professional identity and contribute to self-efficacy.

Finally, another concept that emerged from the data was emphasizing the teaching of 21st century skills to preservice teachers so they may focus on integrating life and career skills and habits into their lessons. Recommending that universities and teaching programs have candidates develop lessons and units where 21st century skills are integrated could ameliorate first-year teaching experiences. All participants had suggestions for improving candidacy programs, which is testament to how the examination of novice teachers' liminal experiences can provide timely insight for local teacher preparation programs, confirming findings from Chang (2018) and Lorenzi and White (2019). Most participants had no technology course as part of their teacher preparation program. These recommendations could be used to further the development of an innovative preservice teaching curriculum, guide creation of emergency shutdowns

and distance learning pedagogy, and improve school districts' support of mentorship for first-year teachers.

Implications of the Study

The implications this study could have on positive social change are numerous. First, as education continues to change and adapt to diversifying needs of students and families, so, too, do the expectations placed upon educators. Using the data and recommendations from this study, local teacher preparation programs and universities can adjust their requirements to be more aligned with new professional duties, such as distance learning and technology literacy. The global response to COVID-19 continues to ebb and flow based on the virus and its variants, placing educators at the heart of society's post pandemic progress, as adults return to work, and students return to school.

Secondly, COVID-19 will continue to affect how novice teachers apply technology innovatively. By examining the liminal transition from "student" to "teacher" during the initial COVID-19 school closures in a state in the Pacific Northwest, there is potential for positive social change in how preservice teachers can prepare for the new landscape of teaching by integrating a variety of engaging technology to support student learning. One of the findings from my data was the need for more technology courses prior to preservice teachers completing their teaching degree, which could augment the confidence and enthusiasm of new teachers. Furthermore, the exploration of how novice teachers cultivated self-efficacy via innovative technology use during COVID-19 school closures may generate a more comprehensive understanding about how to prepare

preservice teachers for their careers, and in turn establishing a deeper sense of understanding for the emotional and intellectual rigor of the profession.

Third, the pandemic also revealed inequitable access to technology, internet, and skills among students and teaching staff. Through the challenges of the initial closures, teachers not only developed more empathy for families, but also, they sought innovative solutions to reach every student while in quarantine. The establishment of deeper empathy and concern may positively change how society views teachers and may continue to do so as teaching practices become more transparent using technology.

As an additional implication for social change, this study demonstrates that liminality is an applicable concept for educational research. Collecting the perspectives of individuals who lived a shared experience as novice teachers during the initial COVID-19 school closures provided insight into the resilience of new professionals. Participant 8 shared that "no one [had] ever asked [her] about teaching during COVID before," and she felt a "sense of relief" in telling her personal story. Although the application of liminality as part of a conceptual framework has rarely been used, there is merit to its use to study a social-educational problem.

Conclusion

After one state in the Pacific Northwest confirmed the first case of COVID-19 in January 2020, and first casualty by February 2020, the United States began closing schools to slow the spread of the virus (Kennedy, 2020). In this study, perceptions of novice teachers who developed their self-efficacy by using technology innovatively amid the initial COVID-19-related school closures were explored. Bandura's (1977) theory of

self-efficacy combined with van Gennep's (1910) theory of liminality, and modernized by Turner (1969), constructed the conceptual framework. Rogers (2003) theory of innovation informed how these components were influenced by COVID-19. Ten novice teachers were voluntarily interviewed for this study, and their stories described how they used technology innovatively to develop self-efficacy during COVID-19 school closures. Understanding how novice teachers built their self-efficacy through experiences with technology may now inform preservice teaching programs and influence further research specific to novice teachers' experiences while in a liminal phase moving from "student" to "teacher." The COVID-19 pandemic led to significant changes for teachers and students, including pivoting from in-person instruction to digital distance learning.

The examination of the social-educational problem of novice teachers' liminality and construction of self-efficacy during COVID-19-related school closures offered meaningful and relevant insight into the personal experiences of professionals and students (Chang, 2018; Lorenzi & White, 2019). In a state in the Pacific Northwest, novice teachers funneled their open mindedness into trial-and-error attempts with new technology to serve their students to the best of their abilities. Through some guidance and mentorship, novice teachers created new learning experiences for students to remain engaged and actively learning during the initial school closures. Relying on their own experiences and skills with technology, novice teachers continued to access and apply technological tools to support student learning. These experiences bolstered the development of their self-efficacy as new professionals through repeated, successful experiences with digital tools. Determining ways to keep students engaged during remote

learning became a focus for novice teachers, and the knowledge they gained about students was a catalyst for empathy and innovation.

References

Ackesjö, H., Lindqvist, P., & Nordänger, U. K. (2019). Betwixt and between: Leisure-time teachers and the construction of professional identities. *Scandinavian Journal of Educational Research*, *63*(6), 884–898. https://doi.org/10.1080/00313831.2018.1466356

Ariessanti, H. D., Trisetyo, A., Suparta, W., & Abudurahman, E. (2020). Concept of gamification in adaptation of snake ladder online representation education COVID-19. *2020 International Conference on Information Technology Systems and Innovation (ICITSI), Information Technology Systems and Innovation (ICITSI), 2020 International Conference On*, 435–442. https://doi.org/10.1109/icitsi50517.2020.9264961

Arnett-Hartwick, S. E., & Cannon, J. (2019). Problems faced by secondary technology education novice and veteran teachers. *Journal of Research in Technical Careers*, *3*(1), 1–12. https://doi.org/10.9741/2578-2118.1055

Ayo, E. B., Anacio, M. L., & Sakay, L. E. (2019). Diagnosing adoption to mobile learning. *International Journal of Interactive Mobile Technologies*, *13*(8), 124–138. https://doi.org/10.3991/ijim.v13i08.10083

Backfish, I., Lachner, A., Hisch, C., Loose, F., & Scheiter, K. (2020). Professional knowledge or motivation? Investigating the role of teachers' expertise on the quality of technology-enhanced lesson plans. *Learning and Instruction, 66*, 1-13. https://doi.org/10.1016/j.learninstruc.2019.101300

Bandura, A. (1977). Self- efficacy: Toward a unifying theory of behavior change. *Psychological Review*, *84*, 191-215. https://doi.org/10.1037/0033-295x.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall. https://doi.org/10.4135/9781446221129.n6

Bandura, A. (1992). Exercise of personal agency through the self-efficacy mechanism. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action.* (pp. 3–38). Hemisphere Publishing Corp. https://doi.org/10.1080/10413209008406426

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company. https://doi.org/10.5860/choice.35-1826

Bandura, A. (2000). Self-efficacy. In *Encyclopedia of psychology* (Vol. 7, pp. 212-213). Oxford University Press. https://doi.org/10.1037/10522-094

Bawaba, A. (2020). Norway: Norway is increasing education support. *Mena Report*.

Bazluki, M., & Milman, N. (2019). Transforming traditional, face-to-face courses to online or blended learning formats: Advice for faculty and instructional designers. *Distance Learning*, *16*(1), 49-51. https://www.infoagepub.com/products/distance-learning-vol-16-1

Bernard, H. R. (2011). *Research methods in anthropology: Qualitative and quantitative approaches* (5th ed.). AltaMira Press.

Bjork Gundmundsdottir, G., & Hathaway, D. (2020). “We always make it work”: Teachers’ agency in the time of crisis. *Journal of Technology and Teacher Education*, *28*(2), 239-250.

Bjork Gundmundsdottir, G., & Hatlevik, O. E. (2018). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education*, *41*(2), 214–231. https://doi.org/10.1080/02619768.2017.1416085

Bowen, G. A. (2009) Supporting a grounded theory with an audit trail: An illustration. *International Journal of Social Research Methodology*, *12*(4), 305-316. https://doi.org/10.1080/13645570802156196

Bushweller, K. (2020). COVID-19 is shaping tech use. What that means for schools. *Education Week*, *39*(34), 3–7. https://www.edweek.org/technology/how-covid-19-is-shaping-tech-use-what-that-means-when-schools-reopen/2020/06

Călinoiu, N. (2019). Learning enhancement through video games. *E-Learning & Software for Education*, *15*(1), 68-77. https://doi.org/10.12753/2066-026X-19-008

Campbell, L. (2020). Teaching in an inspiring learning space: An investigation of the extent to which one school's innovative learning environment has impacted on teachers' pedagogy and practice. *Research Papers in Education*, *35*(2), 185–204. https://doi.org/10.1080/02671522.2019.1568526

Chang, Y. (2018). Certified but not qualified? EFL pre-service teachers in liminality. *Journal of Language, Identity, and Education*, *17*(1), 48-62. https://doi.org/10.1080/15348458.2017.1401929

Channa, L. A. (2015). Narrative inquiry: A research tradition in qualitative research. *Kashmir Journal of Language Research*, *18*(1), 1-17. https://doi.org/10.4135/9781412963909.n275

Cirillo, M., Larochelle, R., Arbaugh, F., & Bieda, K. (2020). An innovative early field experience for preservice secondary teachers: Early results from shifting to an online model. *Journal of Technology and Teacher Education*, *28*(2), 353-363.

Clandinin, D. J. (2013). *Engaging in narrative inquiry.* Routledge.

Cocca, M., Cocca, A., Martinez, E., & Bulnes, M. (2018). Correlation between self-efficacy and teaching performance: The case of Mexican preschool and primary teachers. *Arab World English Journal*, *9*(1), 56-70. https://doi.org/10.31235/osf.io/5nq8b

Cooke, S., & Faez, F. (2018). Self-efficacy beliefs of novice French as a second language teachers: A case study of Ontario teachers. *The Canadian Journal of Applied Linguistics*, *21*(2), 1-18. https://doi.org/10.7202/1057963ar

Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage.

Creswell, J., & Miller, D. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, *39*(3), 124-130. https://doi.org/10.1207/s15430421tip3903_2

Creswell, J., & Poth, C. (2016). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Darling-Hammond, L. (2020, March 19). Learning in the time of COVID-19. *Forbes*. https://www.forbes.com/sites/lindadarlinghammond/2020/03/19/learning-in-the-time-of-COVID-19/#36dbc6e7203b

Dias, M. J. A., Almodóvar, M., Atiles, J. T., Vargas, A. C., & Zúñiga León, I. M. (2020). Rising to the challenge: Innovative early childhood teachers adapt to the COVID-

19 era. *Childhood Education*, *96*(6), 38–45. https://doi.org/10.1080/00094056.2020.1846385

Dubreil, S. (2020). Using games for language learning in the age of social distancing. *Foreign Language Annals*, *53*(2), 250-259. https://doi.org/10.1111/flan.12465

Dushkevych, M., Barabashchuk, H., & Hutsuliak, N. (2020). Peculiarities of student distance learning in emergency situation condition. *Revista Romaneasca pentru Educatie Multidimensionala*, *12*(12), 71-77. https://doi.org/10.18662/rrem/12.1sup2/248

Dvir, N., & Schatz-Oppenheimer, O. (2020). Novice teachers in a changing reality. *European Journal of Teacher Education*, *43*(4), 639-656. https://doi.org/10.1080/02619768.2020.1821360

Egbert, J. & Sanden, S. (2014). *Foundations for educational research: Understanding theoretical components*. Routledge.

Eisenbach, B. B., Greathouse, P., & Acquaviva, C. (2020). COVID-19, middle level teacher candidates, and colloquialisms: Navigating emergency remote field experiences. *Middle Grades Review*, *6*(2).

Ellis, V., Steadman, S., & Mao, Q. (2020). 'Come to a screeching halt': Can change in teacher education during the COVID-19 pandemic be seen as innovation? *European Journal of Teacher Education*, *43*(4), 559-572. https://doi.org/10.1080/02619768.2020.1821186

Gamborg, L., Webb, A. W., Smith, A., & Baumgartner, J. (2018). Understanding self-efficacy of novice teacher during induction. *Research Issues in Contemporary Education*, *3*(2), 16-26.

George, S., Richardson, P., & Watt, H. (2018). Early career teachers' self-efficacy: A longitudinal study from Australia. *Australian Journal of Education*, *62*(2), 217-233. https://doi.org/10.1177/0004944118779601

Gudmundsdottir, G. B., and Hatlevik, O. E. (2018). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education, 41*(2), 214-231. https://doi.org/10.1007/978-94-6209-464-2_6

Hall, J., Roman, C., Jovel-Arias, C., & Young, C. (2020). Pre-service teachers examine digital equity amidst COVID-19 responses. *Journal of Technology and Teacher Education*, *28*(2), 435-442.

Henriksen, D., Creely, E., & Henderson, M. (2020). Folk pedagogies for teacher educator transitions: Approaches to synchronous online learning in the wake of COVID-19. *Journal of Technology and Teacher Education*, *28*(2), 201-209.

Hughes, M., & McCartney, H. (2019). Investigating the experiences of first year early childhood and elementary teachers: A pilot study. *Teacher Educators' Journal*, *12*, 93–128.

Joksimović, M., Robertson, A., Đokić, B., & Dražeta, L. (2019). Technology-based professional development: The case of elementary school teachers in Belgrade. *Management: Journal of Sustainable Business & Management Solutions in*

Emerging Economies, *24*(1), 1-11. https://doi.org/10.7595/management.fon.2018.0029

Kennedy, M. (2020). Classes dismissed: The COVID-19 virus pandemic has shut down virtually the entire U.S. education system and disrupted the lives of millions of students and staff. *American School & University*, *92*(6), 14–17.

Khalid, F., & Husnin, H. (2019). Challenges and support for the development of novice teachers' professional identities. *International Association for Development of the Information Society*, *1*(1), 195-199. https://doi.org/10.33965/icedutech2019_201902c008

Kidd, W., & Murray, J. (2020). The COVID-19 pandemic and its effects on teacher education in England: How teacher educators moved practicum learning online. *European Journal of Teacher Education*, *43*(4), 542–558. https://doi.org/10.1080/02619768.2020.1820480

Kier, M.W., & Clark, K.S. (2020). The rapid response of William & Mary's school of education to support preservice teachers and equitably mentor elementary learners online in a culture of an international pandemic. *Journal of Technology and Teacher Education*, *28*(2), 321-327.

Kim, J. H. (2016). *Understanding narrative inquiry*. Sage.

Kim, K., & Roth, G. L. (2011). Novice teachers and their acquisition of work-related information. *Current Issues in Education*, *14*(1), 1-28.

Kirshner, J. D. (2020). School radio: Finding innovation in reaching remote learners in Belize. *International Journal of Education and Literacy Studies*, *8*(3), 90-97. https://doi.org/10.7575/aiac.ijels.v.8n.3p.90

Kostic-Bobanovic, M. (2020). Perceived emotional intelligence and self-efficacy among novice and experienced foreign language teachers. *Economic Research*, *33*(1), 1200-1213. https://doi.org/10.1080/1331677x.2019.1710232

Kul, U., Aksu, Z., & Birisci, S. (2019). The relationship between technological pedagogical content knowledge and web 2.0. *International Online Journal of Educational Sciences*, *11*(1), 198-213. https://doi.org/10.15345/iojes.2019.01.014

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Sage. https://doi.org/10.1016/b978-008043349-3/50014-1

Lorenzi, F., & White, I. (2019). Liminality in education: Generating a creative space of encounter and dialogue between teachers and students within educational structures. *Pastoral Care in Education*, *37*(3), 190-207. https://doi.org/10.1080/02643944.2019.1648538

Love, M., Simpson, L., Golldner, A., Gadus, B., & Dorwin, J. (2020). Professional development to increase teacher capacities for the use of new technologies. *Intervention in School and Clinic*, *56*(2), 115-118. https://doi.org/10.1787/3a7a992d-en

Majanja, M. (2020). The status of electronic teaching within South African LIS education. *Library Management*, *41*(6), 317-337. https://doi.org/10.1108/LM-05-2020-0084

McQuirter, R. (2020). Lessons on change: Shifting to online learning during COVID-19. *Brock Education*, *29*(2), 47-51. https://doi.org/10.26522/brocked.v29i2.840

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.

Miller, M. W., Jeffries-Simmons, T., & Rockholt, C. (2020). *Reopening Washington schools 2020: District planning guide*. Washington Office of Superintendent of Public Instruction. https://www.k12.wa.us/about-ospi/press-releases/novel-coronavirus-covid-19-guidance-resources

Naderifar, M., Goli, H., & Ghaljaei, F. (2017). Snowball sampling: A purposeful method of sampling in qualitative research. *Strides in Development of Medical Education, 14(3)*, 1-6. https://doi.org/10.5812/sdme.67670

Neumann, I. B. (2012). Introduction to the forum on liminality. *Review of International Studies*, *38*(2), 473–479. https://doi.org/10.1017/s0260210511000817

Nguyen, H., Ahn, J., Belgrave, A., Cawelti, L., Kim, H. E., Lee, J., Prado, Y., Santagata, R., & Villavicencio, A. (2021). Establishing trustworthiness through algorithmic approaches to qualitative research. In: Ruis A. R., Lee S. B. (eds) *Advances in Quantitative Ethnography*. https://doi.org/10.1007/978-3-030-67788-6_

Nordlöf, C., Hallström, J. & Höst, G. E. (2019). Self-efficacy or context dependency? Exploring teachers' perceptions of and attitudes towards technology education. *Internation Journal of Technology Design in Education, 29*(1), 123–141. https://doi.org/10.1007/s10798-017-9431-2

Northcote, M., Kilgour, P., Reynaud, D., Gosselin, K. P., & McLoughlin, C. (2019). A professional learning program for novice online teachers using threshold concepts. *Online Learning*, *23*(4), 336–353. https://doi.org/10.24059/olj.v23i4.1573

Nur Hidayat, W., Suswanto, H., Wijaya Kristanto, C., Pramudya Wardhani, A., Hamdan, A., & Kartika Sari, R. (2020). The effectiveness of interactive digital evaluation training for improving teacher skills in the COVID-19 pandemic period. *2020 4th International Conference on Vocational Education and Training (ICOVET), Vocational Education and Training (ICOVET), 2020 4th International Conference On*, 310–314. https://doi.org/10.1109/icovet50258.2020.9230070

Ochoa, C., & Porcar, J. M. (2018). Modeling the effect of quota sampling on online fieldwork efficiency: An analysis of the connection between uncertainty and sample usage. *International Journal of Market Research, 60*(5), 484–501. https://doi.org/10.1177/1470785318779545

Ottenbreit-Leftwich, A., Liao, J. Y.-C., Sadik, O., & Ertmer, P. (2018). Evolution of teachers' technology integration knowledge, beliefs, and practices: How can we support beginning teachers use of technology? *Journal of Research on Technology in Education*, *50*(4), 282–304. https://doi.org/10.1080/15391523.2018.1487350

Padgett, D. K. (2008). *Qualitative methods in social work research* (2nd ed.). Sage.

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage Publications.

Petersen, N. (2017). The liminality of new foundation phase teachers: Transitioning from university into the teaching profession. *South African Journal of Education, 37*(2). https://doi.org/10.15700/saje.v37n2a1361

Plecki, M. L., Elfers, A. M., Van Windekens, A. (2017). *Examining beginning teacher retention and mobility in Washington state*. University of Washington's College of Education: Center for The Study of Teaching and Policy.

Pollock, M., Yonezawa, S., Gay, H., & Rodriguez, L. (2019). Pursuing deep equity in "blended" classrooms: Exploring the in-person teacher role in supporting low-income youth through computer-based learning. *Teachers College Record: The Voice of Scholarship in Education, 121*(5), 1-23.

Powers, J. M., Brown, M., & Wyatt, L. G. (2020). SPARK-ing innovation: a model for elementary classrooms as COVID-19 unfolds. *Journal of Professional Capital and Community, 5*(3/4), 307–320. https://doi.org/10.1108/jpcc-06-2020-0036

Qadeer, A., Tahir, A., & Chishti, M. I. (2018). Beginning teachers' professional self-image: Reconciliation between teachers and head teachers. *Journal of Educational Research,* Department of Education, IUB, Pakistan, *21*(1), 12-24.

Ratcliffe, J. W. (1983). Notions of validity in qualitative research methodology. *Knowledge: Creation, Diffusion, Utilization*, *5*(2), 147-167. https://doi.org/10.1177/107554708300500201

Robinson, O. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative Research in Psychology*, *11*(1), 25–41. https://doi.org/10.1080/14780887.2013.801543

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). Free Press of Glencoe.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press by Simon & Schuster, Inc.

Roman, T. A. (2020). Supporting the mental health of teachers in COVID-19 through trauma-informed educational practices and adaptive formative assessment tools. *Journal of Technology & Teacher Education*, *28*(2), 473–481.

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed.). SAGE.

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE.

Santi, E., Gorghiu, G., & Pribeauunu, C. (2020). Teachers' perceived self-efficacy for mobile learning. *Revista Romaneasca pentru Educatie Multidimensionala*, *12*(1), 157-166. http://dx.doi.org/10.18662/rrem

Sciuchetti, M. B., & Yssel, N. (2019). The development of preservice teachers' self-efficacy for classroom and behavior management across multiple field experiences. *Australian Journal of Teacher Education*, *44*(6), 19-34. https://doi.org/10.14221/ajte.2018v44n6.2

Scull, J., Phillips, M., Sharma, U., & Garnier, K. (2020). Innovations in teacher education at the time of COVID19: An Australian perspective. *Journal of Education for Teaching*, *46*(4), 497–506. https://doi.org/10.1080/02607476.2020.1802701

Smart, F., & Loads, D. (2017). Poetic transcription with a twist: Supporting early career academics through liminal spaces. *International Journal for Academic Development*, *22*(2), 134-143. https://doi.org/10.1080/14703297.2016.1258323

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63-75. http://doi.org/10.3233/EFI-2004-22201

Stringer Keefe, E. (2020). Learning to practice digitally: Advancing preservice teachers' preparation via virtual learning and coaching. *Journal of Technology and Teacher Education*, *28*(2), 223-232.

Sullivan, F., Hillaire, G., Larke, L., & Reich, J. (2020). Using teacher moments during the COVID-19 pivot. *Journal of Technology and Teacher Education*, *28*(2), 303-313. https://doi.org/10.35542/osf.io/437e2

Thomas, D. R. (2017). Feedback from research participants: Are member checks useful in qualitative research? *Qualitative Research in Psychology*, *14*(1), 23–41. https://doi.org/10.1080/14780887.2016.1219435

Thomas, L., Tuytens, M., Moolenaar, N., Devos, G., Kelchtermans, G., & Vanderlinde, R. (2019). Teachers' first year in the profession: The power of high-quality support. *Teachers and Teaching: Theory and Practice*, *25*(2), 160–188. https://doi.org/10.1080/13540602.2018.1562440

Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, *28*(2), 189-1999.

Tsui, C. (2018). Teacher efficacy: A case study of faculty beliefs in an English-medium instruction teacher training program. *Taiwan Journal of TESOL*, *15*(1), 101-128. http://doi.org/0.30397/TJTESOL.201804_15(1).0004

Turner, V. (1969). *The ritual process: Structure and anti-structure*. Aldine De Gruyter.

Van Gennep, A. (1910). *De quelques rites de passage en Savoie*.

Voss, T., & Kunter, M. (2020). "Reality shock" of beginning teachers? Changes in teacher candidates' emotional exhaustion and constructivist-oriented beliefs. *Journal of Teacher Education*, *71*(3), 292-306. https://doi.org/10.1177/0022487119839700

World Health Organization. (2020). *Coronavirus*.

Xie, X., Siau, K., & Nah, F. F.-H. (2020). COVID-19 pandemic – online education in the new normal and the next normal. *Journal of Information Technology Case & Application Research*, *22*(3), 175–187. https://doi.org/10.1080/15228053.2020.1824884

Xu, M. A., & Storr, G. B. (2012). Learning the concept of researcher as instrument in qualitative research. *The Qualitative Report*, *17*(42), 1-18. https://doi.org/10.46743/2160-3715/2012.1768

Ybema, S., Beech, N., & Ellis, N. (2011). Transitional and perpetual liminality: An identity practice perspective. *Anthropology Southern Africa*, *34*(1/2), 21–29. https://doi.org/10.1080/23323256.2011.11500005

Appendix: Interview Protocol

Interview Protocol Form

School Site and District: _____

Interviewee (Title and Name): _____

Innovative Technology and Liminality Interviews

Introductory Protocol

To facilitate this basic qualitative study, I would like to record the audio from our conversation today. For your information, only I, the researcher, will access to the audio recording and transcription of the interview. After the legal wait period of five years, your interview audio files, and transcription will be securely destroyed. As a voluntary participant, I want to remind you of your right to decline to answer any question, to stop participating at any time, and your right to request a copy of your audio file or transcript. Furthermore, this study will follow all safety protocols concerning COVID-19 transmission by being an online meeting. My intent is to do no harm, and I sincerely appreciate your voluntary participation in this doctoral study.

I anticipate this interview to last between 30-60 minutes. As you have previewed, there are multiple questions to be asked during the interview. Rather than shortening your time to respond to the questions, I would like to ask to extend our time, by no more than 30 minutes total. Again, you are free to decline.

You have been selected and asked to speak with me today because you have identified yourself as a current second-year teacher in this state. You also identified yourself as someone who completed their first year of teaching during the spring of 2020 during initial COVID-19 school closures. These specifications give you a unique insight into the experience of using technology innovatively during the emergency transition to remote learning, as well as maybe developing your professional self-efficacy.

A. Interviewee Background	
Demographics: Please define your age, gender, and pronouns:	
How long have you been teaching? At this school/district?	
Where did you earn your teaching degree or credential?	
What was your undergraduate field of study?	

B. Liminal Experience Perspective	
Liminality is the transitional experience of shifting from one thing to another. In this case, I am looking at the transition from	

student to teacher, as it is an important, formative liminal experience at the beginning of one's teaching career. Please describe your experience as a first-year teacher during initial COVID-19-related school closures, specifically March through June of 2020	
Probes: *What grade(s) did you teach? Where? What challenges and successes did you experience? Specifically, what experiences did you have that related to or pertained to the COVID-19 pandemic?*	
How do you define self-efficacy? Probes: *self-efficacy means your ability to succeed in accomplishing a task. In this case, I am interested in how you define self-efficacy as a novice teacher* (Bandura, 1997).	
What experiences, relationships, or technology tools guided or aided your development of self-efficacy as a first-year teacher?	
Also, specifically during the COVID-19-related school closures, what factors might have helped you to develop self-efficacy? [RQ1]	

C. Technology and Innovation	
What technology resources were available to you during the COVID-19-related school closures? Probe: *Such as learning management system, online subscriptions, etc.*	
Which technology(ies) did you use most often? How did you learn to use it/them? Probe: *How did the way you learned about the technology(ies) influence your self-efficacy with technology?*	
Please tell me about how you used technology while facilitating distance learning.	

Innovation is described as any "idea, practice, or object" that is considered to be new, or is being used for a new or different purpose than originally designed (Rogers, 1983, p. 11). With that definition in mind, which technology(ies) did you use innovatively while facilitating emergency distance learning? [RQ2] Probe: *For example, learning management systems such as Schoology or Canva, applications such as Microsoft teams, and subscriptions such as Clever or Freckle.*	
How might your technology use have helped develop your self-efficacy as a novice teacher?	
How might your experience as a first-year teacher during COVID-19-related school closures have contributed to the way you used technology in innovative ways? [RQ3]	

Perspective on Teacher Preparation	
What technology classes, if any, did you take as part of your teaching degree or credential? Probe: *How many semesters/weeks?*	
What changes do you suggest should be included in the teacher education curriculum that would help you to prepare for distance learning and/or emergency situations? [RQ3]	

Post Interview Comments, Leads, and/or Observations:

This concludes our interview. As a reminder, after the legal wait period of five years, your interview audio files, and transcription will be securely destroyed. My intent is to do no harm, and I sincerely appreciate your voluntary participation in this doctoral study. Thank you for your time.