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How to Support Secondary School Teachers After Emergency Remote Teaching

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Walden University

College of Education & Human Sciences

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Julia Howard Tortorice

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University

2023

Abstract

How to Support Secondary School Teachers After Emergency Remote Teaching

by

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

August 2023

Abstract

The forced use of emergency remote teaching (ERT) during COVID-19 school closures was sudden, disruptive, and difficult for teachers, leading to a minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience. The technology acceptance model was the framework used in this study. The research questions explored the framework by asking about teacher perspectives of support, usefulness, and ease of use of online educational technology. The data collection method for this general qualitative study was semistructured interviews with 12 secondary school teachers who experienced ERT. This study supports that there are still unmet support needs for online education, and the ERT experience changed the participants' perspectives of perceived usefulness and perceived ease of use of online education to positive. An incidental finding was that ERT was disruptive. The findings support a positive social change to meet students' technology needs for higher education and future employment by understanding how to support secondary school teachers' use of online educational technology after the ERT experience.

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Chapter 1: Introduction to the Study

The topic of this study was how to support secondary school teachers after emergency remote teaching (ERT). Forced use of ERT during COVID-19 school closures were sudden, disruptive, and difficult for teachers. This study was needed to help fill the gap in practice and literature on how to support secondary school teachers' use of online educational technology after the ERT experience. This experience changed secondary school teachers' perspective of barriers to implementing and using online educational technology, affecting technology acceptance. This study was needed to support practice and social change by providing information to change practices to support secondary teachers' continued usage of online education to help meet students' technology education needs.

In the background, I discuss what happened to cause ERT and explain the problem of a minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The study was supported by the research questions on secondary school teachers' experience and perspectives after ERT. The qualitative nature of the study is also explained, and the technology acceptance model (TAM) conceptual framework is discussed. Key definitions are provided, the assumptions describe the conditions taken as probabilities that help the study make sense, and the scope and delimitations present the study's boundaries and why those decisions were made. The internal and external threats are discussed in the study's limitations. Finally, the effect of this study on social change is discussed in the section on the significance of the study.

Background

Technology impacts most aspects of life in the United States, including education. Due to the increased need for technical competence in the workforce, online learning has become integral to education worldwide (Kumar et al., 2019; National Science Foundation, 2021). Online learning can increase productivity, improve the rate of learning, and reduce costs (Department of Education, Office of Elementary and Secondary Education, 2022). Secondary schools are integrating more online learning to prepare students for future employment and higher education (Dolighan & Owen, 2021; Gray & Lewis, 2021; Margolin et al., 2019). Online educational technology is valuable, and U.S. education systems have incorporated technology and online education.

Acceptance of technology and barriers to implementation are complex and have existed before ERT. Online teaching has been stigmatized as less effective than face-to-face education (Padgett et al., 2022). In a literature review on studies from 2008–2016, educators' perspectives and attitudes about online education did not change over time, continued to be negative, and face-to-face education was considered the most efficacious (Kumar et al., 2019). However, in support of online education, students liked online learning, and learning outcomes were comparable.

The ERT experience began when the World Health Organization declared COVID-19 a public health emergency on January 30, 2020, and on March 11, 2020, they announced COVID-19 as a global pandemic (Howard et al., 2021). As of March 20, 2020, 135 countries had school closures due to COVID-19 (Darazha et al., 2021). When ERT occurred, schools and teachers were at various levels of readiness to use online

educational technology (Trust & Whalen, 2020). Closures of schools due to COVID-19 resulted in the unprecedented emergency transition to online education. The results were online learning environments that covered content, not courses developed with the correct pedagogy for online education, which can take up to six months to design (Schlesselman, 2020).

Teaching online requires technical support, institutional support, skills with technology, and pedagogical approaches different from in-class teaching (Howard et al., 2021). A lack of internet access was a significant barrier for students and teachers in the United States (Gordy et al., 2021). Internet access, devices, and software barriers varied from school to school. Other barriers were increased workload and difficulty in work-life balance. Teacher-student interactions were difficult, preparation time increased; there was an unwillingness to use distance teaching, and deficient infrastructure (Tseng et al., 2022). Barriers to technology also included a lack of support, time, incentives, access, and understanding (Hill & Valdez-Garcia, 2020). Inadequate time was a recurring barrier, even with teachers experienced in online education.

Researchers have consistently found problems with online education transition before and after ERT and recommended more research about barriers to implementing online educational technology. Implementation barriers vary between locations and over time (Francom, 2020). In a survey from 2015 and 2018, the primary barrier was a lack of time for preparation (Francom, 2020; see also McCulloch et al., 2018). Other barriers were training and technical support at 37.6% in 2015, decreasing to 35.9% in 2018. Administrative support was consistent at approximately 33.3%, and teachers' beliefs

were consistent at around 15.6%. Software access is another major barrier (McCulloch et al., 2018). The lack of time, materials, and technical education found in their study has also been noted in research conducted 30 years ago (Nordlöf et al., 2019). Teachers also have negative attitudes toward technology because of a lack of support and resources. A deficit of administrative, technical, and professional development (PD) support was such a significant barrier to technology integration that it cannot be overcome, regardless of teachers' positive attitudes and high self-efficacy (Önalán & Kurt, 2020). Value beliefs strongly predicted the teachers' perspectives about their ability to implement the technology and mediated perspectives of problems with external barriers (Vongkulluksn et al., 2018). Though studies have identified barriers to technology and Internet access, adequate access alone did not increase technology use.

Barriers must be remediated to support online educational technology use (Francom, 2020; Willyarto et al., 2021). Strategies to overcome barriers to technology implementation were having a shared vision and plan, reducing resource scarcity, changing attitudes and beliefs, PD, and evaluation (Tosuntaş et al., 2019). ERT exacerbated existing barriers to online education. ERT led to the gap in practice and literature of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. In an environment of increasing online education, this study was needed to understand how to support secondary school teachers and help them continue to use online education. Though the ERT disruption has passed, teaching has been changed forever (Howard et al., 2021).

Problem Statement

The problem that was addressed through this study was minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. Forced use of ERT during COVID-19 school closures highlighted a gap in practice and literature on how to support secondary school teachers' use of online educational technology after the ERT experience. Multiple researchers studied kindergarten to 12th-grade teachers' ERT experiences in the United States or similar education systems since it began in the spring of 2020 and recommended further post-ERT research. More post-ERT research is needed to identify how to support teachers' use of online educational technology (Dolighan & Owen, 2021). The National Center for Education Statistics survey of U.S. schools in the spring of 2020 reported that 26% of schools' lack of support was a moderate challenge to using educational technology, and eight percent said it was a large challenge (Gray & Lewis, 2021). Further research is needed on teachers' perspectives on affective and cognitive responses to online educational technology in an unstable work environment (Panisoara et al., 2020). These recommendations are evidence that the problem was current, relevant, and significant.

Current research found problems during ERT because it was so sudden (Marshall et al., 2020, p. 49). It was recommended to study teachers' experience transitioning and using online educational technology during ERT (Trust & Whalen, 2020). Many teachers' technology skills development was inadequate before ERT (Gomez et al., 2021). Even if the teachers had online education experience, they had to learn and implement new technology and redesign lesson plans due to the ERT crisis. The level of

school and teacher readiness varied by time and location. Marshall et al. (2020) found that 92.4% of teachers had never taught online. Trust and Whalen (2020) found that a lower percentage of 66% of teachers had never taught online. Webb et al. (2021) further noted that teachers felt their preparedness before ERT was fair to good, which increased from good to excellent after ERT.

Specific barriers were inadequate quality of teaching, lack of time, teachers could not hold the student responsible, lack of technical support, and a lack of real-time communication (Marshall et al., 2020). Other researchers identified the top five barriers during the transition were feeling overwhelmed (61%), lack of Internet access (53%), lack of knowledge about online teaching strategies (52%), prioritization of personal needs (50%), and lack of knowledge about online teaching tools (44%; Trust & Whalen, 2020). Inadequate support for educational technology was exacerbated during ERT. This phenomenon needs to be understood in an environment of increasing online education in secondary schools.

Purpose of Study

The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience, which aligned with the problem of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. Researchers consistently found problems with online education transition before and after ERT and recommended more research, as ERT exacerbated existing barriers to online education. The paradigms for this study aligned with the problem, purpose, research questions, and

the qualitative methodology. A study's paradigm collects facts, assumptions, and practices to guide knowledge generation (Burkholder et al., 2020). For this study, the ontology was relativism because the purpose was to seek the reality of the teacher's perspective of their experience during ERT. The epistemology was experiential knowledge because the study seeks to understand how teachers experienced ERT and their beliefs are based on their perceptions. The philosophy was constructivism because there was no single truth; multiple realities are perceived and interpreted by the teachers experiencing ERT. I sought to understand how ERT changed the paradigms of secondary teachers regarding online education. The ERT experience may have changed secondary school teachers' perspectives of barriers to implementing and using online educational technology, affecting technology acceptance. Barriers must be remediated to support online educational technology use (Francom, 2020; Willyarto et al., 2021). Inadequate time was a recurring barrier, even with teachers experienced in online education. Strategies to overcome barriers to technology implementation were having a shared vision and plan, reducing resource scarcity, changing attitudes and beliefs, PD, and evaluation (Tosuntaş et al., 2019).

Research Questions

There are three research questions for this basic qualitative study.

RQ: What were the secondary school teachers' perspectives about support for online educational technology after ERT?

RQ 2: How did the secondary school teachers' perspectives about the usefulness of online educational technology change after ERT?

RQ 3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after ERT?

Conceptual Framework for the Study

The concept that supports this study was the technology acceptance model (TAM), developed by Davis (1989), to explain how technology acceptance was influenced. Technology can increase productivity and job performance, but the barriers to implementation are complex. The contextual lens of TAM was understanding teachers' perspectives of PU and PEOU of online educational technology after ERT and identifying how to adjust practices to support teachers. The disruptive experience of ERT may have contributed to increased barriers to implementation. Davis (1989) developed and validated a scale showing that the factors PU and PEOU significantly correlated with behavioral intent (BI) to use technology. The logical connection between this framework and my study was that TAM factors were used to understand secondary school teachers' perspectives of PU, PEOU, and support experiences with online educational technology during ERT. I developed a semistructured interview instrument to collect data about the research questions and understand the primary factors of TAM and technology support. Additionally, the research questions are worded to directly collect detailed interview data to fill the gap in practice and literature of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience.

Nature of the Study

The rationale for selecting a qualitative study design was that I sought to

understand the perspective of secondary school teachers who experienced ERT. The method aligns with the problem and purpose because the information helped to understand how to support secondary school teachers' use of online educational technology after the ERT experience. The method aligns with the research questions because the questions were about the secondary school teachers' perspectives on online educational technology after ERT. Another reason I chose a qualitative study design is because it was suggested or recommended by several researchers (Gomez et al., 2021; Kumar et al., 2019; Marshall et al., 2020; Mustafa & Garcia, 2021).

An analysis of similar research was used in instrument development. The instrument asks questions to understand the primary factors of TAM and technology support. The interview question explored TAM factors to understand secondary school teachers' perspectives of support, PU, and PEOU experiences with online educational technology during ERT. Semistructured audio conferencing interviews of 12 secondary school teachers were done using this instrument. The participants were secondary school teachers who experienced ERT. Participants were recruited by messages on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. Participants were recruited nationally to prevent any potential to identify the participant or organization based on their responses since the locations were unknown. This recruitment avoided relationship, economic, and professional risks.

The interviews were transcribed and coded. The transcriptions were member-checked to confirm the findings. The data were categorized, grouped into higher-level categories, and grouped into themes (Saldana, 2016). In Vivo coding followed by pattern

concept coding and computer-assisted qualitative data analysis software Atlas.it.

Definitions

The following are definitions of key terms used in this document.

Actual technology use (AT): A person's actual use of the technology (Sargolzaei, 2017).

Behavioral intent (BI): A person's subjective intent to change their behavior to accept technology (Davis, 1989)

Continuance intention (CI) is an individual's intention to continue using or long-term usage intention of a technology (Sharma & Saini, 2022)

Emergency remote teaching (ERT): A temporary move to delivering education in an alternate system in an emergency situation (Hodges et al., 2022). It was different from online education, which was planned.

Online education: Education delivered online (Singh & Thurman, 2019). It may include multiple combinations of synchronous, asynchronous, part of the educational program, or all educational presentations. The term was often used interchangeably with distance learning, blended learning, and e-learning (Howard et al., 2021).

Perceived ease of use (PEOU): An individual's subjective judgment of the effort it will take to learn and use a program (Davis, 1989).

Perceived usefulness (PU): An individual's subjective belief that a computer program will improve performance (Davis, 1989).

Technology acceptance model (TAM): A theoretical model that explains variables influencing technology acceptance and integration (Davis, 1989).

Assumptions

Assumptions are conditions taken as probabilities that help the study make sense (Burkholder et al., 2020). An assumption should be a critical condition, have a basis for the assumptions, and be outside the researcher's control. One assumption was that the participants answered honestly and accurately. This assumption was critical to the quality and accuracy of the coding, was based on the teacher's voluntary and probably altruistic participation and was not within my ability to discern. Another assumption was that the participant's receipt of a \$50 thank-you card was insufficient to coerce participation. Freedom from coercion was needed for the study quality; the \$50 was not enough to be significant to the participants given their probable salary, and I do not know the participants' financial situation.

Other assumptions are related to my planning and preparation. An assumption was that the inclusion criteria were appropriate for the purpose. This assumption was critical to the quality and consistency of the data, restricts the participant pool to teachers with similar experience with ERT, and I cannot confirm that the teacher meets the inclusion criteria. Another assumption was that the participants believed I was ethical and adhered to the confidentiality of the data. This assumption was critical to obtaining participants and was supported by the informed consent and the interview instrument. I do not have a relationship with the participants, so I cannot know their beliefs.

Scope and Delimitations

The scope of this study was U.S. secondary school teachers' experience with online education during ERT. The disruption of ERT was a current problem that affected

teachers' experience with online education, thereby changing perspectives. The study covers the gap in practice and literature of minimal understanding of how to support secondary teachers' continuing use of online educational technology after ERT (Dolighan & Owen, 2021). The research was done after approval within a month. Limitations were set on participation to limit the scope and obtain a more homogenous participant pool.

Participant eligibility criteria were secondary school teachers with (a) a minimum of three years of teaching experience, (b) taught secondary school during school lockdowns using emergency online educational technology, and (c) were currently teaching secondary school. There were no limitations on total experience, age, location, ethnicity, sex, culture, nationality, or financial situation. Participants were recruited nationally by messages on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. Participants were interviewed by audio conferencing; only audio recording was done. The practice gap and TAM framework drove the development of the research questions to explore the variable of the perspectives of technical support, PEOU, and PU after ERT. These variables were identified based on the problem, purpose, gap, TAM, and literature review. The other decisions were made to make the scope of the study manageable.

The delimitations were decisions based on the literature review. I eliminated quantitative or mixed-method research because those were the methods used most often for TAM and ERT. Qualitative research of the phenomena was minimal and was suggested or recommended by several researchers. Selecting secondary school teachers was a decision to limit the scope of the study. Preschool through middle school was

eliminated because secondary schools instruct students closer to the need for technology skills in employment and higher-level education. The scope, delimitations, and methodology affect the transferability. The transferability threats to this study are a function of the convenience sampling methodology of participants.

Limitations

The external validity and transferability threats to this study were a function of the convenience sampling methodology of participants. Besides the eligibility criteria, secondary school teachers' experience during ERT varied based on their teaching environment's setting, context, and context mediators (Burkholder et al., 2020). Elements that may influence the context are access to resources, the level of educational technology used before ERT, teachers' computer competency, teachers' self-efficacy with electronic technology, and technical support systems. There was probable variance in how the administration managed ERT in the different environments. The qualitative methodology was iterative and allowed for flexibility and a thick description of the perspectives and support experiences of the participants (Babbie, 2017). Thick descriptions supplied transferability to allow others to identify applicability to a situation. The delay between the ERT experience and the interview data collection may impact the participants' memory and perspectives (Burkholder et al., 2020). This threat cannot be mediated; however, the participants experienced a similar timeline. Another concern was saturation, which is the point where the researchers see recurrent patterns and concepts (Ravitch & Carl, 2019). Ten to 12 interviews should reach data saturation (Lambert, 2012). I saw recurrent patterns and concepts in the sample of 12.

Internal validity and credibility threats to this study are a function of the inexperience of the researcher. Experienced researchers on the doctoral committee guided the researcher. I developed the interview instrument; therefore, the instrument was not research validated. Researcher bias was an internal threat to qualitative studies (Burkholder et al., 2020). My self-evaluation was documented in a positionality memo. Thorough documentation was done to reduce internal threats. Correct documentation preservation provided confirmability (Burkholder et al., 2020). Two negative case analyses were documented.

Significance

A study is significant if it influences practice and generates additional research (Burkholder et al., 2020). This study should affect practices in educational systems to provide additional support for secondary school teachers' use of online educational technology after the ERT experience. It filled the gap for qualitative research about ERT. It contributed to refining quantitative survey instruments based on the qualitative results explaining the teacher's perspectives.

Multiple researchers studied kindergarten to 12th-grade teachers' ERT experience in the U.S. education systems and recommended further post-ERT research (see Gomez et al., 2021; Marshall et al., 2020). This research can help to identify how to support teachers' use of online educational technology. Online learning increased in secondary school education and was integral to future education (Dolighan & Owen, 2021; Gray & Lewis, 2021). Students need online educational technology for future employment and higher education (Kumar et al., 2019; National Science Foundation, 2021). Education

was instrumental in social change (Brown & Baltes, 2017). Economic outcomes like employment and earnings are associated with the individual's educational attainment (Irwin et al., 2022). This study supported a positive social change to meet students' technology needs for higher education and future employment by understanding how to support secondary school teachers' use of online educational technology after the ERT experience.

Summary

The COVID-19 public health emergency on January 30, 2020, resulted in school closures, disruption of the norm, and ERT. Forced use of ERT during COVID-19 school closures was sudden, disruptive, and difficult for teachers. ERT highlighted a gap in practice on how to support secondary school teachers' use of online educational technology after the ERT experience. The purpose of the study was to understand the problem, supported by research questions on secondary school teachers' experience and perspectives after ERT. The nature of the study was a qualitative exploration using the TAM conceptual framework. The assumptions, scope, delimitations, and limitations are many and complex. This study supported the social change to meet students' experiences for higher education and future employment by understanding how to support secondary school teachers' use of online educational technology after the ERT experience. This introduction to the study is discussed in detail in the next chapter of the literature review.

Chapter 2: Literature Review

This qualitative study's purpose was to understand how to support secondary school teachers' use of online educational technology after the ERT experience. The ERT experience changed secondary school teachers' perspectives on barriers to online educational technology implementation. These barriers included the TAM concepts of perceived lack of support, PU, or PEOU of online educational technology. The purpose was developed from the literature review described in this chapter. A literature review identified the minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. A review of the literature also found that more technical support was needed.

This chapter includes a discussion of the literature review processes and findings. This chapter includes an introduction, literature search strategies, the conceptual framework, key concepts, and a summary and conclusions. The key concepts were the value and use of online education, factors that impact the use of educational technology, teachers' level of readiness for ERT, teachers' perspectives and experiences during ERT, barriers to transition, and teachers' PD needs. Administrators and teachers need to know how to change practices to support secondary school teachers' use of online educational technology after the ERT experience.

Literature Search Strategy

Three strategies were used in the literature search for this study. The strategies included searching relevant associations and agencies, the Walden University Library, and sources gleaned from article reference lists. The first strategy was a search of

journals and documents from the Department of National Science Foundation, National Center for Education Statistics, Office of Education Technology, Association for the Advancement of Computing in Education, International E-Learning Association, and Association of Educational Communication and Technology. This search found current problems with teachers and educational technology, focusing the second strategy on the effects of ERT.

The second strategy was a literature search in the Walden University Library. The searches were set for all databases. These databases were Education Source, ERIC, EBSCO, Sage Journals, ScienceDirect, Taylor, and Francis Online, Complementary Index, Directory of Open Access Journals, and Academic Search Complete. All searches were set to only search for peer-reviewed scholarly journals. These basic settings eliminated irrelevant sources from the selected search terms and Boolean phrases.

The following were the search terms and Boolean phrases used for the Walden University Library literature search. The terms used to investigate the lockdown impact on teachers included *emergency remote teaching*, *COVID-19* or *coronavirus* or *2019-NCOV* or *Sars-COV-2* or *COV-19* in varied combinations with the terms *education* or *school* or *teaching* or *classroom* or *education system*. The terms used to investigate factors that impact teachers' use of educational technology were *online learning* or *e-learning*, or *distance learning* in various combinations with the terms *digital competency*, *technology integration*, *computer competency*, *educational technology*, *barriers* or *obstacles* or *challenges* or *difficulties*, *issues*, *problems*, *influences*, and *causes* or *factors* or *reasons for determinants* or *predictors*. Theories were investigated using the terms

theories and concepts in various combinations with *online learning* or *e-learning* or *distance learning*, *digital competency*, *technology integration*, *computer competency*, and *educational technology*. This search led to a more focused search of theories and concepts.

The more focused search used the terms *post-traumatic stress disorder*, *experiential learning*, *social learning theory*, *technology integration theory*, *self-efficacy*, *technology acceptance model*, *TAM*, *technological knowledge*, *pedagogical knowledge*, *content knowledge*, *TPACK*, *technostress*, and *self-efficacy*. The study's significance was investigated using the terms *education* or *school* or *learning* or *teaching* or *classroom*, or *education system* with varied combinations of the terms *social impact*, *social status*, *social class*, *socioeconomic status*, and *social change*. Recurrent library searches for the most effective search terms were set up to provide new literature through e-mail notifications that continued until the research was complete. This strategy kept the study up to date. Literature retrieved from the second strategy led to the third strategy.

The third strategy was to access sources listed in the reference lists of articles. This source led to search terms, seminal works, and additional resources. These three strategies effectively provided the resources to focus on and complete this study. The evaluation of the literature found by these search strategies identified the following topics: the conceptual framework of TAM and related key variables of value and use of online education, factors that impact the use of educational technology, level of readiness, teachers' perspectives, and experience during ERT, barriers to transition, and Teachers' professional development needs.

Conceptual Framework

Technology can increase productivity and job performance, but there are complex barriers to implementation and acceptance of the technology by employees that have long been researched as a barrier to implementation. Davis (1989) developed the TAM to explain the factors resulting from technology use. TAM has five main aspects: PEOU, PU, the attitude of use, BI, and AT (Tseng et al., 2022). Davis developed and validated a scale showing that PU and PEOU significantly correlated with BI to use technology. He found that attitudes only partially mediate the effect of PEOU and PU on BI. PU is the individual's belief that a computer program will improve performance. PEOU is the individual's judgment of the effort it will take to learn and use a program. If the application is easy to use, the application may not be worth the effort to use. The application might be acceptable despite poor PEOU if the PU was high. Davis found that PU was a strong determinant of use and that PEOU appeared to complement it but was not a strong determinant of use.

Multiple studies of TAM were conducted over 30 years that validated the theory but identified concerns. Over time, TAM has been validated as identifying 40% of the variance in AT for multiple professions and was determined to be the best at predicting technology acceptance, but there were concerns about the theory (Davis & Venkatesh, 1996; Sargolzaei, 2017). Andarwati et al. (2020) confirmed TAM in that PU was a strong determinant of BI, but PEOU was a stronger determinant of BI. BI did not predict AT but was needed for AT. Antonietti et al. (2022) also confirmed that PU was a strong determinant of BI; however, they found no significant relationship between PEOU and

BI, which differs from the previously discussed studies.

Other researchers found some confirmation but did not consistently support the original TAM findings that PEOU influenced AT or BI. Tseng et al. (2022) found that the quality of the teaching platform affected PU, and PEOU had a significant impact on PU. PU had a significant impact on attitude, which had a significant impact on BI. Chen et al. (2022) found that PU indirectly influenced CI and that PEOU did not positively affect PU. Walker et al. (2020) found that BI was not significantly impacted by PEOU nor PU in a study of practicum teachers regarding mobile technology; however, they did find a strong link between PEOU and PU. These results may be due to the comparison of mobile technology use as opposed to online education technology. Sharma and Saini (2022) found that PU did not impact continuance intention (CI). This finding differs from the previously discussed studies, but CI had a slightly different definition than BI. They did confirm that PEOU positively impacted CI and CI positively impacted AT.

Additional research identified attitude as a determinant. Songkram and Osuwan (2022) found that PU and PEOU directly influenced attitude. PEOU was influenced by technology self-efficacy, subjective norms, and facilitating conditions. Sulistiyo et al. (2022) found that neither PEOU nor PU was a significant determinant of AT and that motivation, skills, and attitude influenced AT. The strongest determinant of AT was attitude. PEOU and PU were significant determinants of attitude, and they mediated technology use. Tseng et al. (2022) found that the quality of the technology affected PEOU, PU, and teachers' attitudes toward technology and that PEOU impacted PU and attitude. They also found that teachers' attitudes affected BI. These research studies

validated TAM but confirmed weaknesses in the theory.

Researchers sought to rectify the shortcomings of TAM. One approach was to revise the TAM. Venkatesh and Davis (2000) acknowledged that TAM was weak because it only considered a technology system's characteristics. They developed a revision labeled the TAM2. This revision incorporated social influence processes and cognitive instrumental processes as a mediator of PU and BI. The social influence processes studies as the subjective norm, voluntariness, age, sex, culture, and image and that the cognitive instrument processes as job relevance, output quality, and result in demonstrability (Sargolzaei, 2017).

The research validated TAM2 as an improvement in the theory. The research on TAM2 found that PEOU was mediated by computer self-efficacy to affect BI (Venkatesh & Davis, 2000). TAM2 was validated for mobile advertising systems but was not generalizable (Mudaly et al., 2013). Paramaeswari et al. (2020) validated TAM2 for use in e-commerce applications, but again, it needed to be more generalizable. TAM2 was valid but was not generalizable to online educational technology, so further theory development resulted.

Venkatesh and Bala (2008) developed and researched the TAM3 as an extension of TAM2. The TAM3 includes individual differences, system characteristics, social influence, and facilitating conditions. TAM3 needed further research to apply to multiple professions because of the difference in motivators and barriers by profession. In particular, Sargolzaei (2017) found that TAM3 did not apply to transportation and urban planning professions. TAM3 was validated but needed to be generalizable to online

educational technology. Other researchers used a different approach.

The different approach was to use the TAM in conjunction with other theories. For example, Mustafa and Garcia (2021) conducted a systematic review of research where TAM was combined with other theories to study BI to use online educational technology. They found that TAM combined the expectation confirmation model, information system success model, social motivation, self-determination theory, theory of planned behavior, task technology fit, and flow theory. The most common combinations were TAM plus task technology fit or TAM plus theory of planned behavior. The systematic review found that the factors driving continued online learning systems in the combined research studies were course information, PU, attitude, system quality, user satisfaction, PEOU, and academic performance. This systematic review found useful information but did not recommend a specific combination of TAM with other theories. A conclusion can be drawn by considering the use of TAM theories and TAM plus other research theories.

The TAM is the theory that has been consistently validated and generalizable for researching the intention to use online educational technology. The TAM was an appropriate theoretical framework to discuss BI (Tseng et al., 2022). The perspective of a lack of support, PU, and PEOU fit well with qualitative research methodology. The TAM was chosen for this study to understand how to support secondary school teachers' use of online educational technology after the ERT experience.

Literature Review Related to Key Concepts and Variables

Value and Use of Online Education

Online teaching has been stigmatized as less effective than face-to-face education (Padgett et al., 2022). Kumar et al. (2019) systematically reviewed research literature on online education from 2008-2016. They found that educators' perspectives and attitudes about online education did not change over time and continue to be negative. The review found deficiencies with online education and that face-to-face education was considered the best. However, they found that students liked online learning and that learning outcomes were comparable. There were still negative attitudes, but online education will be implemented in secondary schools to meet the challenges of the 21st-century workforce.

Factors That Impact the Use of Educational Technology

Factors that impact the use of educational technology are interconnected and complex. Vongkulluksn et al. (2018) found that value beliefs were directly associated with teachers' technology integration. They found that value beliefs were affected by experience and influenced technology integration. Nelson et al. (2019) confirmed that skills training alone was ineffective in technology integration. Taimalu and Luik (2019) did not support the findings that beliefs were directly associated with use. They found that beliefs about the value of technology had only an indirect effect on technology use. Multiple researchers found other factors.

Dolighan and Owen (2021) found that professional development (PD) and experience affected online educational technology use. Panisoara et al. (2020) found

multiple indicators of teachers' intent to continue online education use in response to the ERT experience. The most directly significant indicator was intrinsic work motivation. The teacher's technological experience, pedagogical beliefs, and knowledge were also indicators. The teacher's self-efficacy was also an indicator. Dincher and Wagner (2021) found that experience and motivation were associated with actual technology use. Other researchers had different findings discussed in the following paragraph.

Khlaif (2018) confirmed that attitudes were important in accepting technology. Attitudes were influenced by technical support, training, and infrastructure. Kul and Çelik (2018) found that attitudes, subjective norms, and perceived control influenced intentions to use technology. (Nordlöf et al., 2019) found that experience, education, and interest were factors that affected attitudes toward technology. Walker et al. (2020) postulated that teacher attitudes were more important than technical skills when integrating mobile technology. Conclusions can be made based on these studies previously discussed.

Education, knowledge, skill, experience, competency, and self-efficacy were factors that contributed to the teacher's personal beliefs about their ability to use educational technology. The concepts of usefulness, meaningfulness, attitude, and interest were factors that contributed to teachers' motivation to use educational technology. They also contribute to the teachers' beliefs that educational technology should be used. We discussed factors somewhat within the teachers' control. The following paragraph discusses factors that were not in the teacher's control.

Ease of use, access, and support systems were factors that were usually beyond the teachers' control. Ease of use was determined by the characteristics of the software

the school chose and the teacher's previous experience with similar technology. A 2020 US public schools survey by the Institute of Education Sciences found that 22% of schools rated outdated computers or software as a moderate challenge, and 12% rated it as a significant challenge (Gray & Lewis, 2021). Twenty-six percent of schools reported a lack of support as a moderate challenge, and eight percent reported it as a large challenge. Internet access, computer access, and inadequate technical support were lacking during the ERT transition (Gordy et al., 2021; Trust & Whalen, 2020). Administrators need to mediate these obstacles to the implementation of educational technology.

Level of Readiness

When ERT occurred, schools and teachers were at various levels of readiness to use online educational technology (Trust & Whalen, 2020). Petko et al. (2018) found that technology integration depended on teacher readiness, which was strongly impacted by school readiness. Teacher readiness was described as perceived skills and beliefs. School readiness was defined as technology resources, emphasis on technology integration, clear goals, administration support, and peer support. ERT revealed significant variations in teachers' readiness to use online educational technology (Trust & Whalen, 2020). They were teaching online required skills with the technology and pedagogical approaches that were different from in-class teaching, technical support, and institutional support (Howard et al., 2021). Designing an online course takes up to six months (Schlesselman, 2020). ERT resulted in online environments that covered content, not courses developed for online education. As discussed in the next paragraph, multiple researchers studied the

variations in readiness for ERT.

Gomez et al. (2021) found that many teachers' technology skills development was inadequate before ERT. They found that even if the teachers had online education experience, they had to learn and implement new technology and redesign lesson plans due to ERT. Marshall et al. (2020) found that 92.4% of teachers had never taught online. Trust and Whalen (2020) found that 66% of teachers had never taught online. Webb et al. (2021) asked participants to answer questions about their preparedness for online education before ERT and after ERT. Teachers felt their preparedness before ERT was fair to good, which increased from good to excellent after ERT. Howard et al. (2021) found similar results.

Howard et al. (2021) developed four profiles based on the teachers' perspectives on readiness and institutional support. They recommended different levels of PD and support based on the profile. Participants in profile one, low readiness, only 10.8% of teachers had previous experience with online education. In profile four, high readiness, 53.3% had previous experience. Assigning a level of PD based on the teachers' readiness profile seems like a good idea: however, the instrument needs to be refined and confirmed before practical application. The following paragraph discusses the timing and quality of PD.

Webb et al. (2021) found that teachers' hours spent in PD for online education before ERT had no relationship with knowledge, skills, and self-efficacy. However, PD hours during ERT had a statistically significant relationship with knowledge, skills, and self-efficacy. Margolin et al. (2019) found that the quality of technology PD was rated

36% above average or excellent. These researchers recommend more PD for teachers with less than three years or more than 20 years of experience. This survey was done after the school district had invested in training and providing each teacher and student with a tablet or laptop. Therefore, the results were more positive than schools without a similar investment. These studies ask participants to think back on their experiences. The following paragraph describes a pre-ERT study.

A 2017 survey showed that 78% of teachers agreed that technology improved learning (Margolin et al., 2019). Science teachers and teachers with four to nine years of experience were more likely to agree that they could implement technology; overall, 78% of teachers agreed. Ninety-three percent reported having access to a computer at all times. Sixty-four percent rated technology support as above average or excellent. Considering the research discussed in this section, teachers' level of readiness for ERT was variable.

Teachers' Perspectives and Experiences During ERT

Several researchers found that the forced use of ERT during COVID-19 school closures was sudden, disruptive, and difficult for teachers. Marshall et al. (2020) found that teachers felt overwhelmed and unprepared for ERT. Trust and Whalen (2020) confirmed those findings. Watermeyer et al. (2021) confirmed the disruptions, feeling overwhelmed, disrupted, traumatized, and unprepared for ERT. In an uncontrolled workplace context like ERT, teachers can only control how they respond to the stress of imposing online teaching (Panisoara et al., 2020). Coping strategies help teachers manage their responses.

MacIntyre et al. (2020) found that coping strategies that were active and approach-orientated resulted in more positive psychological outcomes. Avoidance coping resulted in negative psychological outcomes. The teachers expressed concern with the hurried implementation versus a planned online education program. Marshall et al. (2020) found that teachers recommended better emergency planning and technical training. ERT was not a pleasant experience for teachers.

Barriers to Transition

Closures of schools due to COVID-19 resulted in the unprecedented emergency transition to online education. Marshall et al. (2020) conducted research in March and April 2020. They found that teachers reported that all job functions were more difficult during ERT. Specific barriers were inadequate quality of teaching, lack of time, teachers could not hold the student responsible, lack of technical support, and a lack of real-time communication. Trust and Whalen (2020) also conducted research early in the transition to ERT. The top five barriers to transition were feeling overwhelmed (61%), lack of internet access (53%), lack of knowledge about online teaching strategies (52%), prioritization of personal needs (50%), and lack of knowledge about online teaching tools (44%). Other researchers confirmed that the transition was disruptive.

Gordy et al. (2021) conducted research after ERT and identified the barriers to internet access, increased workload, and difficulty in work-life balance. Internet access, devices, and software vary from school to school. A lack of internet access for students and teachers was a significant barrier in the US. Tseng et al. (2022) found that teacher-student interactions were difficult, and preparation time increased. There was unwilling

to use distance teaching, and the infrastructure was deficient. However, as discussed in the next paragraph, these barriers existed before ERT.

In a longitudinal survey conducted in 2015 and repeated in 2018, Francom (2020) found that implementation barriers vary between locations and over time. The primary barrier was a lack of time for preparation. This finding was consistent between both survey dates at around 60%. Other barriers were training and technical support at 37.6% in 2015, decreasing to 35.9% in 2018. Administrative support was consistent at approximately 33.3%, and teachers' beliefs were consistent at around 15.6%. McCulloch et al. (2018) also found that the barriers to using technology were the need for more preparation time and software access. Studies around the same timeframe focused on different barriers discussed in the next paragraph.

Vongkulluksn et al. (2018) found that value beliefs strongly predicted the teachers' perspectives about their ability to implement the technology. Positive beliefs and attitudes toward technology-mediated perspectives of problems with external barriers. Hill and Valdez-Garcia (2020) found barriers to technology use were a lack of support, time, incentives, access, and understanding. Nordlöf et al. (2019) noted that the lack of time, materials, and technical education found in their study was noted by teachers in research 30 years ago. They also found that teachers have negative attitudes toward technology because of a lack of support and resources. Önalán and Kurt (2020) postulate that a deficit of administrative, technical, and PD support was such a significant barrier to technology integration that it cannot be overcome, regardless of teachers' positive attitudes and high self-efficacy. While studies identified barriers to technology

and internet access, adequate access alone did not increase technology use (Vongkulluksn et al., 2018). Conclusions can be drawn when the barriers before, during, and after ERT are considered.

Barriers must be remediated to support online educational technology use (Francom, 2020; Willyarto et al., 2021). Inadequate time was a recurring barrier, even with teachers experienced in online education. Strategies to overcome barriers to technology implementation were having a shared vision and plan, reducing resource scarcity, changing attitudes and beliefs, PD, and evaluation (Tosuntaş et al., 2019). Researchers consistently found problems with online education transition before and after ERT and recommended more research about barriers to implementing online educational technology. ERT exacerbated existing barriers to online education.

Teachers' Professional Development Needs

Several researchers identified the need for PD about online education. Gomez et al. (2021) found that continuous PD was key to teachers' beliefs in their ability to use technology. (Howard et al., 2021) identified the need for training and support for online education teachers. This recommendation was confirmed by Nikolopoulou and Kousloglou (2022). Vongkulluksn et al. (2020) recommend that PD include values belief profiling with profile-specific strategies. Participants identified the need for continuing PD for online education (Webb et al., 2021). Jones and Dexter (2018) recommend ongoing technical support and formal, informal, and independent PD. Dolighan and Owen (2021) suggest that PD be offered in multiple sessions, including effective pedagogy practices with technology. Pedagogy was an essential aspect of technology

integration (Petko et al., 2018). Taimalu and Luik (2019) found that technology and pedagogical knowledge directly affected integration. Darazha et al. (2021) recommended the development of standard digital competencies and PD for teachers. Mouchantaf (2020) suggests that institutions be mandated to provide PD to teachers for online education. PD was consistently recommended, but there were differing opinions regarding the impact of training and experience.

Song (2018) found that experience improved the participants' beliefs about their ability to implement educational technology. Dolighan and Owen (2021) conducted research early in the ERT implementation. They found that previous experience was not a predictor of improved self-efficacy with ERT implementation. However, PD and interest in teaching online in the future were significant predictors of self-efficacy with ERT implementation. The difference between these findings may be because Song's study was before ERT, and Dolighan and Owen's study was during early, chaotic ERT. Multiple researchers recommend that post-ERT research was needed to identify how to support teachers' continuing use of online educational technology.

Summary and Conclusions

An effective search strategy was used to conduct a comprehensive literature review. The literature review led to the development of the problem and purpose of this study. The literature review revealed the gap in practice and literature of a minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. TAM was identified as the study's conceptual framework. Based on this information, a literature review strategy was developed.

The literature review of the key concepts and variables identified the need for the study and the factors that need to be researched. There were still negative attitudes, but online education will be implemented in secondary schools to meet the challenges of the 21st-century workforce. Therefore, it was important to identify how to support secondary school teachers' use of online educational technology after ERT. Factors that impact the use of educational technology are interconnected and complex.

Many factors are outside the control of the teachers, so administrators need to mediate these barriers. Researchers consistently found problems with the transition to online education before, during, and after ERT. They recommended more research about barriers to implementing online educational technology. Researchers repeatedly recommended more research post-ERT to identify support needs for teachers' use of online education. Several researchers identified the need for PD about online education. TAM was used to research the key concepts that need to be understood to support secondary school teachers' use of online education. The next chapter describes the methodology for this study.

Chapter 3: Research Method

The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience. This purpose filled the gap in practice and literature on how to support secondary school teachers' use of online educational technology after the ERT experience. This chapter includes the research questions that addressed the problem and aligned with this purpose. My role as a researcher is discussed and how it was mitigated where possible. The rationale for the selection of the qualitative methodology is also fully explained. Participant eligibility criteria are defined and defended, and the instrumentation for this study is described. Procedures for recruitment, participation, and data collection are also described. The data analysis plan of semistructured interviews and the coding process are explained. The plan to create trustworthiness in this study is described. Ethical procedures and the documents for the procedures are discussed, followed by the summary.

Research Design and Rationale

The following research questions address the problem, align with the purpose, and are appropriate for a qualitative study because they ask how and what and seek to understand.

- RQ 1: What were the secondary school teachers' perspectives about support for online educational technology after ERT?
- RQ 2: How did the secondary school teachers' perspectives about the usefulness of online educational technology change after ERT?

- RQ 3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after ERT?

These research questions explored what was needed to support secondary school teachers continued use of online educational technology and meet the methodology of the research tradition of a general qualitative study. The central phenomenon was disruptive ERT, which illustrated a gap in practice regarding how to support secondary school teachers' use of online educational technology after the ERT experience (Dolighan & Owen, 2021). This phenomenon needed to be understood in an environment of increasing online education in secondary schools.

Quantitative and mixed method research was not appropriate for the purpose of this study because I wanted to understand the meaning made by teachers who experienced this recent phenomenon, not measure defined variables. I selected a qualitative approach for this study because I sought to understand the perspectives of the teachers who experienced ERT. Grounded theory was appropriate to study this phenomenon because a theory does not exist; however, the process requires multiple rounds of analysis and data collection to develop a theory (Burkholder et al., 2020). As a student, I did not have the time to commit to this approach. Phenomenology was appropriate to study the lived experience and meaning made in response to the specific event of ERT; however, it was not appropriate for my study because I was questioning the usefulness and support processes. A case study design was inappropriate for this study because the phenomenon was worldwide and not limited to a bounded social group. Program evaluation was used to assess the outcomes of a specific program or operation,

so it was not appropriate for this study. Action research was not applicable because I was not studying a specific organizational setting. Since these qualitative approaches were not appropriate for what I wanted to study, I selected a general qualitative approach.

Additionally, as discussed in the literature review, several researchers recommended qualitative research on the phenomena. Most of the research about TAM and ERT was quantitative or mixed methods. The qualitative information from the mixed method research was answers to open-ended questions. This method did not provide the in-depth understanding that a semistructured interview provided. The qualitative method aligned with the research questions because it asks about the secondary school teachers' perspectives of online educational technology after ERT.

Role of the Researcher

Qualitative interpretivism uses the researcher and participants as the primary instruments of the study (Ravitch & Carl, 2019). My role as a qualitative researcher was to conduct semistructured interviews, keeping a similar line of questioning. This allowed me to collect detailed data that captures a broad range of meaning-making experiences and perspectives that support rich descriptions. Another role was to assess the research process reflexively. Researcher reflexivity was a systematic assessment as a researcher of my identity, positionality, biases, assumptions, values, and subjectivities (Ravitch & Carl, 2019). This assessment includes an initial assessment that influences the research development and an ongoing assessment. My positionality evaluation identified some deficits and some advantages. These traits are insignificant in this phenomenon and should not influence the research since I followed a carefully developed protocol and

interview instrument. My acculturation with nursing and business was very fact-based, which requires a conscious effort on my part to stay within the interpretivism mindset while coding qualitative data. Any observer effect was mitigated through member checking at the transcription level. After reviewing the literature, I am biased in believing that ERT was a negative experience. I was deliberate in following the script to avoid communicating that bias to participants. Being an outsider to the secondary school education system had the advantage of having no preconceptions of the secondary school education system. This situation left me open to code outside the influence of a secondary school teacher's paradigm.

I have no relationship with any secondary school system. Therefore, the relationship between the researcher and the participant was built on a short-term mutual engagement and reciprocal transformation, as described by Ravitch and Carl (2019). There were no relationships with participants that could cause power struggles. The context of the interviews was audio conferencing at the time and location of the participant's choice. The interview instrument was followed rigorously. Follow-up questions were prepared in advance, striving for as much consistency as possible. The interview instrument was developed to elicit subjective responses from the participant to capture a broad range of meaning-making, experiences, and perspectives.

The interview transcriptions were member-checked to avoid any evaluation or judgment on the researcher's part. The member checking ensured fidelity to the participant's thoughts, feelings, and experiences. Interviews were done within 1 month. That put the participants at a similar moment in time after their ERT experience and their

ability to think back on that experience. Participants were recruited nationally to prevent any potential to identify the participant based on their responses if the location were known. This recruitment avoided relationship, economic, and professional risks. My role as a researcher has been carefully considered and mitigated where possible.

Methodology

Participant Selection

Participants were recruited nationally by a recruitment message on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. The message asked participants to respond to recruitment by email. The informed consents were emailed before the interview, and the participant responded, "I consent" by email. Scheduling was done by Google calendar. Participants' eligibility criteria were secondary school teachers with (a) a minimum of 3 years of teaching experience, (b) taught secondary school during school lockdowns using emergency online educational technology, and (c) were currently teaching secondary school. There are no limitations on total experience, age, location, ethnicity, sex, culture, or financial situation. Participants were asked to self-identify as meeting the criteria during recruitment. Twelve interviews reached data saturation for a qualitative study (Lambert, 2012). Saturation is the point where the researchers see recurrent patterns and concepts.

Instrumentation

I developed the interview instrument questions to explore the research questions. The informed consent was emailed before the interview, and the participant responded, "I consent" by email. I reminded the participants that they could stop at any time. I asked

the participants if they had any questions. The participants agreed to proceed. I told the participant that I was recording this interview. I turned on recordings only after the participant agreement.

The interview instrument is Appendix A. The instrument organizes and guides the interview to answer the research questions. These questions were created to elicit information about the conceptual framework of TAM. This interview instrument included an introduction, questions that focus on perspectives and values related to the research questions, and a closing. The questions for this interview are relational, contextual, do not evaluate, person-orientated, and subjective. The interview setting was quiet and undisturbed. After the interview, I thanked the participants and asked them how they wanted to receive their gift cards. A copy of the transcript was sent to them for their review, correction, or addition. I also emailed them a summary of the results.

The instrumentation for this study was carefully considered and explained. The content validity for the interview questions was an assessment that the questions cover the aspects of what they are supposed to measure. Table 1 shows the relationship between research questions and instrument questions.

Table 1*Relationship Between Research Questions and Instrument Questions*

Research Question	Instrument questions that measure an RQ
RQ1: What were the secondary school teachers' perspectives about support for online educational technology after ERT?	<p>What was your experience with emergency online teaching during COVID-19?</p> <p>How do you use online teaching now?</p> <p>What was your technical support system for emergency online teaching during COVID-19?</p> <p>What do you or would you need to support your use of online teaching now?</p>
RQ2: How did the secondary school teachers' perspectives about the usefulness of online educational technology change after ERT?	<p>What was your perspective about the usefulness of online teaching?</p> <p>How did emergency online teaching during COVID-19 change your perspective about the usefulness of online teaching?</p>
RQ3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after ERT?	<p>What was your perspective about online teaching being easy to use?</p> <p>How did emergency online teaching during COVID-19 change your perspective about how easy it was to use online teaching?</p>

Procedures for Recruitment, Participation, and Data Collection

Participants were recruited by messages on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. The informed consent was emailed before the interview, and the participant responded, "I consent" by email. I asked if they had any questions. I informed them that the interview was recorded. After the consent, the audio recording began.

Audio conferencing interviews of twelve participants were completed. The script for the interview's closing was at the bottom of the interview instrument, appendix A. The script asked if they had any questions and thanked them for their participation. I confirmed how to send the gift card and how to confirm receipt. I reminded them that I had sent a copy of the transcript and a copy of the study summary.

The interviews were transcribed and member-checked to confirm the findings. Saturation was met in qualitative research with ten to twelve participants (Lambert, 2012). Saturation is when the researchers see recurrent patterns and concepts. I saw recurrent patterns and concepts in twelve interviews. Interviews were done within one month. One 30–60-minute audio interview at the participant's convenience. I audio-recorded the interview. I checked the transcription to correct automatic transcription errors. Then it was member checked. Data was stored in a password-protected one drive and will be deleted after five years. Participant names are on a hard copy stored in a locked safe and were destroyed after five years. In cases where the participant's email gave clues to their name, I blacked out the email address. Participant names are not in the one drive database.

The interview instrument contains a closure script that thanked the participant and asked how they wanted to receive their gift card. The transcript member checking was done, and a copy of the study summary was sent. Recruitment, participation, and data collection procedures were carefully thought out and well documented.

Data Analysis Plan

Data was collected through audio conferencing interviews with twelve

participants. The interviews were transcribed and member-checked to confirm the findings. The data collected were the answers to the instrument questions. Table 1, in the instrumentation section, page 39, describes the relationship of the research questions to the instrument questions. Data was organized and documented using Atlas.it qualitative coding software.

Coding was done using instructions from Saldana (2016) using computer-assisted qualitative data analysis software Atlas.it. The first cycle was In Vivo coding. In Vivo, coding was creating codes from the words or phrases in the participant's language. The second cycle of coding was Pattern Coding. This was a process for identifying similar codes to develop categories and subcategories organized into themes. Two negative cases were included in the coding, which led to a closer examination of the content of the data. This process contributed to trustworthiness.

Trustworthiness

Trustworthiness results from the researcher's quality of planning and process compliance. Credibility was documented by negative case analysis, triangulation, member checking, saturation, reflexivity, and peer debriefing with the doctoral committee. Inquiry audit trails and triangulation documented dependability. Transferability was documented by reflexivity and thick description. Confirmability was documented by confirmability audit and reflexivity. Doctoral committee members' review will document inter-coding reliability. Intra-coding reliability was documented in coding decisions. Specifics of this documentation are described in the following paragraphs.

Two negative case analyses were done because the answers varied from the rest. Negative cases are interview results that are different from the majority of the other results. This variance could indicate a need for further study (Burkholder et al., 2020). Triangulation looked at different sources or vantage points to verify that the interpretation best fits the data (Burkholder et al., 2020). An incidental theoretical triangulation may be that teachers with a positive perspective of PU and PEOU may use online education more frequently, as has been confirmed by TAM researchers. However, the factors are so complex that it would take more study to confirm any correlation. Since there was minimal qualitative research about ERT and TAM, triangulation between similar studies was not probable. The doctoral committee checking confirmed triangulation.

Member checking evaluated the transcription from the interview participants. This process verified that the transcript was what the participant intended to communicate. Inquiry audit and confirmability audit documentation included how the data were collected, how categories were derived, and how decisions were made throughout the study, as described by Burkholder et al. (2020).

Progressive subjectivity was done by recording my conceptualization and expectations before the research began. It was done during the research and peer-reviewed by the professors on the doctoral research committee. Reflexivity was done by documenting my positionality memo, assessment of my role and responses during the research, and documentation of ongoing analysis as described by Burkholder et al. (2020). Documentation of a thick description was a detailed transcript of the findings. Piloting of the interview instrument resulted from an instrument review by the doctoral

committee.

Confirmability means other researchers would reach similar conclusions using the same qualitative data (Burkholder et al., 2020). Confirmability was met by documenting decisions made during the research. Transferability was supplied by thick descriptions of the detailed interview transcript and assumptions to allow others to identify applicability to their situation. The delay between the ERT experience and the interview data collection may impact the participants' memory and perspectives (Burkholder et al., 2020). This threat cannot be mediated; however, the participants experienced a similar timeline.

A systematic assessment documents the researcher's reflexivity as a researcher of identity, positionality, biases, assumptions, values, and subjectivities. This assessment included an initial assessment that influences the research development and an ongoing assessment. My positionality evaluation identified some deficits and some advantages. These traits are not part of the phenomena and should not influence the research since I followed a carefully developed protocol and interview instrument. My acculturation with nursing and business was very fact base, which required a conscious effort on my part to stay within the interpretivism mindset while coding qualitative research. Based on the literature review. I have an assumption that ERT was a negative experience. I consciously did not communicate my belief that ERT was a negative experience. Being an outsider to the secondary school education system has the advantage of having no preconceptions of the secondary school education system. It leaves me open to code without the influence of secondary school teachers' paradigms. Any observer effect was

mitigated through member checking of transcription. Qualitative research usually meets saturation with ten to twelve participants (Lambert, 2012). I met saturation when I saw recurrent patterns and concepts with twelve participants.

Ethical Procedures

Before starting any research, the proposal met Walden University permissions and IRB approval. Participants were recruited nationally by messages on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. Nationally recruiting participants prevented any potential to identify the participant based on their responses if the location were known. This recruitment avoided relationship, economic, and professional risks. I worked from a private home office and had no professional relationship with participants. The informed consent was emailed before the interview, so the participant had time to review it.

At the beginning of the interview, I reminded the participant that they could stop at any time. I asked if they had any questions. I told the participant that I would record this interview. I turned on the recording only after the participant agreement. After the participant agreed, the semistructured interview began. A copy of the interview instrument is Appendix A.

Participant identification was only written on a hard copy and stored in a locked safe. All other information is kept in my password-protected one drive. No one else can access that one drive file; only anonymous data was shared or published. It will be maintained for five years and then deleted. The hardcopy participant identification document will be shredded after five years.

One potential foreseeable event would be someone hacking my password-protected one-drive account. Anyone hacking my account will not get access to participant identification. Another foreseeable adverse event was a participant stopping the interview before it was complete. All participants completed the study.

Summary

This chapter describes the research methodology of this study. The research questions addressed the problem and aligned with the purpose. The questions addressed the gap in practice and literature of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The questions were appropriate for a qualitative study. My role as a researcher was carefully considered and mitigated where possible. The rationale for the selection of the qualitative methodology was appropriate. Participant eligibility criteria were well-defined and appropriate for this study. The instrumentation for this study was carefully considered. Recruitment, participation, and data collection procedures were carefully thought out and well documented. The data analysis plan was semi-structured interviews, and the coding process was appropriate. The study design was trustworthy. The procedures and instruments were ethical. The next chapter discusses the results of this carefully planned study.

Chapter 4: Results

The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience, which aligned with the problem of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The participants were 12 secondary school teachers who experienced ERT. The data were collected through semistructured interviews. The interview questions explored the TAM factors to understand secondary school teachers' perspectives of support, PU, and PEOU experiences with online educational technology during ERT. These TAM factors and technology support were the basis for the three research questions, which asked about the teachers' perspectives about support for online educational technology after ERT, how their perspectives about the usefulness and ease of use of technology changed after ERT. This chapter includes the study setting, data collection, data analysis, results, evidence of trustworthiness, and a summary.

Setting

Participants were recruited nationally by a recruitment message on the Facebook webpage Teacher2Teacher, a teachers' community with 874,000 followers. Participants' eligibility criteria were secondary school teachers with (a) a minimum of three years of teaching experience, (b) taught secondary school during school lockdowns using emergency online educational technology, and (c) were currently teaching secondary school. There are no limitations on total experience, age, location, ethnicity, sex, culture, or financial situation. Demographic data were not collected. Participants were asked to

self-identify as meeting the criteria during recruitment.

Secondary school teachers' experience during ERT varied based on their teaching environment's setting, context, and context mediators (Burkholder et al., 2020). Elements that may influence the context are access to resources, the level of educational technology used before ERT, teachers' computer competency, teachers' self-efficacy with electronic technology, and technical support systems. There was probable variance in how the administration managed ERT in the different environments. The delay between the ERT experience and the interview data collection may impact the participants' memory and perspectives; however, the time frame was consistent for all participants (Burkholder et al., 2020).

Data Collection

Participants responded to the recruitment message, and the informed consent was sent and responded to by email before the interview. Participants self-selected an interview time from Google calendar appointment slots. I had a couple of scheduling problems where the participant was not responsive, so I removed that person from the list and went to the next person in line. I had enough participants within one week of the first message, so I did not have to repost. Twelve interviews were done within 2 weeks, from January 9, 2023, to January 20, 2023. A 20–30-minute audio interview was conducted via Google meet. I had projected 30-60 minutes, but the questions were all answered within 30 minutes.

The recording was done on an iPhone 14 Pro Max using an application from the app store named Voice Recorder and Audio Editor. The audio recordings were saved to

my OneDrive file. This application has an automatic transcription function. The automated transcription was saved to OneDrive. The automatic transcription had so many errors that it was not efficacious. So, I did manual correction and transcription on all the interviews. After I corrected the transcriptions, I used member checking to verify the transcripts. This was done by sending the transcriptions to the participants for their correction and feedback. None of the participants sent corrections to the transcription.

I met saturation when I saw recurrent patterns and concepts in my 12 interviews. Data were stored in a password-protected one drive and will be deleted after 5 years. Participant names are on a hard copy stored in a locked safe and will be destroyed after five years. A copy of the study summary will be sent to participants.

Data Analysis

Data were collected through audio conferencing interviews by telephone with twelve participants. I originally planned to record video conferencing interviews using Google Meet, but the IRB rejected that methodology due to privacy concerns. The IRB response said that video recording required a special justification that is not normally approved. The interviews were transcribed and member-checked to confirm the findings. There were no corrections made to the transcriptions by the members. The member-checked transcriptions were uploaded into Atlas.ti qualitative coding software.

In Vivo Coding

Coding was done using instructions from Saldana (2016). The first cycle was In Vivo coding. I created codes from the words or phrases in the participants' language. I coded all interview questions from all interviews. It went smoothly but resulted in an

Table 2

Examples of In Vivo Codes for RQ1, Question 1

In Vivo Codes	Explanation	Excerpts
Don't have the required devices	Detailed description: teachers described negative experiences due to inadequate equipment during ERT.	"Most people don't have the required devices for Zoom classes and Google classrooms."
Confusing the students	Detailed description: teachers described negative experiences that involved students during ERT.	"It was confusing the students."
Very tough	Detailed description: teachers described negative experiences during ERT	"During this time, it was very very tough for us, you know."
Inability	Detailed description: teachers described negative experiences during ERT	"because of our inability and learning the technology."

Pattern Coding

The second cycle of coding was pattern coding. I chose pattern coding as my secondary coding method. I am using it because I want to explain or infer the teachers' perspectives to identify emerging themes. Saldana (2016) defined a pattern as data that are repetitive, regular, or occurrences of action or data that happens more than twice. The frequency of occurrence of quotations as a part of a code may be a measure but is not always an indicator of significance (Saldana, 2016); it is just one factor to be considered in data analysis. I organized code patterns into categories and subcategories. These were organized based on research questions using terminology from TAM and the literature review. The coding is described in detail by RQ later in this chapter. Table 3 demonstrated examples of pattern codes from RQ1, Question1.

Table 3*Examples of Pattern Codes for RQ1, Question 1*

Pattern Codes	Explanation	Excerpts
Lack of equipment	Detailed description: teachers described negative experiences due to inadequate equipment during ERT.	“Most people don’t have the required devices for Zoom classes and Google classrooms.” “They did not have some of these gadgets.”
Student Detriment	Detailed description: teachers described negative experiences that involved students during ERT.	“It was confusing the students.” “It was an unsafe learning experience with children.”
Negative sentiment about ERT	Detailed description: teachers described negative experiences during ERT	“During this time, it was very, very tough for us, you know.” “It was not easy.”
Teachers unprepared	Detailed description: teachers described negative experiences during ERT	“Because of our inability and learning the technology.” “I did not know about online management and streaming systems.”

Developing Themes

The categories were organized into themes. A theme results from coding, categorization, and analytical reflection (Saldana, 2016). Two negative cases were included in the coding and led to a closer examination of the content of the data. The code book is Appendix B. It lists the themes, the codes contributing to the themes, and a description of the code, including exemplars. A screenshot of Atlis.it coding is Appendix C.

Results

This qualitative study had three research questions and eight interview questions. The coding results are discussed by the research question.

RQ 1 Codes and Themes

RQ 1: What were the secondary school teachers' perspectives about support for online educational technology after ERT? Related interview questions:

1. Describe your experience with emergency online teaching during COVID-19.
2. How do you use online teaching now?
3. Describe your experience with the technical support system for emergency online teaching during COVID-19.
4. What do you or would you need to support your use of online teaching now?

Table 4 is a list of codes from interview questions one and two. Table 5 is a list of codes for questions three and four.

Table 4*RQ 1 Coding: Interview Questions 1 and 2*

Codes	Frequency	Categories	Themes
Lack of equipment	2	ERT experience	Negative ERT Experience
Negative sentiment about ERT	15		
System unprepared	12		
Student detriment	10		
Teachers unprepared	18		
Personal development	4		Positive ERT experience
Positive sentiment about ERT	2		
Student benefit	9		
Not using	1	Current use of online education	Current use of online education varies
Personal use	8		
Use at school	10		

Table 5*RQ 1 Coding: Interview Questions 3 and 4*

Codes	Frequency	Categories	Themes
Inadequate technical support	6	Experience with technical support	Negative experience with technical support for ERT
Negative sentiments about technology	2		
Process and planning needs	12		
Technology acceptance needs	2		
Adequate technical support	13		Positive experience with technical support for ERT
Positive sentiments about technology	9		
Internet access	3		
Professional development	2		
Student training	3		
Technology acceptance needs	7		
Process and planning needs	5	Current support needs	Support needs continue to be unmet after ERT
Technology acceptance needs	7		
Equipment for students	5		
Internet access	3		
Professional development	2		
Student training	3		

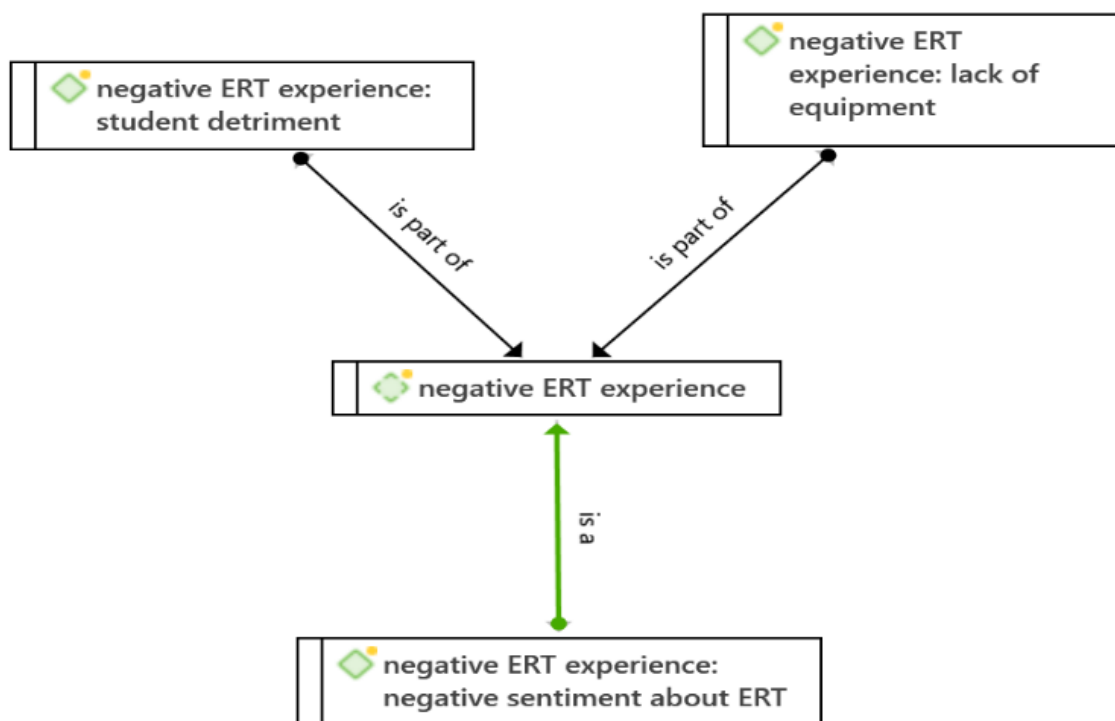
RQ 1 Theme 1: Negative ERT Experience

The forced use of ERT during COVID-19 school closures was sudden, disruptive, and difficult for teachers. The participants described these negative experiences. Their terminology was emotional. Participant 11 demonstrated this by stating, “I was caught unaware. I did not know about online management and streaming systems. Also, the difference in requirements made the whole process overwhelming.” Participant 3 said that the experience “was really disturbing.” These quotations led to In Vivo codes describing a negative ERT experience.

The code patterns led to categorizing the codes into ERT experiences. Negative ERT experience codes were a lack of equipment, student detriment, teachers unprepared, system unprepared, and negative sentiments toward the ERT experience. This code pattern had a total frequency of 57, the second-highest number of related quotations in the study. Analysis of the language and code patterns led to the theme of a negative ERT experience. I found that in answering Interview Question 1, the response to RQ 1 was a negative ERT experience for all the participants. Teachers in this study expressed a large number of negative experiences during ERT. This confirmed the findings of researchers like Marshall et al. (2020), Trust and Whalen (2020), and Watermeyer et al. (2021). Figure 2 demonstrates the relationship of codes to the theme of a negative ERT experience.

Figure 2

Relationship of Codes to the Theme of a Negative ERT Experience



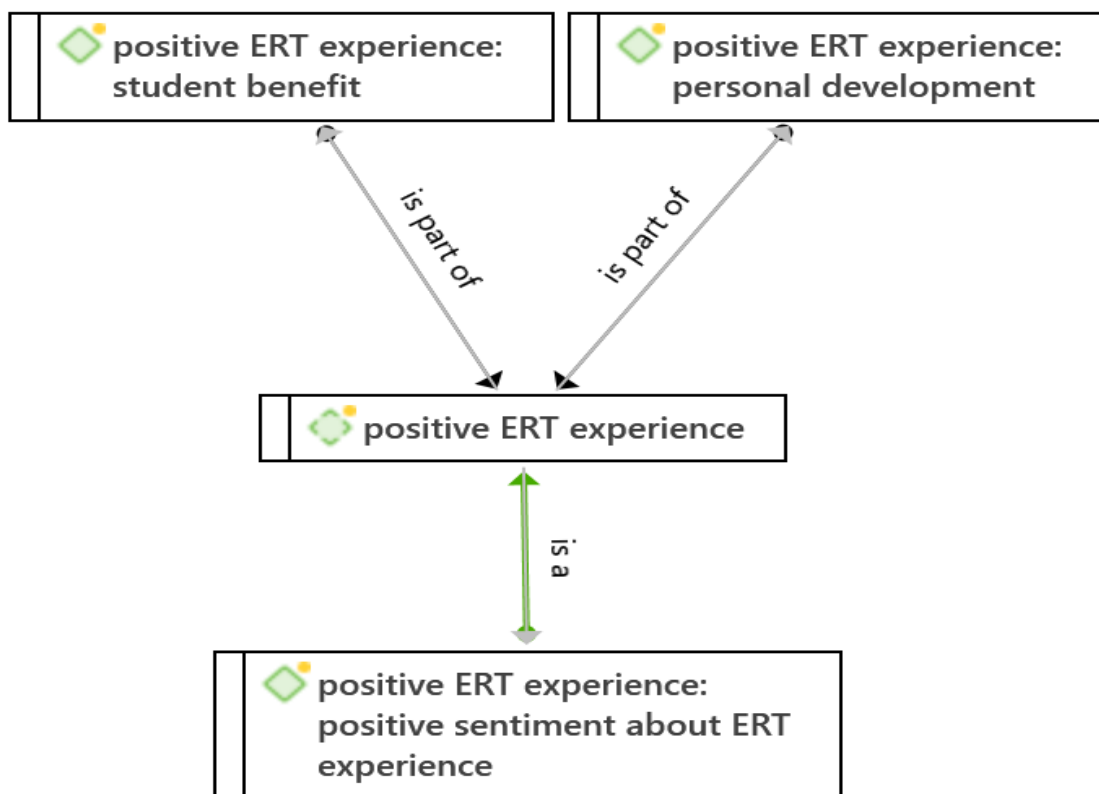
RQ 1 Theme 2: Positive ERT Experience

The participant's language described positive experiences. Participants Seven and Nine stated that their schools provided the needed education. Participant Three said, "During that time, we saw the students were really performing well." These quotations led me to In Vivo codes that described positive ERT experiences. Teachers who reported positive experiences also reported negative experiences. These teachers' descriptions of a positive ERT experience resulted from their perspective changes as ERT progressed. They all had an initial hard time but learned, and their experience became positive as they developed or learned that it was an effective tool for students.

The code patterns led to categorizing the codes into ERT experiences. Positive ERT experiences were student benefits, personal development, and positive sentiments toward the ERT experience. Analysis of the language and code patterns led to the theme of a positive ERT experience. I found that in responding to interview question one, the response to RQ1 was that some participants had positive ERT experiences that developed after overcoming negative experiences. This finding was not discussed in the literature published earlier after the ERT experience. Figure 3 shows the relationship of codes to the theme of a positive ERT experience.

Figure 3

Relationship of Codes to the Theme of a Positive ERT Experience



RQ 1 Theme 3: Current Use of Online Education Varies.

Participants described how they were using online technology. Only one participant did not use online education after ERT, indicating there was some online education use by most participants. The code patterns led to categorizing the codes into the current use of online education. The codes were not used, personal use, and use at school.

Analysis of the language and code patterns led to the theme current use of online education varies. I found that in responding to interview question two, the response to RQ1 was that online education use varies. This was not a good question because there was no context. This information would be more useful if connected with demographic information, including before and after use, or if the information is about a specific facility where teachers had a more consistent experience.

RQ 1 Theme 4: Negative Experience with Technical Support for ERT

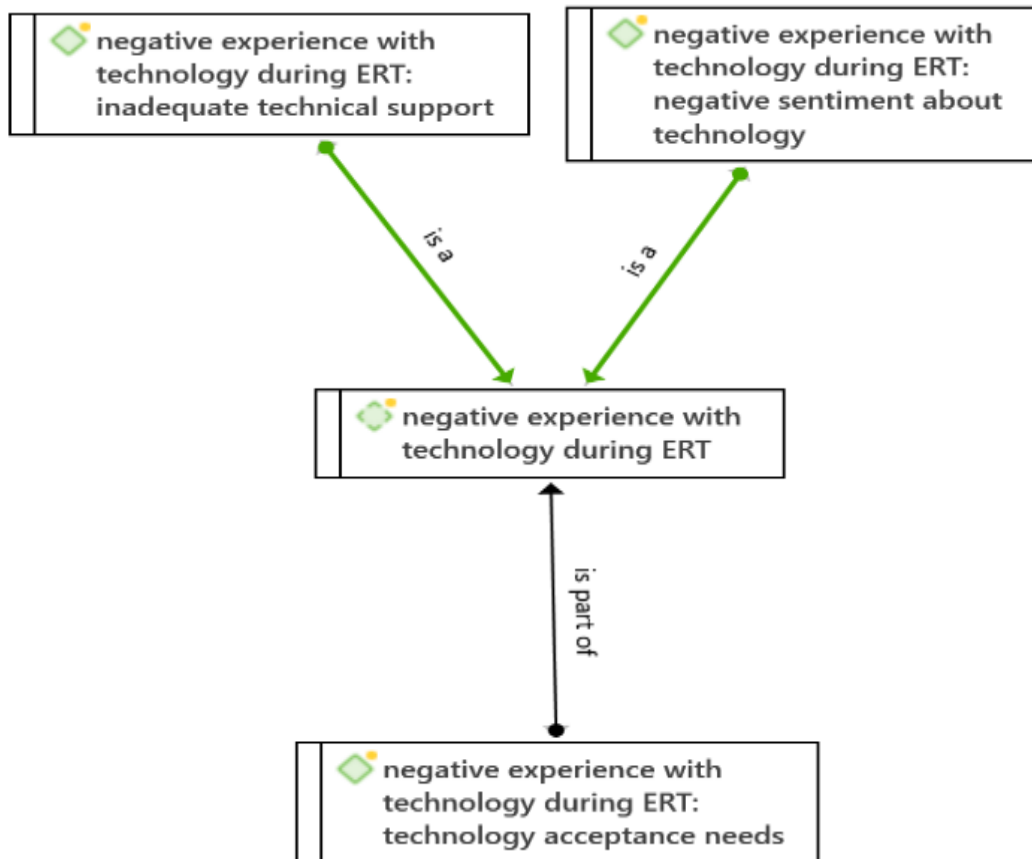
The participants described negative experiences with technical support during ERT. Participants described inadequate technical support and frustration. Participant Twelve expressed it well: “I had to look for how to help myself.” These quotations led me to In Vivo codes that were similar descriptions of a negative experience with technical support. This is the first question that elicited the code of needing to improve technology acceptance by teachers. Participant Twelve stated, “First, a lot of encouragement needs to be done. And a lot of communication needs to be given....Sharing of information and talking out issues.”

The code patterns led to categorizing the codes into experiences with technical

support. Negative experiences with technology support were inadequate technical support, process and planning needs, and negative sentiments about technical support. A part of a negative experience with technology during ERT was an organic report of technology acceptance needs. Analysis of the language and code patterns led to the theme of a negative experience with technical support for ERT. I found that in responding to interview question three, the response to RQ1 was a negative ERT experience with technical support for some participants. Those that expressed a negative experience needed more technical support and had negative sentiments about technology. This aligns with Nordlöf's et al. (2019) findings that teachers had negative attitudes toward technology because of a lack of support and resources. These findings also align with the need for more technical support found during ERT by Gordy et al. (2021), Trust and Whalen (2020), and Marshall (2020). Figure 4 demonstrates the relationship of codes to the theme of a negative experience with technology during ERT.

Figure 4

Relationship of Codes to the Theme of a Negative Experience with Technology During ERT



RQ 1 Theme 5: Positive Experience with Technical Support During ERT

The participant's language described positive experiences with technical support during ERT. Participant Nine stated, "If we have issues, we fix it with them. They were effective 100%." Participant Six said, "I had a good and sound network."

The code patterns led to categorizing the codes into experiences with technical support. Positive experiences with technology support were adequate technical support,

internet access, professional development, student training, and positive sentiments about technical support. A part of a positive experience with technology during ERT was an organic report of technology acceptance needs. Analysis of the language and code patterns led to the theme of a positive experience with technical support for ERT.

I found that in responding to interview question three, the response to RQ1 was a positive ERT experience with technical support for some participants. Positive and negative experiences had comparative frequencies of twenty-two and twenty-three, respectively. This may indicate that negative experiences with technology support are not the vast majority, as discussed in the research. Further research is needed to verify this information. The teachers who had a positive experience with technical support during ERT had adequate technical support and positive sentiments about technology.

RQ 1 Theme 6: Support Needs Continue to be Unmet after ERT

The participants described current support needs. Participants described inadequate technical support, and frustration continued to exist after ERT. Participant Six stated, “I talk to other people, and they share information that technology is the best thing we need.” Participant Nine wants “More process about online teaching.” Participant Seven needs “A plan for equipment.”

The code patterns led to categorizing the codes into current support needs. Current support needs codes were the need for process and planning, student equipment, internet access, professional development, and student training. An organic report of technology acceptance needs was part of current support needs. Analysis of the language and code patterns led to the theme that support needs remain unmet after ERT. In

answering interview question four, the response to RQ1 was that support needs for online education continue to be unmet after ERT. Every participant reported that they had unmet technical support needs at the time of the interview.

RQ 2 Codes and Themes

RQ2: How did the secondary school teachers' perspectives about the usefulness of online educational technology change after ERT?

Related interview questions:

5. What is your perspective on the usefulness of online teaching?
6. How did emergency online teaching during COVID-19 change your perspective on the usefulness of online teaching?

Table 6 is coding for RQ2.

Table 6*RQ 2 Coding*

Codes	Frequency	Categories	Themes
Negative perspective about the usefulness	3	Usefulness of online education	Negative perspectives about the usefulness of online education
Easier	12		Positive perspectives on the usefulness of online education
Experience influenced perspective	7		
Improved educational technology	5		
Online education useful	10		
Students learned	12		
Technology acceptance needs	8		
Work-at-home advantages	20		
Negative change of perspective of usefulness	4	ERT changed the perspective on the usefulness of online education	Negative change in perspective of usefulness due to ERT
Increase in teacher's knowledge	7		Positive change in the perspective of usefulness due to ERT
Positive change in perspective of usefulness	7		

RQ 2 Theme 1: Negative Perspectives about the Usefulness of Online

Education

The participant's language described a negative perspective about the usefulness of online education. Participant Ten was the only participant to express a negative perspective about the usefulness of online education, making this a negative case. The participant stated:

Moreover, you know that the problem that we have is that online teaching is something that most of us do not really engage in online teaching because it is hard to learn a different learning style. We teachers, were really, really stressed, especially since most of us were not used to online teaching. Why it is really important is because everyone is really used to classroom-based learning.

The codes led to the category of the usefulness of online education and the theme of a negative perspective about usefulness. In answering interview question five, I found that the response to RQ2 was on the participant's negative perspective about the usefulness of online education. Even though Participant Ten expressed negative perspectives, the discussion ended with their identifying the need for technology acceptance of online education. This discussion indicates that although this participant expressed a negative perspective about the usefulness of online education, their perspective changed to positive during the ERT experience.

RQ 2 Theme 2: Positive Perspectives on the Usefulness of Online Education

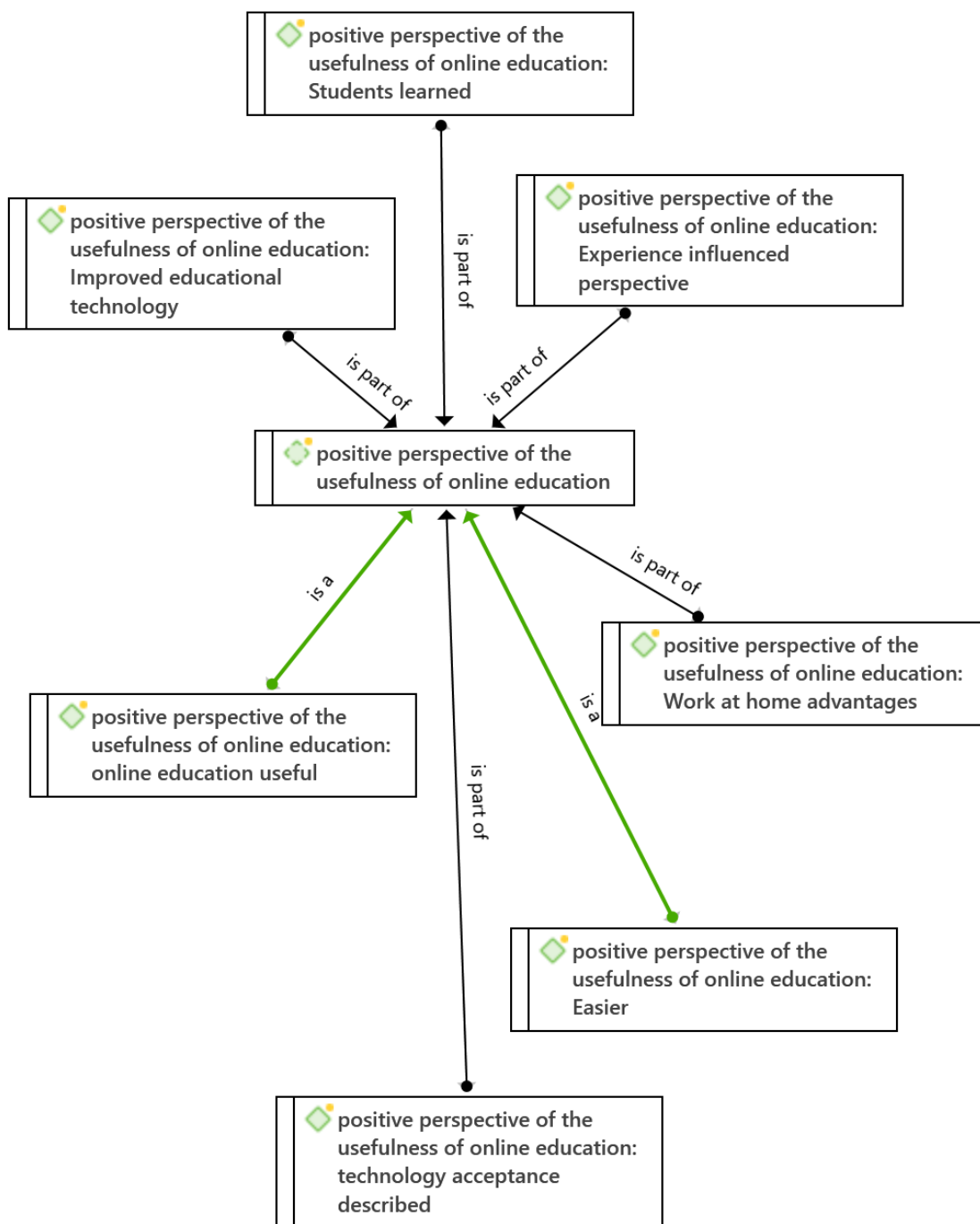
The participant's language described positive perspectives about the usefulness of

online education. Participant Two stated, “It changed my perspective because it made me learn new things and technology and take courses.” Participant Ten stated. “I think it is useful it is just that when we get able to use it, you will come to see that when you are able to learn it, you are able to access it every day you care to.” Note that Participant Ten was the only participant who expressed a negative perspective on the usefulness of online education. The frequency of positive comments about the usefulness of online education was seventy-four, the highest frequency of any theme in the study. The frequency may indicate that participants had a robust positive perspective of the usefulness of online education.

The codes led to the category of the usefulness of online education and the theme of a positive perspective about usefulness. I found that in responding to interview question five, the answer to RQ2 was a more positive perspective about the usefulness of online education than any other theme. Figure 5 demonstrates the relationship of codes to the theme of a positive perspective on the usefulness of education.

Figure 5

Relationship of Codes to the Theme of a Positive Perspective on the Usefulness of Online Education



RQ 2 Theme 3: Negative Change in the Perspective of Usefulness Due to ERT

Two participants expressed negative sentiments about the disruption with the abrupt implementation of ERT. There were no specific examples or explanations about why the teachers' perspectives about the usefulness of online education were negative. The comments used emotional language. For instance, Participant Nine stated, "Suddenly, I felt quite exposed." Participant Seven stated, "I felt I wasn't allowed on the site because I had no such knowledge." The participant's language led to In Vivo codes that described negative changes in perspective about the usefulness of online education. Both of these participants also described positive changes in perspective as ERT progressed.

The codes led to the category of ERT changed the perspective on the usefulness of online education and to the theme of a negative change in perspective of usefulness due to ERT. I found that in answering interview question six, the response to RQ2 was that two participants had a negative change in perspective about the usefulness of online education.

RQ 2 Theme 4: Positive Change in the Perspective of Usefulness Due to ERT

Participants expressed a positive change in their perspective of usefulness of online education during ERT. For example, Participant Four stated, "Because it made me better diversify and learn new things and the technology and related courses." Participant Two said, "It changed my perspective because it made me learn new things and technology and take courses; learn to prepare PowerPoints. It really helped me a lot because it made me get more knowledgeable." Positive change in sentiments and the

increase in teachers' knowledge was part of a positive change in the perspective of usefulness of online education due to ERT.

The codes led to the category of ERT changed the perspective on the usefulness of online education and to the theme of a positive change in perspective of usefulness due to ERT. In answering interview question six, the response to RQ2 participants had a positive change in perspective about the usefulness of online education due to ERT. The teachers who described a positive change in the perspective of the usefulness of online education during ERT expressed a positive sentiment and personal learning and development. The teachers described online education as useful due to their experience during ERT. This finding and the finding that all but one participant are currently using online education aligns with the finding of Panisoara et al. (2020) of teachers' intent to continue online education use in response to the ERT experience. Other studies do not support this finding. Kumar et al. (2019) systematic review of research literature found that educators' perspectives and attitudes about online education did not change over time and continue to be negative. This qualitative study found changed perspectives and positive perspectives on the usefulness of online education. This contradicts Kumar et al. (2019). More research is needed to verify that a contradiction exists.

In retrospect, the similarity between questions five and six resulted in a lot of overlapping content. In answering their perspective on the usefulness of online teaching, participants described what happened during ERT that affected that perspective. So, when we got to the question of "how did your perspective change," the subject had already been covered.

RQ 3 Codes and Themes

RQ3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after ERT?

Related interview questions:

7. What is your perspective about online teaching being easy to use?
8. How did emergency online teaching during COVID-19 change your perspective about how easy it is to use online teaching?

Table 7 is coding for RQ3.

Table 7

RQ 3 Coding

Codes	Frequency	Categories	Themes
Hard to learn	2	Ease of use of online education	Negative perspectives about the ease of use of online education
Difficulty depends on the individual	4		Positive perspective of ease of use of online education
Easy once learned	12		
Easy to use	10		
Positive sentiment about eases of use	5		
Negative change in perspectives about ease of use	2	ERT changed the perspectives on the ease of use of online education	Negative change in perspectives about ease of use of online education during ERT
Positive change in perspectives about ease of use	29		Positive change in perspectives of ease of use of online education during ERT

RQ 3 Theme 1: Negative Perspectives About the Ease of Use of Online Education

The two negative perspectives were a negative case analysis. Participant Two stated, “It was hard to use and to understand the language being used and how to communicate.” Participant Five stated:

If there were courses and curricula that teachers could modify to their taste rather than starting everything from scratch. It is a challenge for people who are not so tech-savvy to navigate a new application. Trying to understand sharing your screen, enabling class periods, and other features. It is a whole different thing. If you are used to seeing your students raising their hands when they want to ask questions in person rather than looking at a screen. It is always different.

These quotations led me to In Vivo codes that were similar descriptions of a negative perspective of ease of use of online education.

The code patterns led to categorizing the codes into ease of use of online education. The explanations were related to difficulty learning, change, and frustration. Analysis of the language and code patterns led to the theme of negative perspectives about the ease of use of online education. In responding to interview question seven, I found that the answer to RQ3 was that two participants had their perspective of the ease of use of online education change to negative.

RQ 3 Theme 2: Positive Perspective of Ease of Use of Online Education

There were positive sentiments and statements that the ease of use depended on the individual, and it was easy to use once learned. Participant Four stated, “You need to spend time on the online teaching aspect and understand the language being used.”

Participant Seven said:

Initially, online teaching was not easy for me to use. One thing I would tell anyone doing online teaching is that consistency is the key. When one is being more consistent in your online teaching, you will become perfect. With time the person is able to navigate through all the technologies. Moreover, it has more avenues to able to continue online teaching.

Most participants discussed a difficult start, but their perspectives changed with progressive experience. Depending on the individual, the difficulty is part of the positive perspective of ease of use. The relationship seems to be that some people are unable or unwilling to learn to use the software. Participants communicated that it was easy to use once learned. These quotations led me to In Vivo codes that were similar descriptions of a positive perspective of ease of use of online education.

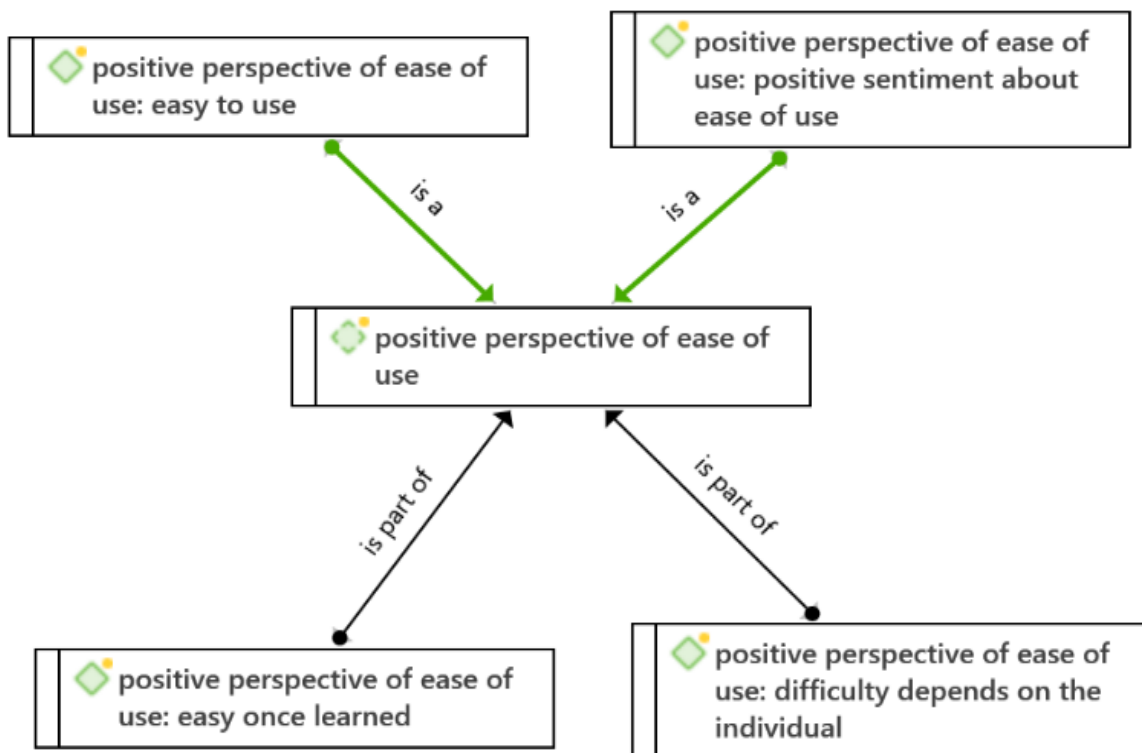
The code patterns led to categorizing the codes into ease of use of online education.

Analysis of the language and code patterns led to the theme of positive perspectives about the ease of use of online education. I found that in responding to interview question seven, the response to RQ3 was that the ease of use was positive for many participants.

Figure 6 demonstrates the relationship of codes to the theme of a positive perspective of the ease of use of online education.

Figure 6

Relationship of Codes to the Theme of a Positive Perspective on the Ease of Use of Online Education



RQ 3 Theme 3: Negative Change in Perspectives About Ease of Use of Online Education During ERT

The two negative perspectives could be a negative case for analysis, except the participants went on to support the theme that online education was easy to use. They expressed the difficulty of learning during the ERT experience. Participant Seven stated, “It was difficult to learn during the lockdown.” Participant Ten stated, “I didn’t really know anything about online.” Both participants said that learning to use online education

is good once they learned how. There were no specific examples.

Unlike the question of change in perspective about usefulness, neither participant was positive about the question of change of perspective about ease of use. Since there were earlier findings of a positive perspective of usefulness, the negative perspective of ease of confirms that the software might be acceptable despite poor PEOU if the PU was high. This confirms Davis's (1989) findings that PU was a strong determinant of use, and that PEOU complemented it but was not a strong determinant of use.

These quotations led me to In Vivo codes that were similar descriptions of a negative change in perspective of ease of use of online education.

The code patterns led to categorizing the codes into ERT changed the perspectives on the ease of use of online education. The explanation was difficulty learning. In response to interview question eight, the response to RQ3 two participants had a negative change in perspectives about the ease of use of online education during ERT.

RQ 3 Theme 4: Positive Change in Perspectives of Ease of Use of Online Education During ERT

The comments expressed were positive sentiments. Participant Three stated, "Yes, it changed me because I was able to test it and analyze it." Participant Six said:

I thought it was going to be hard because using a platform to teach people. You know, organizing things that need to be very, very hard for you to know that you are going to be able to use it. I did not think I would use it. So now, I am really used to it. I really want other people to know how to use it.

The code patterns led to categorizing the codes into ERT changed the perspectives

on the ease of use of online education. I found that in responding to interview question eight, the response to RQ3 was that participants had a positive change in perspectives about the ease of use of online education during ERT.

Like the questions on usefulness, the similarity of questions seven and eight resulted in many overlapping content. In answering their perspective on the ease of use of online teaching, they described what happened during ERT that affected that perspective. So, when we got to the question about whether your perspective changed, the subject had already been covered.

Evidence of Trustworthiness

Credibility

This study was well-planned, and process compliance was good. The only significant change was the change from video recording to audio recording at the request of IRB. Credibility was documented by negative case analysis, triangulation, member checking, saturation, reflexivity, and peer debriefing with the doctoral committee. Qualitative research usually meets saturation with ten to twelve participants (Lambert, 2012). I met saturation when I saw recurrent patterns and concepts with twelve participants. Based on the literature review, I assumed ERT was a negative experience. I consciously did not communicate my belief that ERT was a negative experience.

Negative case analysis was done for participant responses that varied from the rest. Negative cases are interview results that are different from the majority of the other results. A negative case analysis was done for RQ3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after

ERT and interview question seven: What is your perspective about online teaching being easy to use? Two participants did not think the use of online education was easy. The explanations were related to difficulty learning, change, and frustration. Neither participant was positive about the question's change in perspectives about the ease of use of online education. The remaining participants said they found online education easy after learning how to use it. This leads to a discussion of triangulation.

Triangulation looks at different sources or vantage points to verify that the interpretation best fits the data (Burkholder et al., 2020). An incidental theoretical triangulation may be that teachers with a positive perspective of PU and PEOU may use online education more frequently, as has been confirmed by TAM researchers. However, the factors are so complex that it would take more study to confirm any correlation. Since there was minimal qualitative research about ERT and TAM, triangulation between similar studies was not possible. The doctoral committee checking confirmed coding triangulation. Member checking evaluated the transcription from the interview participants. This process verified that the transcript was what the participant intended to communicate. Inquiry audit and confirmability audit documentation included how the data were collected, how categories were derived, and how decisions were made throughout the study, as described by Burkholder et al. (2020). Trustworthiness accomplished by documentation is discussed in the next paragraph.

Progressive subjectivity was done by recording my conceptualization and expectations before the research began. It was done during the research and peer-reviewed by the doctoral research committee members. Reflexivity was done by

documenting my positionality memo, assessment of my role and responses during the research, and documentation of ongoing analysis as described by Burkholder et al. (2020). Documentation of a thick description was a detailed transcript of the findings. Piloting of the interview instrument resulted from an instrument review by the doctoral committee.

Transferability

Transferability was supplied by thick descriptions of the detailed interview transcript and assumptions to allow others to identify applicability to their situation. The delay between the ERT experience and the interview data collection may have impacted the participants' memory and perspectives. This threat cannot be mediated; however, the participants experienced a similar timeline. The Covid-19 lockdowns began in March 2020. Depending on the state and school location, the conversion and continuation of online education varied. The participants were interviewed in January 2023, about 33 months after the school closures.

Systematic assessment documents the researcher's reflexivity as a researcher of identity, positionality, biases, assumptions, values, and subjectivities. This assessment included an initial assessment that influences the research development and an ongoing assessment. My positionality evaluation identified some deficits and some advantages. These traits are not part of the phenomena and should not influence the research since I followed a carefully developed protocol and interview instrument. My acculturation with nursing and business was very fact base, which required a conscious effort on my part to stay within the interpretivism mindset while coding qualitative research. Being an

outsider to the secondary school education system has the advantage of having no preconceptions of the secondary school education system. It left me open to code without the influence of secondary school teachers' paradigms. Any observer effect was mitigated through member checking of transcription.

Dependability

Inquiry audit trails and triangulation documented dependability. Transferability was documented by reflexivity and thick description. Confirmability was documented by In Vivo coding of participant descriptions, confirmability audit, and reflexivity. Doctoral committee members review document inter-coding reliability. Intra-coding reliability was documented in coding comments, memos, and code descriptions. Specifics of this documentation are described in the following paragraphs.

Confirmability

Confirmability means other researchers would reach similar conclusions using the same qualitative data (Burkholder et al., 2020). The audit trail is the documented process, data collection, data analysis, and interpretation of the data. This was done by documenting decisions made during the research using some recommended practice memos from Ravitch and Carl (2019), the code comments, and the memos function in Atlis.ti.

Summary

This qualitative study had three research questions and eight interview questions. The coding results supported previous research and added new information literature. The following is the summary of the research questions.

RQ1: What were the secondary school teachers' perspectives about support for online educational technology after ERT? The frequency of positive and negative comments about technical support during ERT was about equal. Those that expressed a negative experience needed more technical support and had negative sentiments about technology. Teachers with positive experience had adequate technical support and had a positive sentiment. Technical support needs continue to be unmet.

RQ2: How did the secondary school teachers' perspectives about the usefulness of online educational technology change after ERT? Some teachers maintained a negative perspective on the usefulness of online education. Those with a positive perspective described an improved perspective due to the progressive experience during ERT.

RQ3: How did the secondary school teachers' perspectives about the ease of use of online educational technology change after ERT? On the question of change of perspective, most participants acknowledged that online education was easy to use once it was learned. This was a result of the ERT experience. The negative perspectives were about the difficulty of learning. The next chapter discusses this study's interpretations, limitations, recommendations, and conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience, which aligned with the problem of minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The rationale for selecting a qualitative study design was that I sought to understand the perspective of secondary school teachers who experienced ERT. Another reason I chose a qualitative study design is because several researchers recommended it.

The key findings are the answers to the research questions. There were about an equal amount of positive and negative perspectives about support for online educational technology after ERT. Some teachers maintained a negative perspective on the usefulness of online education after ERT. Those with a positive perspective described an improved perspective due to the progressive experience during ERT. On the question of change of perspective, most participants acknowledged that online education was easy to use once it was learned. The negative perspectives about ease of use were about the difficulty of learning.

Interpretation of the Findings

Perspectives about Support for Online Education Technology after ERT

This study's frequency of positive and negative comments about technical support during ERT was about equal. Those who expressed a negative experience needed more technical support and had negative sentiments about technology. This aligns with previous findings that teachers had negative attitudes toward technology because of a

lack of support and resources (Nordlöf et al., 2019). These findings also align with the need for more technical support found during ERT (Gordy et al., 2021; Marshall et al., 2020; Trust & Whalen, 2020). The teachers who had a positive experience with technical support during ERT had adequate technical support and positive sentiments about technology. However, every participant reported that they had unmet technical support needs at the time of the interview.

Changes in the Perspective of Usefulness Due to ERT

The TAM describes PU as the individual's belief that a computer program will improve performance. PU equates to this study's term, usefulness. The frequency of negative perspectives on the usefulness of online education was three from one participant. No specific reason was described. This negative case differs from the following discussion of changes in positive perspectives.

The frequency of positive perspectives on the usefulness of online education was 74, the highest frequency of any theme in the study. The teachers described a positive perspective resulting from the progressive experience during ERT. They all had an initial hard time but learned, and their perspective became positive through the experience. Teachers described online education as being easier, having improved educational technology, students learned in that environment, and they liked the work-at-home advantages. The teachers who described a positive change in the perspective of the usefulness of online education during ERT expressed a positive sentiment and personal learning and development. The teachers described online education as useful due to their experience during ERT. This finding and the finding that all but one participant are

currently using online education aligns with the finding that teachers' intent to continue online education use in response to the ERT experience (Panisoara et al., 2020). Other studies do not support this finding. For instance, Kumar et al. (2019) found that educators' perspectives and attitudes about online education did not change over time and continue to be negative. In contrast, this qualitative study found changed perspectives and positive perspectives on the usefulness of online education. More research is needed to verify that a contradiction exists.

Change in the Perspective of Ease of Use Due to ERT

The TAM describes PEOU as the individual's judgment of the effort it will take to learn and use a program. PEOU equates to this study's term, ease of use. This study's two negative perspectives of ease of use are related to difficulty learning, change, and frustration. The remaining participants expressed that online education was easy to use once learned. Like the perspective of usefulness, teachers described a difficult start, but their perspectives changed with progressive experience.

Incidental Findings

The forced use of ERT during COVID-19 school closures was sudden and difficult for teachers. Teachers in this study expressed a large number of negative experiences during ERT. This study confirmed the findings of previous researchers (Marshall et al., 2020; Trust & Whalen, 2020; Watermeyer et al., 2021).

Technology acceptance was not mentioned to the participants. However, multiple teachers organically discussed the need for a process to improve technology acceptance for teachers. They expressed the need for more communication, group training or

meetings, and peer support for online education.

Limitations of the Study

The external validity and transferability threats to this study are a function of the convenience sampling methodology of participants. Besides the eligibility criteria, secondary school teachers' experience during ERT varied based on their teaching environment's setting, context, and context mediators (Burkholder et al., 2020). Elements that may influence the context are access to resources, the level of educational technology used before ERT, teachers' computer competency, teachers' self-efficacy with electronic technology, and technical support systems. There was variance in how the administration managed ERT in the different environments. The qualitative methodology was iterative and allowed for flexibility and a thick description of the perspectives and support experiences of the participants (Babbie, 2017). Thick descriptions supply transferability to allow others to identify applicability to a situation. The 33-month delay between the ERT experience and the interview data collection may have impacted the participants' memory and perspectives. This threat cannot be mediated; however, the participants experienced a similar timeline.

Internal validity and credibility threats to this study are a function of the inexperience of the researcher. Experienced researchers on the doctoral committee guided me. I developed the interview instrument; therefore, the instrument was not research-supported. There were flaws in the interview questions. Question 2, "How do you use online teaching now?" did not produce enough usable information. Questions 5, "What is your perspective on the usefulness of online teaching?" and Question 6, "How did

emergency online teaching during COVID-19 change your perspective on the usefulness of online teaching?” were duplicative. Participants answered Question 6 while discussing Question 5. That limited the interview response to Question 6. The information was obtained but would be more easily done by eliminating Question 5. Question 7, “What is your perspective about online teaching being easy to use?” and Question 8, “How did emergency online teaching during COVID-19 change your perspective about how easy it is to use online teaching?” had the same problem as Questions 5 and 6. Question 7 should be eliminated.

Another internal threat was researcher bias. Researcher bias is an internal threat to qualitative studies (Burkholder et al., 2020). I intentionally focused on the purpose of the study and research questions and adhered to the data collection plan to avoid bias. My self-evaluation was documented in a positionality memo. Thorough documentation was done to reduce internal threats. Correct documentation preservation provided confirmability (Burkholder et al., 2020). Two negative case analyses were done.

Recommendations

This study’s findings inform administrators and leaders about a continued lack of support. Adequate technological support should be provided to implement a successful online education program. Since participants’ technology support needs vary, I recommend facility or system-level study or research to facilitate planning to meet support needs. The list of unmet support needs identified in this study can be used for further research or survey instrument development. Information from that research could be used to improve or recommend technical support systems for online education.

Research has noted that educators' perspectives and attitudes about online education did not change over time and continued to be negative (Kumar et al., 2019). But, this study found that some participants' perspectives of PU and PEOU of online education changed to positive during the ERT experience. Further qualitative, quantitative, and mixed method research needs to be done to measure the impact of ERT on PU and PEOU to make recommendations for practice change. The disruptive experience of ERT for teachers was confirmed and has been well-researched. I do not recommend any further research on that subject.

Implications

This study supports positive social change by informing administrators, teachers, and leaders in school systems to change policy and practice to support secondary school teachers' use of online education after ERT. This information helps fill the literature gap of a lack of qualitative research about teachers' experience during ERT. The identified unmet technology support needs can raise awareness of the lack of support for online education. It can be used to develop or refine quantitative survey instruments based on qualitative results.

Most study participants reported developing positive perspectives of PU and PEOU of online education during the ERT experience. ERT may have improved the technology acceptance of online education. A limited local survey may produce information on the PU and PEOU perceptions of that area's teachers. If the findings are positive, administrators must use this advantage to progress their online education programs before the effect dissipates.

Conclusion

The forced use of ERT during COVID-19 school closures highlighted a minimal understanding of how to support secondary school teachers' use of online educational technology after the ERT experience. The purpose of this qualitative study was to understand how to support secondary school teachers' use of online educational technology after the ERT experience. The TAM was the framework used in this study. The research questions explored the framework by asking about perspectives of support, usefulness, and ease of use of online educational technology.

This qualitative study found that teachers had positive perspective changes during ERT that can lead to technology acceptance and positive social change. The study provides information that fulfilled the purpose to understand how to support secondary school teachers' use of online educational technology after the ERT experience. It helped mediate the problem of minimal understanding. This study's information supports positive social change to meet students' technology needs for higher education and future employment by understanding how to support secondary school teachers' use of online educational technology. This study supported that there are still unmet support needs for online education, and the ERT experience changed the participants' perspectives of PU and PEOU of online education to positive. The finding that ERT was disruptive supports previous research.

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Appendix A: Interview Instrument

Date:
 Time:
 Participant identifier:

Introduction

Hello, I am Julia Tortorice, an Ed.D. student at Walden University. Thank you for agreeing to participate in this study. Do you have any questions? You can stop this interview anytime for any reason and still receive the gift certificate. I will record this interview. I will send you a copy of the transcript and codes for your review. I will also send you a final summary of the results. Do you consent to the recording? I will start the recording now.

Questions

- Describe your experience with emergency online teaching during COVID-19?
 - Probe: How did you or others respond or mitigate concerns?
- How do you use online teaching now?
 - Probe: Why or why not?
- Describe your experience with technical support system for emergency online teaching during COVID-19?
 - Probe: How did you or others respond or mitigate concerns?
- What do you or would you need to support your use of online teaching now?
- What was your perspective about the usefulness of online teaching?
 - Probe: Why or why not?
- How did emergency online teaching during COVID-19 change your perspective about the usefulness of online teaching?
 - Probe: Can you give me an example?
- What was your perspective about online teaching being easy to use?
 - Probe: Why or why not?
- How did emergency online teaching during COVID-19 change your perspective about how easy it was to use online teaching?
 - Probe: Can you give me an example?

Closing

Do you have any questions? Thank you for your participation. I need your mailing address to send a visa gift card. I will email you a copy of the transcript for your review, correction, or addition. I will also email you a summary of the results.

Appendix B: Codebook

Theme	Code	Description
Negative ERT experience	Lack of equipment	Detailed description: Teachers described negative experiences due to a lack of equipment during ERT. Inclusion criteria: Any negative experience due to a lack of equipment. Exclusion criteria: non-equipment experiences. Typical exemplars: “they did not have some of these gadgets.”
	Negative sentiment	Detailed description: Teachers described negative experiences due to ERT without a specific example. Inclusion criteria: Descriptions of negative experience, sentiment, or emotion that does not include a specific situation or example. Exclusion criteria: Positive experiences or negative experiences with a specific example. Typical exemplars: “not easy,” “it was hard.”
	Student detriment	Detailed description: Teachers described negative experiences that involved students during ERT. Inclusion criteria: Any negative experience involving students. Exclusion criteria: Positive experiences or negative experiences that did not involve students. Typical exemplars: “It was confusing the students.”
	System unprepared	Detailed description: Teachers described negative experiences during ERT because the system was unprepared. Inclusion criteria: Descriptions of negative experiences due to the system being unprepared. Exclusion criteria: Positive experiences or negative experiences not due to system preparation. Typical exemplars: “I did not know about online management and streaming systems.”

Theme	Code	Description
	Teachers unprepared	Detailed description: Teachers described negative experiences during ERT because they were personally unprepared to use online education. Inclusion criteria: Descriptions of negative experiences due to lack of personal knowledge or experience. Exclusion criteria: Positive experiences or negative experiences not due to personal knowledge or experience deficit. Typical exemplars: "I did not know about online management and streaming systems."
	Student benefit	Detailed description: Teachers described a positive student benefit during ERT. Inclusion criteria: Description of positive student experiences during ERT Exclusion criteria: Negative experiences or non-students' positive experiences Typical exemplars: "During that time, we saw the students were really performing well."
Negative experience with technology during ERT	Inadequate technical support	Detailed description: Teachers described negative experiences with technical support during ERT. Inclusion criteria: Negative descriptions of technical support. Exclusion criteria: Positive or non-technology descriptions. Typical exemplars: "That was all the technical support I had." Atypical "I had to look for how to help myself."
	Negative sentiment about technology	Detailed description: Teachers described negative sentiments about technology. Inclusion criteria: Negative description of technology experience without a specific example. Exclusion criteria: Positive description. Typical exemplars: "Technical issues affected us."
	Process and planning needs	Detailed description: Teachers described the process and planning needs for online education. Inclusion criteria: Description of concerns with process and planning. Exclusion criteria: Descriptions that do not include process and planning. Typical exemplars: "I had some technical skills, but not really to the extent."

Theme	Code	Description
Positive experience with technology during ERT	Positive sentiments about technology during ERT	Detailed description: Teachers described positive sentiments about technology. Inclusion criteria: Positive description of technological experience without a specific example. Exclusion criteria: Negative description. Typical exemplars: "I have a good and sound network."
Negative perspective on the usefulness of online education	Negative perspective of the usefulness	Detailed description: Teachers described negative perspectives about the usefulness of online education. Inclusion criteria: Descriptions of negative perceptions of the usefulness of online education. Exclusion criteria: Positive experiences or negative experiences not related to usefulness. Typical exemplars: "Most of us were not used to online teaching."
Positive perspective on the usefulness of online education	Easier	Detailed description: Teachers described online education as more straightforward to use. Inclusion criteria: positive descriptions that online education is easier. Exclusion criteria: negative descriptions or descriptions not related to ease of use. Typical exemplars: "Online is easier."
	Online education is useful.	Detailed description: Teachers described online education as useful. Inclusion criteria: positive description of online education as usefulness. Exclusion criteria: negative descriptions of usefulness. Typical exemplars: "very useful."
	Students learned	Detailed description: Teachers described students learning using online education. Inclusion criteria: positive description of students learning using online education. Exclusion criteria: negative descriptions. Typical exemplars: "They were doing very well."

Theme	Code	Description
	Work-at-home advantages	Detailed description: Teachers described the advantages of working from home. Inclusion criteria: positive description of teachers' advantages. Exclusion criteria: negative descriptions or descriptions not related to working from home. Typical exemplars: "I feel relaxed when teaching using online."
Negative change in perspective of the usefulness during ERT	Negative change in perspective about the usefulness	Detailed description: Teachers described negative changes in the perspective about the usefulness of online education during ERT. Inclusion criteria: Descriptions of negative changes in perspective. Exclusion criteria: Positive experiences or negative experiences not related to usefulness. Typical exemplars: "I really felt quite exposed."
Positive change in perspective of the usefulness during ERT	Positive change in perspective about usefulness	Detailed description: Teachers described a positive change in perspective of the usefulness of online education during ERT. Inclusion criteria: Positive experiences or sentiments. Exclusion criteria: Negative experiences or sentiments. Typical exemplars: "What was our fear is that with an online platform, there are certain demonstrations and skills that would not be possible to conduct and handle online. Subsequently, we got to discover and had that experience that it is definitely possible to do this kind of a thing. It is definitely possible."
Negative perspective of ease of use of online education	Hard to learn	Detailed description: Teachers described a negative sentiment about the ease of use of online education. Inclusion criteria: negative perspectives of ease of use. Typical exemplars: "It was hard to use and to understand the language being used and how to communicate."

Theme	Code	Description
Positive perspective of ease of use of online education	Difficulty depends on the individual	Detailed description: Teachers described learning of online education is dependent on the individual. Inclusion criteria: any description that the ability to learn online education is dependent on the learner. Exclusion criteria: negative perspectives. Typical exemplars: "Someone that does not have the experience, it appears to be difficult for that person."
	Easy to use	Detailed description: Teachers described online education as being easy to use. Inclusion criteria: Positive perceptions about ease of use. Exclusion criteria: Negative perceptions. Typical exemplars: "Quite easy to use."
	Positive sentiment about ease of use	Detailed description: Teachers described a positive perception of the ease of use of online education. Inclusion criteria: Positive perceptions about ease of use. Exclusion criteria: Negative perceptions. Typical exemplars: "Easy to use."
Negative sentiment with ease of use	Negative experience with ease of use	Detailed description: Teachers described a negative experience with the ease of use of online education. Inclusion criteria: negative perspectives of ease of use. Typical exemplars: "I did not really really know anything about online."
Positive change with ease of use	ERT changed perspectives about the ease of use	Detailed description: Teachers described a positive change in the perspectives about the ease of use of online education. Inclusion criteria: Positive perceptions about ease of use. Exclusion criteria: Negative perceptions. Typical exemplars: "changed my perspective because it made me diversify."

Appendix C: Atlas.it Example

The screenshot displays the Atlas.ti software interface with the following components:

- Top Menu:** File, Home, Search & Code, Analyze, Import & Export, Tools, Help, Codes, Search & Filter, Tools, View, Feedback & Help.
- Left Panel (Explore):** Shows a tree view of documents and code groups. The 'Codes (29)' group is selected.
- Code Manager (Center-Left):** Lists code groups with their counts:
 - RQ1 Current support needs (6)
 - RQ1 Current use (3)
 - RQ1 ERT experience (10)** (Selected)
 - RQ1 ERT technical support (9)
 - RQ2 ERT changed usefulness (4)
 - RQ2 Usefulness (9)
 - RQ3 Ease of use (7)
 - RQ3 ERT changed ease of use (3)
- Search Entities (Center-Right):** A table titled 'Show codes in group RQ1 ERT experience' with columns for Name, Grounded, Density, and Groups.

Name	Grounded	Density	Groups
negative ERT experience	57	3	[RQ1 ERT experience]
lack of equipment	2	1	[RQ1 ERT experience]
negative sentiment about ERT	15	1	[RQ1 ERT experience]
student detriment	10	1	[RQ1 ERT experience]
system unprepared	12	0	[RQ1 ERT experience]
teachers unprepared	18	0	[RQ1 ERT experience]
positive ERT experience	15	4	[RQ1 ERT experience]
personal development	4	1	[RQ1 ERT experience]
positive sentiment about ERT experience	2	1	[RQ1 ERT experience]
student benefit	9	1	[RQ1 ERT experience]
- Search Results (Bottom-Right):** Shows search results for '54:13 in p5' and '11:7:13 in p11'. The first result is 'Most people don't have the required devices for Zoom classes and Google classrooms.' with a code 'negative ERT experience: lack...'. The second result is 'they did not have some of these gadgets' with a code 'negative ERT experience: lack...'. Buttons for 'Diagram', 'Preview', and 'Comment' are visible.
- Bottom Status Bar:** Shows '59 codes' and '10 filtered codes'.