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"Thrown into the Lion's Den" — Revisiting Special Education Teacher Preparation Training After a Pandemic

Sarana Eyire Roberts and Yeunjoo Lee

California State University, Bakersfield USA

Abstract: *The COVID-19 Pandemic led to immediate school closures resulting in online learning. Online learning under such circumstances presented challenges for teaching students with disabilities. As school districts continued to provide educational services to students through online learning environments, it has become increasingly important to gain insight into how prepared special education teachers felt to teach in these environments. Nineteen special education teacher participants were interviewed about their preparation to teach online. Participants shared having minimal levels of preparation with technology and no preparation teaching online prior to emergency online learning. They also described the type of preparation experienced at the onset and during online learning and their perception of its effectiveness. Based on participant interviews, this study presents recommended practices to support teacher preparation programs and district professional development.*

Keywords: virtual, online, teacher preparation, in-service, preservice, special education

In the state of California, preparation programs are required to address technology competency by helping teacher candidates utilize multiple types of technology and a variety of instructional technology to meet the needs of diverse learners to assist in assessment, analysis, and communication of student learning (Commission on Teacher Credentialing, 2009). However, when the pandemic forced school closures, remote learning ensued, moving the importance of teacher candidate mastery of technology from an additive teaching element to one that was essential. This was indicated by differences in approaches to teaching students with disabilities in remote settings that ranged from online and frequent class sessions to no schooling at all (Roberts & Lee, 2023). In March of 2020, the California Department of Education sent a press release specifying the need to continue educating students with disabilities and not use the pandemic as a barrier for providing students with disabilities an education (Wright, 2020). However, the release did not specify a mode of instruction for remote learning, leaving this up to the expertise of teachers and local school districts. Additionally, while many California special education preparation programs introduced teacher candidates to technology to assist in student learning, the extent of instruction was unclear. The shift to remote learning in the emergency situation forced teachers to learn new pedagogical skills and technology to deliver instruction (Darling-Hammond & Edgerton, 2021). To provide a glimpse into teacher training during the COVID-19 pandemic, An and Zakaria (2022) conducted a scoping review of online trainings. Their literature review examined 34 articles from all parts of the world on teacher training during the period of January 2020 to December 2021 of the pandemic. While teacher training addressed the negative effects of

Correspondence concerning this article should be addressed to Sarana E. Roberts, E-mail: sroberts21@csub.edu

the COVID-19 pandemic, studies reviewed such as Marshall et al. (2020) showed few teachers received any meaningful training from their schools or school districts (An & Zakaria, 2022). More specifically, there was a need to have training that targeted supporting online teaching (Pozo-Rico et al., 2020). Providing additional training that help teachers apply content knowledge was needed to increase the effectiveness of teacher's online instruction (Ladendorf et al., 2021). Moreover, teachers in more rural school settings needed training suitable to the needs of students with disabilities and provided in a timely manner to mitigate the challenges with online learning (Padilla et al., 2021). Although An and Zakaria's analysis was one of the most comprehensive, providing the field with a glimpse into teacher preparation and district professional development during this time, their data mostly focused on general education settings.

PERCEPTIONS OF ONLINE TEACHING PREPAREDNESS

Recent studies conducted within the United States have explored special education teacher's preparedness to teach online (Lambert & Schuck, 2021; Sayman & Cornell, 2021; Schuck & Lambert, 2020). Some K-12 teachers have shared their pandemic experiences (Krishnan, 2023; Meisner & McKenzie, 2023). In Meisner and McKenzie's (2023) study that surveyed 699 educators about their experiences of online instruction, educators perceived themselves as having more success with areas they had more internal control over such as the delivery of curriculum and technology skill level. However, educators felt less successful with the areas they had less control over such as having access to adequate technology, parental involvement, and student motivation. Online instruction not only requires knowledge of technology, but the ability to pair technology with appropriate pedagogy (Krishnan, 2023). It is a critical skill to foster student engagement and motivation, and special educators specifically found it to be a significant challenge (Meisner & McKenzie, 2023). Teachers' experiences during the early pandemic months highlighted the need to investigate the types and levels of teacher preparation and professional development, which prepared them for online instruction.

Prior research posited challenges to teaching online during the pandemic (Jenkins & Walker, 2021). Jenkins and Walker (2021) surveyed 111 special education stakeholders in the state of Virginia and found that schools and school divisions were effective at providing free and appropriate public education. However, educators felt less effective at providing instruction for students with specialized instruction during online teaching. Rather than evaluating the COVID-19 pandemic as a blip in time where educators return to business as usual, Meisner and McKenzie (2023) argue that lessons learned from the pandemic should be an opportunity to assess gaps in digital equity and make positive gains in ensuring all students, regardless of race, economic background, or disability, are provided with a quality education in online spaces. Highlighting what is known about California teacher preparedness is crucial to advancing teacher preparation practices in higher education spaces.

It is critical that special education teachers learn to support students from diverse backgrounds in both in-person and online learning environments, especially during emergency situations such as a pandemic (Darling-Hammond & Edgerton, 2021). California has been recognized as one of the most racially diverse states in the United States (Hubbard, 2021). Approximately 20% of the students are White, 56.1% Hispanic, 10% Asian, and 5% Black in California (California Department of Education, 2024). California has continued to rank as one of the most economically diverse states in the country (California State Assembly, 2021). During the pandemic, the disparities between socio-economically disadvantaged and advantaged were

exacerbated, with some communities having greater access to digital tools and resources than others (Gao et al., 2020; Gee et al., 2023; Schulz & Robinson, 2022).

Now that the pandemic has ended, it is important to not just think of the pandemic as a period of time where mode of instruction differed but use teacher's COVID-19 teaching experiences to inform how teacher preparation and districts prepare special educators to use technology when teaching. Effective online teaching can be leveraged to support children with varying needs. The present study interviewed special education teachers about their experience with online learning and preparation to teach online. Through the perceptions of special educators, the research explores the following questions:

- What was the level and nature of preparation that special educators had to teach online?
- Based on experiences shared about teaching online, what emerged as some key elements to address in teacher preparation programs?

THEORETICAL FRAMEWORK

Two learning theories serve as the basis for understanding pandemic learning: connectivism and experiential learning theory. Connectivism, a learning theory for the current digital age, was considered to understand the type of current teacher preparation to seek practical solutions to training future special education teachers. This theory asserts that learning occurs through digital networks, and learning is not found in one place alone (such as a physical classroom) but through a variety of informational sources or nodes (Downes, 2019; Siemens, 2005). The theory posits that students should make connections using various mediums and technology tools. Thus, it is imperative that educators know how to utilize technology with students in a way that elicits student growth and development. This growth is based on a set of experiences and activities (Downes, 2019, 2022; Siemens, 2005).

Experiential learning theory was used to understand the process of learning that teachers experienced and the theory suggests that people learn best through real-world experiences, reflection, and transforming those experiences into new knowledge (Burns & Danyluk, 2017; Kolb, 2014). Learning to teach online during the pandemic was an example of experiential learning in its truest form because university instructors and districts did not simulate an environment where online learning was necessary. Instead, the experience was created by a life event, the pandemic. However, Roberts (2012) made a distinction between the terms, suggesting that learning does not just happen from experiencing an event. There is a distinction between "learning by doing" and "experiential education" (Roberts, 2012). What happens during and after the experience determines whether learning occurs (Roberts, 2012). This encourages that the learner engages in a process that leads to learning from an experienced event. Experiential learning theory defines learning as a 4-stage cycle that takes place when encountering a new experience: concrete experience, reflective observation, abstract conceptualization, active experimentation (Kolb, 2014). The first two stages of the theory focus on feeling and reflecting on an experience, while the second two stages focus on transforming.

METHOD

PARTICIPANTS AND SETTING

For this qualitative inquiry, teachers who resided in Central and Southern California of the United States were selected using snowball sampling. The central California city is characterized

as one of the least educated cities in the United States (Sasic, 2019) with a high poverty level (18.5%) (U.S. Census Bureau, 2018). The southern California city also has a high poverty level (17.3%) (U.S. Census Bureau, 2018). Table 1 details descriptive data of participating teachers. The researchers conducted in-depth interviews with 19 special education teachers in central and southern California who delivered online learning environments during the COVID-19 Pandemic. The participants had an average of 5.8 years of teaching experience in a public school classroom setting. Ten participants taught students with mild to moderate support needs (MMSN), and nine participants taught students with extensive support needs (ESN) or autism spectrum disorder (ASD).

Table 1

Participant Demographic Data

Characteristics	N	%	M	SD
Gender				
Male	13	68%		
Female	6	32%		
Location				
Central	13	68%		
Southern	6	32%		
Student Type				
ESN	5	26%		
MMSN	10	52%		
ASD	4	21%		
Placement				
SC	16	84%		
Resource	3	16%		
Years				
1-5	14	74%		
6-10	1	5%	5.8	6.78
11+	4	21%		

Note. Location was reported by region to maintain confidentiality. Southern= Southern California, Central= Central California, SC= Self-Contained. Years of teaching at the start of school closure reported.

DATA COLLECTION

This study focused on participants' level and nature of preparation to teach online. The interview was conducted by the first author via zoom. Each session lasted about one hour, and the interviewer asked whether the participants would like to share any other information regarding their experience teaching online at the end of each interview session. In-depth interviews were semi-structured asking three initial questions that allowed for follow-up and clarification as needed. The three initial questions asked were:

1. Did you teach in a virtual learning environment prior to Spring 2020?
    a. Can you elaborate on these experiences?
2. What preparation and training did you have for teaching online?
    a. Did you receive your preparation and training before or during the pandemic?

3. How effective do you feel your preparation and professional development experiences were?

Data Analysis

Statements and phrases of participants were transcribed verbatim and coded to represent patterns within the data. From those codes, themes were created to represent the coded data. These codes and their corresponding themes led to one overarching concept that formed the basis for the assertions/conclusions and theories made (Saldaña, 2021). The researchers coded all data for analysis in order to have an intimate and thorough analysis of the data. Data were coded electronically using Microsoft Word comments feature and color-coded highlighting (Saldaña, 2021).

During the interview process, the primary researcher created field notes to memorialize initial interpretations and discussed interview data with the secondary researcher as data were collected. The researcher undertook two coding iterations. The first cycle of coding used magnitude coding. Magnitude coding was used to capture the directionality of the participants' perceptions for the effectiveness of the training and professional development received in both teacher preparation and professional development contexts. Using magnitude coding, the primary researcher applied either a positive, negative, or neutral label to each participant's response about their training that supported their perspective of the effectiveness of online teaching. For example, a response of "I think my training and preparation was okay or somewhat effective" would be coded as a neutral response. A response of "not effective," "non-existent," or "terrible," would be coded as negative, whereas "great," "effective," or "I was prepared" are examples of responses that would be coded as positive (See Table 2).

Table 2

Sample of Magnitude Coding of Preparation to Teach Online

Participant	***Training Source***	***Training Received (Before/During)***	***Magnitude Code***	***Statement***
Participant A	PD	During	Negative	*Rushed, didn't have enough time to prepare*
Participant B	PP & PD	During	Neutral	*In Spring 2020, not prepared. Now very prepared.*
Participant C	PP & PD	During	Positive	*I think that they've been effective overall, I think, I think the timeframe should probably have been shifted forward.*
Participant D	Neither	During	Negative	*I don't think it's really effective because even during summer, we had two days, not three days of preparation to teach for the whole year.*
Participant E	PD	During	Negative	*Um, like I said I don't feel that we were given any preparation in*

				regards to the online platforms that we were expected to teach with... I didn't feel very supported…
Participant F	PD	During	Positive	*Yeah, so that's been kind of helpful.*
Participant G	Neither	Neither	Neutral	*I didn't receive any professional development from my administrator, I did everything on my own, which has advantages and disadvantages.*
Participant H	Neither	Neither	Negative	*I don't think I was prepared properly ahead of time it's just been trial and error.*
Participant I	PD	During	Negative	*It was overwhelming…*
Participant J	PD	During	Negative	*I don't think they were very effective. like I said we were just thrown in there to kind of figure it out on her own…*
Participant K	PD	During	Negative	*So, when the pandemic happened, I felt that my preparation for technology wasn't quite there.*
Participant L	PD	During	Neutral	*I mean I tried my best but my Ed Tech, I'm not good with technology.*
Participant M	PP & PD	Before & During	Negative	*So, I was completely a fish out of water with this with an interface internet based educational realm, I was completely had no clue...Yeah, it wasn't good.*
Participant N	PD	During	*Negative*	*I wouldn't say it's very effective. And again, I feel like going and playing with it yourself going through the system and the program and everything and exploring it, you cannot learn that way.*
Participant O	PD	During	*Positive*	*Um, I thought they were good...*
Participant P	PD	During	*Positive*	*They were useful*

Participant Q	PD	During	*Positive*	*It was pretty good actually. I think one of the interesting things I think about it, is a lot of the trainings were taught by experienced teachers who were used to being in the classroom and are now moving their teaching online zoom.*
Participant R	PD	During	*Negative*	*I mean, I, they felt very rushed. It seemed like instead of really focusing on just the basic implementation of a lot of the programs, it was like here's the whole program, you know, they kind of rush through it and I think we missed a lot... so I don't feel like the training was really in depth.*
Participant S	PD	During	*Neutral*	*I believe they're adequate they gave us a clickable experience as to what it would look like of course when we started in session then you add students into the mix and so that's a different variable…*

Note. PD=Professional Development, PP= Preparation Program

The second coding cycle used In Vivo coding. Using In Vivo coding, words and phrases from interview data were used that captured the voices of participants. The phrases selected served to highlight key themes found within each research question. The first research question was categorized as *the level and nature of preparation*. The second research question was categorized as *emerging elements to address in teacher preparation and development*.

The researchers were interested in how the elements of experiential learning theory applied to the current study. The aspects that lead to beneficial experiential learning include engaging in a real-life experience, reflecting upon that experience, and transforming the experience by applying new ideas (Kolb, 2014). The first research question allowed researchers to consider how participants reflected on experiences of learning to teach online. The second research question allowed researchers to assess how participants applied new ideas and modified ideas. In examining how participants were supported while they applied new ideas, the researchers reviewed connectivism theory. Thus, where participants discussed the application of specific technology within the data, the researchers noted three types of technology reservoir participants were learning to use with students: 1) social networks (i.e., Twitter, YouTube, Facebook, Instagram, blogs, videos, and podcast), 2) virtual reality platforms (i.e., webinars, video games, and virtual field trips), and 3) online classrooms.

RESULTS

Overall, participants shared views of their preparedness to teach online that were coded as negative. Most of these perceptions addressed their teacher preparation programs not properly preparing them for online instruction. Almost all participants stated that while they were exposed to technology and the importance of using it, they never received training to teach in online spaces during their preparation programs. These perspectives about preparation effectiveness were gleaned by responses to the question, "*How effective do you feel your preparation and professional development experiences were?*" More positive statements were made regarding district professional development received than teacher preparation program support. However, many of these teachers stated that most of the technology training received was only after the pandemic. Table 2 depicts statements made by participants and their magnitude codes (i.e., positive, negative, neutral). Overall, 16 participants reported not receiving training to use technology in online spaces at any point during their teacher preparation programs, including after the pandemic occurred. Of the 19 participants, 10 made statements that were coded as negative about the effectiveness of preparation programs and professional development. While five participants shared positive views about the effectiveness of their preparation to teach online, four of the five were solely referring to the professional development and training they received from their school districts, and not their teacher preparation programs. Moreover, participant comments considered the onset of the pandemic as well as its progression from the spring to fall of 2020, with more positive feelings about the professional development occurring in the fall.

LEVEL AND NATURE OF PREPARATION

When analyzing teachers' level and nature of preparation for online instruction, two themes emerged. One theme was that participants had little and inadequate technology experience pre-pandemic and at its onset. Another theme was that special education was an afterthought. These two themes led to an overarching perception that participants had about the nature of their preparation to teach online. Participants expressed that a fend for themselves mentality existed, with little and inadequate technology experience at the onset of the pandemic, and with special education and the needs of students with disabilities being an afterthought. Figure 1 depicts a sample of the codes and the themes derived from those codes that led to the overarching perception. Following Figure 1, the results report themes related to 1) level and nature of preparation and 2) emerging elements to address in teacher preparation programs.

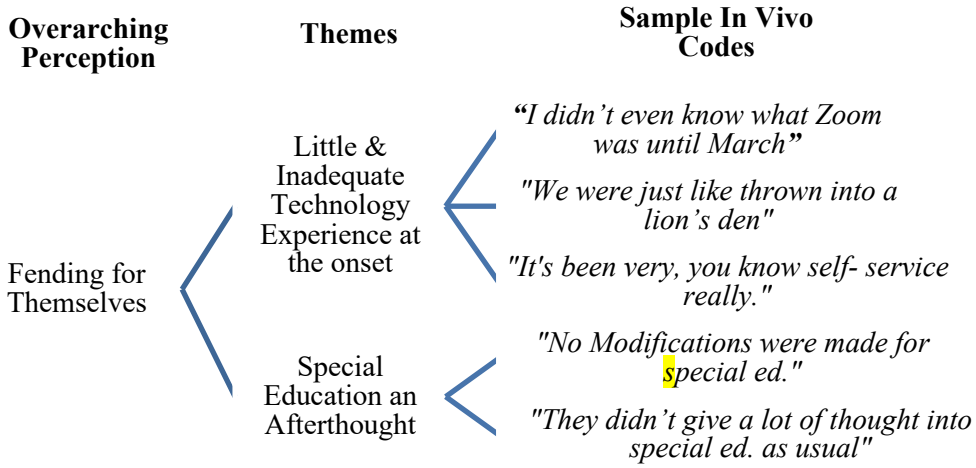
THEME 1: LITTLE TO INADEQUATE EXPERIENCE AT THE ONSET

Participants reported having no formal preservice training on technology prior to the pandemic, with Participant I stating, "I didn't even know what Zoom was until March." While some participants described using assistive technology for accommodation purposes, they did not perceive themselves to be trained in the use of educational technology. Participants described having little to no knowledge of using educational technology tools to enhance student learning. Even when participants became aware of what to do through district professional development, they reported not knowing how to adequately implement the technology.

Participants also shared the challenges of not having effective training in advance, with Participant D voicing that if teachers had received training earlier "... the future teacher will not be like us, like we were just like thrown into a lion's den, either you have to protect yourself or you will just have, you will just let the lions, eat you...." The lion's den metaphor represented being

placed in a perilous situation or a situation of extreme disadvantage. In fact, more than one participant echoed feeling "thrown in". Participant H stated, "it was basically, they throw you in, say here are the materials, that we are going to use and figure it out." When participants stated they were "thrown in" or someone threw them into a space , it was used in the context of being placed in a new and unfamiliar situation with little to no preparation to manage that situation. Yet Participant J used a "sink or swim" metaphor when referring to being "thrown into the water," meaning that they were on their own and any success in teaching online would be due solely to their own efforts. These sentiments encapsulate the level of fiery brought about by the circumstances of the pandemic that many participants saw as avoidable for future teachers. While participants acknowledged that the pandemic was an unforeseeable event, they noted that teachers should have been trained on using technology as a part of their preparation to become teachers, as well as professional development.

Figure 1
Level and Nature of Preparation



THEME 2: SPECIAL EDUCATION AN AFTERTHOUGHT

Unfortunately, the circumstances of preparing teachers to teach online during the pandemic made many special education teachers feel left out (Krishnan, 2023), and what was needed to teach students with disabilities was an afterthought. This assertion was supported by Participant J's statement, "They didn't give a lot of thought into special education as usual." Participants, like Participant J, shared that much of the required professional development was tailored to general education teachers and the experiences they would have supporting students in an online setting. However, this one-size-fits-all type of approach to technology exposure was reported to not account for the diverse nature and complexities of teaching a class of students with disabilities. Participants shared that many of these meetings were not as beneficial since they were not fully applicable to their teaching. Workshops and district training that did not consider the needs of students with disabilities and their teachers was an instance of not giving a lot of thought to special education. The "as usual" in Participant J's statement indicated that procedures and systems in place for special educators were not lacking as a function of the pandemic but always occurred and were exacerbated by the pandemic. In addition, resources to assess and prepare for Individualized Education Plans (IEPs) from home were not always provided.

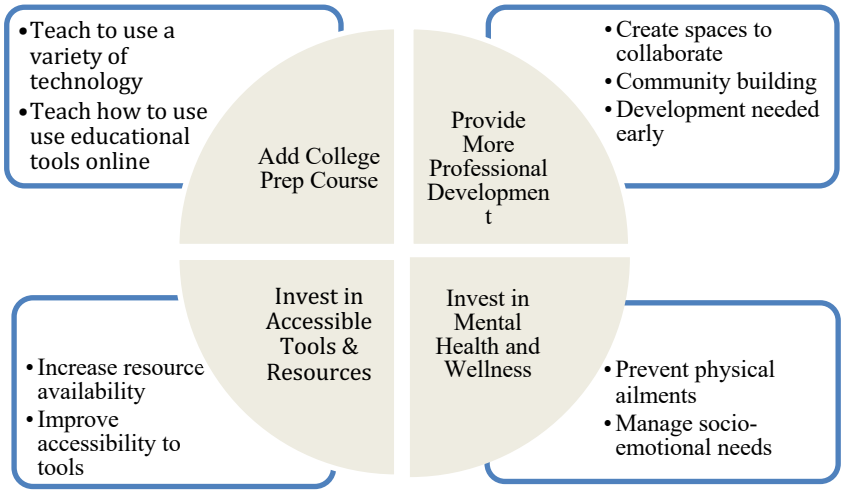
Halt of instruction was another example in which the needs of special education teachers were forgotten or not considered. For a few participants, instruction ceased while districts figured out how to implement technology tools and train teachers for online instruction. While halting instruction was reported to be schoolwide and not isolated to special education classrooms, it has been reported that the adverse effects of missing a period of time from school are greater for students with disabilities than for their counterparts without disabilities (Christani et al., 2015). Participants illustrated a seemingly fair and equally applied process that put their students at a disadvantage due to the extreme learning loss, which has been historically greater for students with disabilities than those without (Christani et al., 2015). In addition, most participants reported that their district stopped holding IEP meetings for the remainder of the academic year (Jenkins & Walker, 2021).

EMERGING ELEMENTS TO ADDRESS IN TEACHER PREPARATION AND DEVELOPMENT

Four themes emerged from interviews with the participants regarding teacher preparation programs and professional development. Through their experiences of learning to use technology effectively during the pandemic, participants provided insight into what would be helpful for future teachers to have in place. Figure 2 demonstrates the emerging elements that need to be addressed in teacher preparation programs. These emerging elements to address in preparation programs are accompanied by main points made across participant interview statements.

Figure 2

Emerging Elements to Address in Teacher Preparation and Development



THEME 1: ADD A COLLEGE COURSE TO PREPARE TEACHERS FOR ONLINE TEACHING

Participants recommended adding a college course to prepare special education teachers to work specifically with educational technology tools online. While some participants shared that they did not have any experience at all with technology in their teacher preparation programs, others stated that technology was addressed in their program but not to the extent that they needed it in the profession. Furthering this point, the pandemic made many realize that teachers were not prepared for an emergency situation such as a pandemic. Demonstrating this point, Participant D stated to the interviewer:

> Like, I think, if, they can, if you can add like a course like a, like a teacher prep. Something like to prepare the future teachers special ed teacher to teach online I think it's going to be beneficial like that will be great because you know, who would have thought that we are going to be in this situation, but I think if they have that like, like a course or two in their pocket, I, they will not be like us.

Furthermore, participants would have also liked to learn more about a variety of educational technology tools that could be used in the classroom. Participants expressed needing more hands-on support for technology competency and appropriate pedagogical skills in synchronous, asynchronous, and in-person settings. The nature of technology exposure in teacher preparation programs focused on using assistive technology with students. Yet, during the pandemic, the type of technology relied on was educational technology used to deliver and enhance instruction. Not only did teachers want to learn about the technology, but they wanted opportunities to explore it in educational settings while in their teacher preparation programs.

Theme 2: Early & Community Building More In-service Professional Development

Participant C shared that trainings received from the school district were effective; however, did not happen soon enough. This participant stated, "Trainings are effective, but I would have liked to see them happen sooner." Along with this notion of providing professional development early on, participants stressed the need for professional development that is special education specific. Participant S stated, "It would be nice to have been trained a little bit more on the special ed aspect of it, as opposed to just a general." A few participants indicated that professional development needed to be more in-depth and cater to the needs of special educators who often struggle to use technology effectively with their students.

Additionally, opportunities for community building within these professional spaces were brought up as a crucial factor. Two participants mentioned the most helpful aspect was being able to talk with colleagues about their triumphs and challenges and also to share resources. Unfortunately, not all participants had other special education teachers who were easily accessible to them and who were able to provide such support. In fact, some participants reported experiencing isolation during this period. Thus, providing a space and time to create community and collaborate was seen as a crucial aspect of in-service trainings moving forward (Darling-Hammond & Edgerton, 2021; Womack & Monteiro, 2021). This included having professional development opportunities that would allow for the sharing of resources and ideas for working with specific types of educational technology with students with disabilities.

Theme 3: Invest in Accessible Tools and Resources

Participants spoke to a need for teacher preparation programs and school districts to invest in tools and resources that students can use at home. Resources would have also been helpful to participants, as many mentioned not having enough or up-to-date e-readers, manipulatives, learning programs, supplemental materials, and reliable internet access. This made teaching during this time extremely difficult in the eyes of participants. It appeared that resources were scarce not only for students but for teachers as well. One participant mentioned that the school only had one copy of curriculum materials to use on the school grounds, and some of those were shared. This created problems for her when needing to use these materials at home. Thus, investing in accessible resources for both teachers and students is an important aspect of training, as teachers

would need to be able to access and utilize tools and supplemental material while learning how to teach online.

Theme 4: Invest in Mental Health & Wellness

A few participants discussed an unexpected aspect of online teaching during an emergency situation. Participant O discussed that he and his colleagues had physical ailments and headaches that did not exist before teaching online. This could be related to additional levels of stress that teachers might have been feeling with managing the needs of students on their caseload, while simultaneously learning new technology, adjusting pedagogical skills, and supporting paraprofessionals and the families of their students. Although Participant C discussed maintaining a positive outlook on her teaching and learning during the pandemic, she also detailed concerns that some of her colleagues could not maintain such an outlook. In her response to the anything else question of the interview, Participant C stated:

> What makes me sad is my fellow educators have not been so able to do that and shut off the negativity, and it's leaked over into their teaching. And so that's been the biggest thing for me…But some of these teachers that I'm working with I'm finding they just, they're tired, they don't want to deal with it. It's too much effort, it's too much time, it's too much energy. Lesson planning in a virtual space is not easy.

The aspect of mental and physical health decline was mentioned when participants were asked if there was anything else they would like to share about their experience. While this factor was an unexpected outcome of online instruction during the pandemic, it indicated a need to support teachers during such challenging times as a result of extensive use of technology and difficulty adapting to a new and challenging circumstance.

Theoretical Framework

Of the four stages of experiential learning, there was evidence of participants going through each stage. However, the source of the learning differed for participants. Some participants credited district professional development for learning technology, while others suggested that they learned on their own. Those participants demonstrated they reflected on their experiences during the pandemic and learned valuable skills during the process. Participant G learned on their own and stated that it had its "advantages and disadvantages." Participant G used learning platforms such as Zoom and Nearpod and based decisions on the needs of their students. Participant H engaged in “trial and error." Both participants were examples of how teachers engaged in in-the-moment reflection where teaching practices were adjusted to meet the needs of students without district or university support.

Connectivism helped to understand what types of technology participants learned to use and from whom. Connectivism identifies three reservoirs of digital learning: social networks, virtual reality platforms, and online classrooms (Kropf, 2013). Participants in this study discussed learning how to use online classroom formats. These platforms included Google Classroom, Canvas, and Zoom which were endorsed and supported by participants’ districts. This indicated that the focus of participants' learning experiences centered around creating a virtual space where students with disabilities could learn. Virtual reality platforms were discussed second most of the three digital reservoirs. While districts did provide online

classroom format resources, teachers helped each other to use virtual reality platforms. These reality platforms included online games, such as Prodigy, and video clips. Participants did not mention using social networks.

DISCUSSION

It is critical that special education teachers learn to support students from diverse backgrounds in both in-person and online learning environments, especially during emergency situations such as a pandemic. Centered around the context of the pandemic, the current study uses special education teacher's experiences to illustrate the extent of preparation to teach online. At the onset of the pandemic, participants shared having minimal levels of preparation with technology and no preparation for online instruction. Overall, this study presents recommended practices in an online learning environment and discusses suggestions for teacher preparation programs and professional development.

When examining this study's findings, there are three layers of learning to consider: teachers' process of learning to teach online, educator's efforts to train teachers to teach online, and how the field can respond to lessons learned from the pandemic. Participants in this study provided an example of experiential learning. The concrete experience of the pandemic made participants reflect on their preparation to teach online. Although higher education teacher preparation programs in the state of California are required to provide technology instruction (California Commission on Teacher Credentialing, 2009, 2018), most participants did not report receiving any digital education from their preparation program. Participants shared not feeling prepared and concluded that more training needed to occur to support special education teachers with online teaching tools and resources. This could be due to the presentation of the instruction being provided in the form of explanations, activities, and simulations which Kolb (2014) concludes are less effective than real world situations. Thus, really engaging in the event and reflecting on it to learn technology was likely not taking place prior to the pandemic. Furthermore, due to the pandemic, the use of technology was no longer a teaching option as teachers had no choice but to use technology. One could argue that this led to an increased engagement and motivation to learn during the pandemic as teachers were sitting with and reflecting on using a variety of virtual classroom and virtual reality platforms.

Most districts took action to provide support after noticing a need to learn technology. However, participants expressed that trainings should have been offered sooner and provided practical application to the needs of special education teachers. This finding is consistent with Marshall et al. (2020), who stated training needed to be more meaningful and timely in order to be effective. Thus, educator's efforts to train in this digital age need adhere to and consider a connectivism learning approach. While other approaches to training teachers may be effective as well, this emergency remote learning situation required both formal and informal training to occur via media and technology tools. The pandemic reminds educators how important a role technology should play in teacher preparation. Yet, much like Pozo-Rico et al. (2020), many special education teachers in this study expressed the need to be taught more specific skills to effectively incorporate technology and utilize its many benefits (Krishnan, 2023). Essentially, teachers were told what tools and resources to use but not how to use them. In order to take experiences from teaching during the pandemic and use them to *transform* future teacher training, we offer several recommendations for supporting online teaching.

TEACHER PREPARATION PROGRAM RECOMMENDATIONS

Based on the interviews conducted in this study, we offer a few recommendations that may serve to support preservice training of special education teachers as the field looks beyond the pandemic. First, we recommend that institutions of teacher preparation programs offer a course devoted to supporting future teachers with technology literacy and pedagogical knowledge through hands-on application (Krishnan, 2023; Reed et al., 2021). Using connectivism theory as the guide, technology training should tap into all three reservoirs where individuals can acquire information: 1) social networks (i.e., Twitter, YouTube, Facebook, Instagram, blogs, videos, and podcast), 2) virtual reality platforms (i.e., webinars, video games, and virtual fieldtrips), and 3) online classrooms (i.e., online libraries and learning management system) (Kropf, 2013). Rather than merely providing teachers with information on a variety of tools, these courses can show teachers how to use tools to provide opportunities that instill critical thinking and growth. The curriculum needs to, therefore, be one that extends beyond teaching assistive technology to teaching both assistive technology and educational technology that enhance student learning across teaching modalities and platforms.

DISTRICT PROFESSIONAL DEVELOPMENT RECOMMENDATIONS

While the participants reported having professional development on the use of technology, it was only as a result of the pandemic. Thus, we first recommend providing professional development to reinforce their technological and pedagogical skills upon entering the profession (Krishnan, 2023; Reed et al., 2021). District professional development should be applicable to the needs of the students with disabilities they serve. Districts should move toward providing ongoing, periodic professional development or workshops for the mental health and well-being of teachers to keep them from leaving the field and provide much-needed support to continue the work of educating students with disabilities (Pozo-Rico et al., 2020; Womack & Monteiro, 2021). Lastly, districts may want to create a professional learning and support community for special educators within the district (Womack & Monteiro, 2021).

LIMITATIONS

There were some limitations to the current study. First, the study only focused on two regions in California. This may limit the ability to generalize to areas outside these regions. Second, the study had a small sample size, opting to focus on qualitative analysis of a few cases for in-depth responses and analysis. Thus, experiences may vary from those in other regions or if another data collection method was used with a larger sample size. While insights were gained, future research may want to examine feelings on current preparation to teach online through quantitative means using larger scale random sampling and survey data for more generalizability.

CONCLUSION

Participants' experiences allowed for opportunities to learn where efforts can be placed to support teachers early on with technology and teaching online. The work of preparing and training should not be left to districts alone. Participants in this study unveiled a need for teacher preparation programs to do their part in ensuring that teachers are prepared for teaching experiences in a variety of teaching modalities that extend to include online learning spaces. While most programs are required to expose teacher candidates to technology, the depth and breadth of

that coverage need to be more practical, hands-on, interactive, and address the educational needs of students with disabilities.

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