Teacher Candidates' Experiences with Distance Learning in the Initial Year of COVID-19

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Abstract
The advent of distance learning as a result of the *COVID-19 pandemic* introduced challenges to teaching and learning. Teacher preparation programs worldwide grappled with the predicament of moving practicum-based field experiences online. The following research examines a practicum, field-based, teacher preparation course that was transitioned to distance learning as a result of the COVID-19 pandemic. Two university field supervisors noticed teacher candidates struggled with promoting student engagement when teaching to elementary students in distance learning environments. This inquiry was developed to investigate how elementary education teacher candidates promote student engagement in distance learning environments. An interpretive phenomenological analysis of 20 lesson reflections reveals candidates need more support with questioning, formative assessment, and technology tools to keep students engaged online. Findings from the research suggest teacher preparation programs need to consider the addition of distance learning methods to teacher preparation coursework.

Keywords: Teacher Preparation, Distance Education, Student Engagement, Teacher Candidate, COVID-19, Pandemic

Introduction

The abrupt transition of traditional face-to-face instruction to screen-to-screen instruction due to the *COVID-19 pandemic* presents many challenges for teacher preparation programs (TPPs) in the United States (US). TPPs must decide how to move practice-based, face-to-face field experiences online so teacher candidates (TCs) may learn how to lesson plan and teach content to K-12 students remotely. While widespread use of distance learning appears to be a consequence of the COVID-19 pandemic, distance learning increased as a pre-pandemic instruction mode. For example, the states of Michigan, Alabama, New Mexico, and Idaho passed legislation nearly a decade ago to require that all K-12 students complete online learning experiences before graduating from high school (Kennedy & Archambault, 2012). Most US states offer free online virtual schooling alternatives for students (Littlefield, 2020). However, there are no requirements to mandate that teacher candidates complete distance learning methods courses in teacher preparation years. To date, only 1.3 % of TPPs in the US address distance education (Barbour, Siko, Gross & Waddell, 2014; Kennedy & Archambault, 2012) in teacher preparation. Now more than ever, TPPs need to consider ways to create distance education coursework to prepare teachers effectively for working in 21st-century classrooms.

In the spring 2020 semester, two university field supervisors (authors) transitioned a face-to-face field-based practicum course to synchronous distance learning due to the COVID-19 pandemic. Ten undergraduate, third-year, elementary education TCs worked with mentor teachers to provide online synchronous instruction to elementary (K-5) students. Throughout the spring 2020 semester, TCs met with the authors to reflect on their distance learning experiences. The authors noticed TCs experienced difficulties with student engagement. An inquiry ensued to examine how teacher candidates support online engagement when working with elementary students synchronously in distance learning environments.

Situated Learning

Situated learning (Lave & Wenger, 1991) is used in this research to understand how teacher candidates construct knowledge of distance learning student engagement. Situated learning proposes that understanding develops through interpersonal relationships. When communicating with others, individuals connect prior experience with the authentic contextual learning environment to understand a specific situation, topic, or task. Situated learning is a learning concept that involves learners in cooperative reflective activities while being immersed in an experience. The teacher candidates examined in this study cooperated with a university supervisor to plan, enact, and reflect on their ability to provide synchronous distance learning to elementary-aged students.

Distance Learning

In distance learning environments, media channels enable synchronous or asynchronous interactions between physically separate learners, teachers, and educational resources (Saykılı, 2018). Students who learn online undertake more responsibility to perform learning activities using multimedia resources such as discussion boards or social media to learn content and interact with others. Thus,

distance education is an interactive telecommunication system that connects learners, resources, and teachers (Türkan, Leblebibi, & Önal, 2020). Distance learning provides several advantages to students, such as working from home, being responsible for personal education, and reviewing lesson content slowly or repeatedly. Through synchronous or asynchronous modes of instruction, students may learn together or on their own time. Technology is part of the 21-st century classroom; however, stakeholders must make several considerations before implementing a distance learning curriculum. Teachers need time to adapt to new technologies before being expected to use them effectively. Teachers' Technological Pedagogical Content Knowledge (TPACK) emphasizes that it is essential for teachers to use technologies effectively to teach content to students (Koehler & Mishra 2009). The abrupt change from face-to-face to screen-to-screen instruction has challenged even the most well-prepared experienced teachers. The COVID-19 pandemic ushered in a new pedagogical need. Teachers now need to address the social-emotional needs of students' by implementing trauma- and healing-informed pedagogical practices all while making up for learning loss and preparing for the coming unpredictable combinations of distance learning (Darling-Hammond & Hyler, 2020). The greater expectations placed on the teaching workforce means TPPs need to update program standards to reflect the needs of today's students, failing to do so will result in increased teacher attrition. Teachers who feel ill-prepared for a school's distance learning curriculum may experience an abrupt change to their teaching identity, resulting in feelings of loneliness and isolation (Zhang, 2020), thus attributing to teacher attrition.

Student Engagement

Research on student engagement focuses on behavioral indicators of students' participation in academic settings to associate student engagement with instructional excellence (Axelson & Flick, 2011). The bahavioral perspective of student engagement is utilitarian in nature because it examines behaviors such as academic achievement and attendance to suggest that schools use extrinsic motivations, such as grades and attendance expectations, to promote student engagement. Other literature (Wolters & Taylor, 2012) draws the concept of self-regulated learning to describe student engagement as it relates to motivation, classroom climate, and student attitude. From a self-regulated learning perspective, student engagement is a psychological and physical phenomenon. The self-regulated learning perspective on student engagement suggests that teachers use intrinsic motivations that capitalize on students' interests and address community-relevant issues to keep students engaged.

Others describe types of student engagement (Wang & Eccles 2013). Behavioral engagement relates to attendance and active participation in classroom learning. Emotional engagement examines students' positive and negative reactions to school, teachers, and activities. Cognitive engagement focuses on the degree to which the student is willing to put in the effort to comprehend challenging material and acquire difficult skills. While one may think types of student engagement should be studied in isolation. However, critics (Axelson & Flick, 2011) warn that "we do damage to the messy reality of student learning if we disaggregate the various forms of student engagement from each other" (p.41). For this reason, it is recommended that researchers conceptualize student engagement as a multidimensional construct.

Methods

Phenomenology is a qualitative research approach that investigates the commonality of a lived experience within a particular group. The purpose of phenomenological research is to reach a description of the universal essence of individuals' experiences with a phenomenon (Creswell & Poth, 2018). Classical phenomenology focuses on first-person experiences and the trait of intentionality, direction of experience towards things in the world, to understand how an established way of seeing is brought into being. In phenomenological research, intentionality refers to the way the researcher uses established 'objects' and ways of seeing to analyze experiences (any subject and all phenomena are 'objects'). Meaning is created by the mind, through actions directed towards objects via the process of intentionality.

Research Context and Participants

The TPP uses a cohort model and is a four-semester long program that results in an undergraduate degree in elementary education with initial teacher licensure. TCs begin the TPP their junior year of college and complete four semesters of field experiences and methods courses instruction. A cohort coordinator assigns TCs to an elementary school and mentor teacher. Semesters one through three include two days of field experience and methods course instruction. Semester four includes full-time student teaching. A university field supervisor observes TCs in the field and teaches bi-monthly seminars. Seminars provide opportunities for TCs to discuss field experience events, review relevant theory, receive lesson plan support, engage in reflective practice, and practice instructional strategies. The research reported on in this study took place when TCs were in the third semester of the TPP. At the start of the fall 2020 semester, instruction remained online, however, TCs were allowed to choose one of three pathways to complete the third semester field experience requirement: (1) work face-to-face with a mentor teacher, (2) work online with a mentor teacher, or (3) complete field simulation tasks provided by the field supervisor with no mentor teacher assignment. 10 of 18 TCs chose to work with a mentor teacher, either face-to-face or remotely and are reported on in this research because they planned and enacted instruction to students in a distance learning environment. The ten TCs reported on in this study completed two formal observations that included a lesson pre-conference, formal observation, and post-conference. To accommodate online instruction, field supervisors (the authors) joined TCs' live online lesson or watched a recording of TCs lesson. To plan online instruction, TCs used the university's lesson plan template and chose a Charlotte Danielson Framework (CDF) (2013) domain as a professional development goal for their lesson. The public school system used the CDF for in-service teacher evaluation. Therefore, the CDF allowed TCs to become fluent in and comfortable using the CDF for personal goal-setting. TCs shared their lesson plan with their supervisor and used CDF language to establish a goal (i.e. in this lesson, I want to create a culture for learning). The field supervisor used the TCs' CDF goal to provide lesson plan suggestions in pre-conference meetings. TCs were required to record their lesson (even if the field supervisor attended their live instruction online) and analyze their video using a video reflection framework (Smith, 2019). Then TCs used the video reflection protocol to guide post-conference reflective dialogue with the university field supervisor.

COVID-19: The Virtual Field Experience

Nationwide lockdown changed the way TPPs provide learning to TCs. On March 13, 2020 TCs (of the affiliated university being studied in this research) moved the face-to-face teaching they provided to elementary-aged students to screen-to-screen instruction. To accommodate the quick escalation of virtual learning, the university referred to empirical research to explore how to create "virtual" field experiences for TCs. According to the literature, there are three types of virtually enhanced field experiences (Hixon & So, 2009). *Type I* is characterized by concrete, direct experiences where the TC works in a live classroom setting with a mentor teacher and students. In a Type I field experience, technological tools facilitate, supervision, reflection, and communication. In *Type II* virtually-enhanced field experiences, TCs observe students and teachers in classrooms remotely. Examples of Type II technological tools include synchronous lesson observations or non-real-time pre-recorded videos. Simulated environments are used to create Type III virtually-enhanced field experiences. In *Type III* "virtual practicum", TCs learn about and practice pedagogy using an artificial model of reality. The different types of virtual field experiences may be used in conjunction with one another. For example, TCs may be asked to remotely observe a classroom (Type II experience) for an assignment while working in direct (Type I) field experience.

Data Collection

Data were collected over the course of a 16-week semester of online instruction in fall 2020. Primary data included 20 teacher candidate lesson reflections (two per TC). TCs completed written reflection prompts on their enacted distance education lessons. TCs recorded their screen-to-screen instruction using the *Screen-Cast-o-Matic* (a web-based screen recording tool), then reflected on their audio-video recording using a free video annotation download tool (v-note.org). Written reflection prompts asked TCs to comment on how their screen-to-screen instruction was met or not met a personal pedagogical goal. TCs referred to the CDF Evaluation Instrument (2013) to select a pedagogical goal. Before watching and analyzing their video, TCs decided what instructional elements would evidence them having met or not having met this goal. Secondary data sources included university supervisor notes. The authors (university supervisors) took notes when meeting with TCs to conduct post-lesson conferences. In post-lesson conferences, TCs shared their written reflections with the university supervisor. They described how they analyzed their video recording and what they noticed about their instruction related to their CDF goal. University supervisor notes were triangulated with TCs' lesson reflections to provide clarification and insight into participants' reflective responses and their reflective processes.

Data Analysis

Interpretative Phenomenological Analysis (IPA) was used to explore the experiences and challenges TCs had with promoting student engagement in distance learning environments. IPA involves a light form of thematic analysis where the data are kept intact through a process of phenomenological reduction or bracketing so a phenomenon may become evident (Smith & Osborn, 2015). Data were analyzed in three stages: initial note-taking, transferring notes into themes, and connecting themes

to generate findings. During initial note-taking, we employed a free analysis approach (Smith & Osbron, 2015) to focus on how TCs support student engagement in distance learning environments. To do so, we opened TCs' lesson reflections on *Google Docs* and created a three-column-table (listing initial note, data excerpt, and theme). We then used an idiographic analytical approach (Grbich, 2013) to transfer our initial notes into themes and met to discuss our notes. Our joint discussion resulted in four themes: *engagement strategy, beliefs about engagement, engagement challenges, and plan of action.* A research key was created to independently analyze one TC lesson reflection (case) to help us orient subsequent analysis. We independently coded the single case using the right column of the three-column table to list each theme as it occurred. This process allowed new sub-ordinate themes to emerge. Next, we shared our coding with each other until 100% inter-rater reliability was established. Then, we looked for connections between themes, placing each theme in chronological order to look for patterns. At this time, we noticed the following pattern: "engagement strategy", "engagement challenge", "plan of action", albeit the pattern did not answer the research question at hand. Therefore, we isolated the engagement strategy theme for deeper analysis. This resulted in the addition of three subordinate themes: ("questioning", "technology", "feedback", "formative assessment" to the research key (Table 1).

Theme/ Subthemes	Definition	Example
Engagement Strategy	Distance learning strategy enacted by TC to promote student engagement	Behavioral, cognitive, or emotional engagement
questioning	TC uses a question-response format to engage students in verbal or written discussion	chatbox discussion
formative assessment	Verification of student understanding progress before moving on.	*Kahoot!* Feedback
technology	use of applications, software, or other computer resources to model, problem-solve, or practice content with students	*PowerPoint* Whiteboard tool
challenge	TC perceives feeling(s) of discomfort about an instructional event	Not all students were engaged
plan of action	TC reflects on ways to improve student engagement in subsequent instruction	I want to do…next I want to try…

Table 1: *Research Key*

We used the research key to independently re-code the data. Since we had omitted "challenge", and "plan of action" from our research key we coded any perceived challenge or plan of action within each subordinate theme, for example within the questioning subtheme we looked for any perceived challenges and plan of action). We split the data in half amongst us to ensure that we analyzed lesson reflections from participants who we did not supervise during the spring 2020 semester. This was done

in an attempt to preserve phenomenological reduction as much as possible. In our analysis, we created another Google Doc where we manually coded the data using the same two-row, three-column table (subordinate theme, data excerpt, theme). Then, we uploaded the table as a pdf single case *HyperResearch*. We independently analyzed the pdf source as one case using the research key we developed as a codebook. Themes were used to create groups, and subordinate themes became codes within a group. We each ran a group and code report, then converted our independent reports into one joint excel spreadsheet. Then we conducted an iterative analysis checking the HyperResearch report against the raw data to make sure thematic connections worked to compile a directory of participants' phrases as a way to identify strongly captured thematic clusters.

Reflexivity

The first author is an Assistant Professor in multilingual learning, elementary education. Her beliefs about student engagement and distance learning align with Sociocultural concepts of learning and come from her personal experiences growing up as a bilingual and her professional experiences working as a former public elementary school teacher and now a university professor. She believes tools mediate learning and that humans make sense of the world through their interactions with others. The first author believes teachers should plan instruction using content and language standards. Teachers should use differentiated language supports to help students (who are in different levels of language proficiency) make sense of content. The first author is knowledgeable in preparing TCs to design and enact instruction to students who are multilingual or who speak a language other than English as a first language. The first author worked as an elementary school teacher for over eight years and currently works as a university methods course instructor and field supervisor. She values teacher reflection for professional development and requires that TCs' use video and video annotation tools for evidence-based teaching reflections. The first author whole-heartedly believes that students are engaged when they understand and are excited about what they are learning.

The second author is supervising teacher candidates in the field and works as a lecturer in education. A former elementary and secondary teacher, she developed an immersive language program and engaged her students in numerous art projects. Her teaching philosophy is grounded in social constructivism while providing students a sense of self-efficacy and agency. Her research interest takes a sociocultural perspective as learning and development is taking place in the interaction with others. COVID-19 required a transfer to distant learning and the second author explored synchronous and asynchronous teaching formats. The second author believes that teaching in a distance learning environment requires educators to adapt to new ways for student participation and engagement and challenges P-12 and higher education to develop different modes of teaching.

Findings

This study explored TCs experiences with promoting student engagement in a distance learning environment. To understand TCs' experiences with distance learning as a phenomenon, we examined the engagement strategies TCs utilized, the challenges TCs perceived, and any mention of next steps for a plan of action.

Questioning

TCs used questioning to promote student engagement and add rigor to online lessons as a way to invite students to think critically. For example, one TC explained, *"[Students] had the most attention when I asked them questions. They could even regain their focus if I asked them to answer a question or give me an answer to a problem*" (TC, November 2020).

Other TCs combined strategies they learned about in their methods courses with questioning. TCs used think-aloud and open-ended questions such as: "What should I do now? Can you help me?" along with Total Participation Techniques (TPTs) such as "think-pair-share" and "thumbs-up" in an attempt to keep students engaged online. TCs noticed TPTs did not work in the online setting with the same tenacity as the face-to-face setting. A TC explained, *"I model how to solve the problems then give them [students] time to practice on their own, but it's hard to create the 'pair' time online. I know I should do breakout rooms, but I don't think I can do this on WebEx [distance learning software used by the school]"* (TC, September 2020).

TCs revealed they needed to reconceptualize the participation strategies they learned about in their methods classes to "fit" the online platform they were using. This made some TCs feel ill-prepared and unsure of their teaching competency. As one TC shared, *"I know I have to get better at teaching online. I don't feel confident"* (TC, October 2020).

TCs expressed strong desires to improve on the types of questions they used to promote online student engagement. One TC summed it up, "*I should have added more variation to my questions. In this way, I could introduce new vocabulary and expose students to the different styles of questioning"* (TC, December 2020).

Distance learning showed TCs they needed to improve their questioning skills. As TCs taught students online, the screen provided evidence of student disengagement, this evidence promoted TCs to see a need for improvement. As one TC expressed, "*I can see them doing other things as I'm speaking, so I know I need to improve on how I ask them questions*" (TC, November 2020).

An overall feeling of needing to improve questioning techniques via online tools was expressed by all TCs. Six of ten TCs shared a desire to use breakout rooms to engage students' online discussions, while four TCs shared they wanted to use the chatbox feature to keep track of student responses.

Formative Assessment

TC used formative assessment in the form of feedback to promote online student engagement. Praise such as "thank you" or "good job" kept students interested in a lesson. However, TCs noted that praise was not enough to develop online student discussions for critical thinking. For instance, one TC stated: *"I'd like to take the comments my students make and have them elaborate or turn their comments into a discussion. Instead of saying a mere thank you, I'd like my feedback to become more detailed*" (TC, November 2020).

In other instances, TCs analyzed students' independent work samples to keep track of student progress and understanding. A TC shared, *"I use practice problems to see what students know how to do before I moved on"* (TC, October 2020). However, when completing practice problems online, TCs noted that they did most of the talking and provided little time for students to work with each other in small groups to problem-solve. As one TC shared, "*It's hard for me to create a way for students to work together in small groups online. It's always a whole-group with me doing most of the talking. I know I need to change this*" (TC, November 2020).

Formative assessment became challenging for TCs to implement online: "*I created a rubric to use to check off when students complete a specific task, but I cannot see each student individually, so I observe a few students at a time; usually the ones I know are struggling"* (TC, October 2020). The distance learning environment challenged TCs abilities to keep track of student progress during instruction. While some TCs used online games like *Kahoot*! to formatively assess students TCs noticed they needed to rethink formative assessment in their lessons to consider the use of technology as an instructional tool. As one TC shared, "*I can't walk around to check on the progress anymore and offer support*" (TC, October 2020). TCs began to consider the use of technology as an instructional tool putting technology in the hands of students to keep students engaged.

Technology

Respective schools provided video conferencing apps such as *WebEx* or *Google Meets* as distance learning platforms. TCS frequently used the chatbox and camera features to keep track of student engagement in the form of verbal responses and facial gestures. Other candidates relied on the Google suite and used Google slides to present lesson content with animations (pictures and emojis on the slides). TCs felt confident using the Google suite for instruction but expressed issues with internet connectivity (the video freezing), visibility, (not being able to see all students in a grid view), and multitasking (showing the google slide and teaching while also observing students online). As a result, TCs expressed frustration, "*It's so hard to see all of the students when I'm teaching […] I can't see everything on my one screen*" (TC, September 2020). Another TC voiced, "*I could not successfully explain to the students how to take a screenshot*" (TC, September 2020). Teaching in a screen-to-screen setting demanded that TCs have pedagogical, content, and technological competence. Feelings of frustration led TCs to notice the importance of practicing distance learning lessons in advance to detect and solve technical problems. TCs explicitly stated that they practiced their lesson procedures at home or asked a peer what they did to solve a similar problem. TC's expressed that they would like to improve their multitasking skills such as monitoring students via camera and chat, working with an additional screen to monitor students during presentations, or asking their mentor teacher what he or she does to multitask.

Conclusions

Findings from this research reiterate the need for TPPs to reconceptualize teacher competency. Teaching in a screen-to-screen setting requires that TCs have pedagogical, content, and technological competence. Changes to how teachers learn and how they are prepared for distance education should be made in concert with

TPPs, teacher educators, partnership school faculty, administrators, and policymakers to establish as much agreement as possible. As Zhang (2020) notes, "the key to successful learning is to bridge the gap between physical and virtual spaces by extending the learning beyond the physical classroom" (p.36). With the advancement of interactive web 2.0, mobile technology, and artificial intelligence, paradigmatic changes in conceptual designations are needed in teacher preparation. Wide-spread access to information and greater availability to communicate online has become more prevalent to students, which positively enhances students' ability to learn independently. It would be negligent to think that things will return to how they once were in the classroom pre-pandemic. Teaching no longer includes technology, it is technology. TPPs must prepare TCs for 21st-century classrooms by including coursework and field experiences to make TCs competent in and comfortable with distance learning.

The COVID-19 pandemic is often referred to as "the new normal" and this "new normal" has several implications for TPPs: First, teachers need to be competent in technology and able to use technology for student instruction. Using technology for instruction involves risk-taking, innovation, and creativity. TPPs need to experiment with ways of preparing TCs for distance education environments. We recommend that TPPs consider adding distance learning field placements to their curriculum to ensure graduating TCs are competent and able to work effectively in both face-to-face and screen-to-screen environments.

Lastly, teachers need to adapt to novel technologies to keep up with technological changes and advancements. Teachers need opportunities to connect with other educators to receive professional development on the latest technologies (Darling-Hammond & Hyler, 2020). Professional collaboration is associated with higher job satisfaction, self-efficacy, and the use of innovative practices. TPPs need to provide TCs with peer collaboration experiences to discuss and explore teaching and learning technologies in teacher preparation so this form of teacher professional development becomes commonplace. In the same vein, teacher professional development needs to be reconceptualized to include technology as a mode of learning and topic of learning.

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