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Research Article

Digital pedagogy in dialogue: Student teaching during COVID-19

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This study depicts the narrative of Noelle, a 22-year-old student teacher from a state university in a large Southeastern U.S. community amidst the COVID-19 pandemic. During Noelle's student teaching experience in the Fall 2020 semester, educators and students were returning to formal teaching and learning in a variety of face-to-face, virtual, and hybrid configurations. Classroom teachers turned to digital technologies to overcome the barriers presented by virtual student attendance and social distancing. At the same time, student teachers like Noelle were entering classrooms to develop their burgeoning teaching skills. Noelle's narrative was constructed and analyzed with respect for the inner dialoguing in which she engaged as she developed her digital pedagogy and digitally-mediated teaching approaches. Findings from Noelle's narrative of digital pedagogy are presented thematically and conclusions and implications for teacher education programs and future research are disseminated.

Keywords: Digital pedagogy; Student teaching; Teacher education; Narrative research

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1. Introduction

Noelle is a 22-year-old White female student teacher enrolled at a state university in a large Southeastern U.S. community amidst the ongoing COVID-19 pandemic. She has just finished her student teaching semester in a kindergarten classroom in which varying numbers of her students attended face-to-face and virtually during the Fall 2020 semester.

We spoke for the final time a few days before the Christmas holidays and our conversation turned to what Noelle felt was a significant lack of preparation for using digitally-mediated teaching approaches required for meeting students' needs during the pandemic:

> Author: If *I* was teaching that [technology teaching methods] class, based on what *you've* told me...I wouldn't organize the syllabus by *tools*. I'd organize it by *verbs* and I'd teach them how to *do* stuff in their teaching. Like, when you're planning a *reading* lesson, the *book* you pick is kind of a byproduct of what the *objective* is. You don't base everything around the *book* necessarily.
> Noelle: Yeah! Tools are *fun*. Like, I'm not saying tools aren't *good*. It's *nice* to learn these things, because there was stuff that [the instructor] taught me that I didn't *know* existed. But, like, I feel like when I talk to *you* and we talk about things I've used. It's like, "Well *how* did you...*use* technology to

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> get this *taught*?" You know? Like, it wasn't just like, "Oh, what *tool* did you use? What'd you do in Google *Drive* that…"
> Author: It's a *means* to an *end*. It's not the *end*...
> Noelle: It makes a little more sense that way…Like, *one* time, [in the technology methods course], we made a *gradebook*. And, I mean, like, [the instructor] *walked* us through it, and it was *great*. It was fun. I didn't mind doing *that*. But then [the instructor] would...like, "I'm just going to highlight this. I'm just going to highlight it in *yellow*. And you, you highlight it. And we're highlighting it for *this* purpose. Blah, blah, *blah*, blah, *blah*." [laughs] And then we got our *grades* back and it was, like, [I] got ten *points* deducted because [I used blue]. "But this is *my* gradebook!" So, [laughs] so that was the frustration in that *class*. (personal communication, December 22, 2020)

This study depicts Noelle's narrative of digital pedagogy during her student teaching semester in the Fall 2020 academic semester amidst the COVID-19 pandemic. Noelle was placed in a kindergarten classroom at a school in a fairly large district, which, like other districts in the United States, were trying to balance their legal responsibility for maintaining "the health, safety, and welfare of students and school staff" (OECD, 2020a, p. 1) as they returned for the 2020-2021 school year.

Educators turned to digital technologies to mediate (Jones & Hafner, 2012; Steffen et al., 2019) and transcend social distance and extended quarantining when face-to-face teaching and learning were risky or not feasible. However, teachers struggled to design and implement instruction and meet curricular goals with integrity using digitally-mediated approaches that they may not have received sufficient training for in advance of school closures and phased reopenings (OECD, 2020a).

Many students faced a lack of access to a digital device or reliable Internet connection, impacting their equitable participation in virtual learning (Vogel et al., 2020). Communities were encouraged to band together to support each other as preexisting educational and economic disparities were magnified (Murry et al., 2021).

In times of challenge, novice teachers often rely on the guidance of mentors as they develop what Herbart (1802/1896) called "pedagogical tact" (p. 197) to bridge theoretical or hypothetical understandings of teaching to actual classroom practice; however, teaching classes split between virtual and face-to-face contexts during the pandemic was generally considered unfamiliar territory for even the most experienced teachers (Gastager et al., 2017).

Meanwhile, student teachers like Noelle were trying to gain experience in designing and implementing instruction, managing a classroom, and taking full responsibility across the curriculum for students with diverse learning needs. Ideally, the student teaching semester functions as a capstone to a pre-service program experience, including extensive, supervised field experiences; application of best practices; critical reflection (Darling-Hammond, 2006a); and regarding digital pedagogy, the opportunity to integrate strategies and tools in ways that transform, rather than substitute, traditional teaching and learning approaches in ways unique to the use of technologies (Kimmons et al., 2015; Puentedura, 2004).

Considering the significant uptake of digital technologies across K-12 educational settings during the better part of 2020, it is important to construct more understanding about how pre-service teaching candidates developed digital pedagogy and digitally-mediated teaching approaches, particularly student teachers, in these uncharted times.

The research question for this study was *What can be learned about the dialogic nature of digital pedagogy from the narrative of an elementary pre-service teaching candidate who student taught during the COVID-19 pandemic?*

2. Literature Review and Theoretical Framework

Britzman's (2003) dialogic theory of teacher practice was used as the lens for conceptualizing Noelle's development of digital pedagogy and digitally-mediated teaching approaches in this study. Viewing teaching as a dialogic practice acknowledges that this profession is not done in isolation (Holquist, 2002). It accounts for the evolving nature of a teacher's practices that evolve

through social enactment and dialoguing with countless factors and stakeholders. Practitioners also draw upon their past life experiences as they frame decisions and experiences in the present and project towards future decisions of teaching (Greene, 1995; Wertz et al. 2011).

Teachers enact "many kinds of knowledge and skills [as they] pursue multiple goals with learners who have diverse learning needs" (Darling-Hammond et al., 2007, p. 390). In the daily act of designing and implementing instruction, teachers must navigate and dialogue with "authoritative" and "internally persuasive discourse" (Bakhtin, 1981a, p. 342). Among the authoritative discourses student teachers must dialogue with are the opinions and feedback of their cooperating teachers and university supervisors, which can be quite complicated when there is a lack of alignment and consistency between pre-service coursework and field experiences (Darling-Hammond, 2010). In a meta-synthesis of recent qualitative research, Hart (2020) found that additional factors that can influence the work of the student teaching triad, including clarity of roles, tensions from differing expectations, divergent background experiences and expertise, and positionality within power dynamics.

Internally persuasive discourses resound within a teacher's own consciousness and are "always in dialogue with authoritative [discourses]" (Britzman, 2003, p. 43.). Teachers are in a constant state of flux as the ends of teaching and learning called for by authoritative discourses are weighed against one's morals, expertise, and past experiences (Alsup, 2006; Bruner, 1986; Clandinin, 1993). In the dialoguing of digital pedagogy, teachers may align their approaches with means-end, deterministic discourses about the affordances of digitally-mediated teaching and learning approaches (Chandler, 2012; Cristia et al., 2017; Pereiria & Pereiria, 2015).

Alternatively, practitioners may reach "tipping points" (Novoa, 2018, p. 146) in which they adopt a more critical, reflective stance (Elbaz-Luwisch, 2007; Rogers, 2007) and consider the individual needs of students (Van Manen, 2015), redefining what effective and equitable teaching and learning looks like with digital technologies (Brader & Luke, 2013; Greene, 1984; Luke 2004). A particular challenge all educators had to navigate during the pandemic was facilitating the equitable participation of learners virtually attending and participating in their classes (Gierhart , 2022).

To Van Manen (2015), pedagogy is elusive of positivist rationalization and emerges in those instances in which one "is required to act pedagogically" (p. 18). Framed dialogically, teachers develop digital pedagogy and digitally-mediated teaching approaches across their narratives (Britzman, 2003). Since this narrative conceptualization of digital pedagogy is concerned with the lived experiences of a student teacher, narrative methods were employed in this study (Mishler, 1999).

3. Research Design

Through the lens of dialogism and discourses, a teacher's pedagogy exists along a continuum of lived experiences, embedded across spatial-temporal contexts, and studied with respect for the dialogic ways in which they were perceived (Clandinin, 1993; Clandinin & Connelly, 2000). Narrative understanding diverges from positivist, "paradigmatic" (Bruner, 1986, p. 14) research by acknowledging that humans internally perceive and draw upon their experiences (Dilthey, 1887/1985; Kim & Macintyre Latta, 2010) through the stories they recall and retell (Clandinin, 1993; Gubrium, 2003; Robinson & Hawpe, 1986; Spector-Mersel, 2010), translating perceived experiences in a universally-interpreted manner (Mishler, 1999; White, 1981).

Hartung (2013) noted that constructing and drawing understanding from career-based narratives can provide "inner stability" (p. 48) to practitioners in challenging times and phases in their work. Such interpretivist-minded inquiry was conducted for this study using narrative methods to construct and analyze Noelle's narrative of digital pedagogy in a rigorous, authentic manner (Eisner, 1990; Skrtic, 1990; Smith, 1987) and disseminate how the findings can inform teacher education and student teaching experiences in a post-COVID world (Geertz, 1973).

I conducted four interviews with Noelle using semi-structured interview protocols, approximately once per month during the Fall 2020 semester. Biographical and contextual questions were designed for the first interview to better frame Noelle's narrative of digital pedagogy across her lifetime of experiences and with respect for the chronotopic situatedness (Bakhtin, 1981b) of her dialogue-laden semester of student teaching (Alsup, 2006; Britzman, 2003; Polkinghorne, 1995; Schutz, 1945).

The interview questions in subsequent months were informed by artifacts and reflections Noelle shared each month as well as the preceding month's interview (McAdam, 2019; Torre & Murphy, 2015). I designed many of these questions using Morrisey's (1987) two-sentence questioning technique, which Kim (2015) recommended for use in narrative research. These questions began by revisiting information and stories that were either shared in a previous interview or discovered in one of Noelle's artifacts or journal reflections; then, I posed a question to spark Noelle's narration about her digital pedagogy and digitally-mediated instruction (Bamberg, 2012).

Out of an ethical concern to "increase the sum of good" (Israel & Hay, 2006, p. 2) from this research and reduce any additional risk of virus transmission at Noelle's student teaching placement site, I did not observe Noelle's teaching in-person. I also opted to not record her teaching of in-person and virtual students, as this would present an additional layer of complication to the challenges she and her colleagues were navigating with simultaneously teaching kindergarteners in face-to-face and virtual contexts.

However, it was important to triangulate the findings by collecting multiple forms of data (Creswell, 2012; Glesne, 2010; Lather, 1986). Noelle shared several artifacts of her digitally-mediated teaching (e.g., lesson plans, photographs, digital slideshows, etc.) as well as written reflection journal entries to support the construction of her vivid, authentic narrative (Clandinin & Connelly, 1988, 2000; Lemley & Mitchell, 2012; Ronksley-Pavia & Grootenboer, 2017) and make her pedagogical dialoguing more explicit (Bakhtin, 1963/1999a; Britzman, 2003). The artifacts, in particular, served as visual inspirations to support Noelle's narration and reflection on aspects of her digitally-mediated instructional design and teaching that may have otherwise gone unconsidered (Bach, 2007; Torre & Murphy, 2015).

After data collection was completed, I began analyzing the data hermeneutically through several readings, establishing a sense of the whole (Bakhtin, 1999b; Wertz et al., 2011) before focusing on individual portions and stories in Noelle's narrative (Linde, 1987). Then, I began constructing Noelle's narrative as the arc and plot emerged (Bruner, 1979; Kim, 2015), avoiding generalizations or assertions of cause (Bakhtin, 1963/1999a) and with respect for the situatedness of Noelle's stories (Kristeva, 1980). I followed up with Noelle to ask clarifying questions as needed during this process (Connelly & Clandinin, 1990). The narrative is presented in Noelle's own words as much as possible to enhance its authenticity (Creswell, 2012; Guba & Lincoln, 1994; Gubrium & Holstein, 2009; Yin, 2010).

Then, I analyzed the narrative itself through the theoretical lens of Britzman's (2003) dialogic theory of teacher practice. I inductively coded factors and issues with which Noelle was in dialogue regarding her design and implementation of digitally-mediated instruction (Lapan et al., 2012). Open coding was conducted first, followed by axial coding in which codes were revised as themes emerged, collapsed, and evolved across additional readings of the narrative (Tracy, 2013) through which Noelle's story could be depicted (Atkinson, 2007). Finally, selective coding was conducted to frame the results of the analyses within dialogic theory (Williams & Moser, 2019), which allowed for relating the narrative to a wider audience and drawing conclusions and implications (Clandinin, 1993; Kim, 2008; Lather, 1986; Lyotard, 1979/1984; Polkinghorne, 1995).

4. Limitations

This research was limited to a single individual's narrative (Gasson, 2004) and what she selected to share during her participation in the study (Haydon et al., 2019). The findings from Noelle's narrative are not generalizable to the experiences of other student teachers during the COVID-19

pandemic (Bowden et al., 2017). Also, narrative inquiry is inherently bound and conveyed by elements of the narrative genre (Andrews et al., 2004; Derrida, 1981) and cannot objectively investigate internal or cognitive "aspects of experience" (Leitch, 2006, p. 552).

The study was context-specific and subject to the biases of narrator-researcher interpretation (DaMatta, 1994; White, 1981), especially given my positionality as a teacher educator and former elementary classroom teacher (Höckert & Ljung, 2009); however, given the intertwined nature of narrative methods and Noelle's unfolding narrative (Clandinin et al., 2018), as evidenced in the story that opened this article, my "relational ontology" (Caine et al., 2013, p. 581) was closely tied to our co-construction of her narrative (Lather, 1986).

5. Narrative Findings

5.1. Difficult Beginnings

Noelle's kindergarten students began the 2020-21 school year learning virtually from home. While her cooperating teacher taught on Zoom each day from the school building, Noelle was quarantined at home due to a contact tracing precaution; however, she was still able to virtually engage in the work of student teaching. She explained, "We *Zoom* three times a day being in *kindergarten*. So I've been participating in all the Zooms. And I always take attendance for my cooperating teacher and all that stuff. And I've been able to do *that*, because it's all *online*...luckily" (personal communication, August 28, 2020).

Noelle's student teaching experience was mediated by several digital technologies, such as the Canvas learning management system that Noelle had to learn quickly with her CT as they designed components of the digital side of their classroom. In a reflection journal entry from early August, Noelle detailed the work and collaboration she engaged in as she co-designed her class Canvas page:

> [This platform] is not user friendly and I could not figure it out. After [viewing] some YouTube videos and [receiving] help from my friend Riley (pseudonym), I figured it out! Our page is now cute and accessible for kinders! I was even able to make it to where it will read the page [aloud] to the students.

After Labor Day, the families of Noelle's students were allowed to choose whether to continue having their children attend virtually or return to face-to-face instruction at school. By late September, 14 of Noelle's kindergarten students had returned to in-person learning while eight continued with virtual learning; the numbers of face-to-face and virtual learners shifted and changed each month for the rest of the semester. Enforcing social distancing and face mask requirements was not a major challenge for Noelle "because they've never known school before this [and] they were told this is the rule. To them, it's the norm" (personal communication, September 26, 2020).

For Noelle, the main struggle was implementing instruction and managing a classroom that was unlike anything she had been prepared for in her teacher education coursework. In a mid-semester journal entry, she candidly moored over the many difficulties of synchronously and simultaneously meeting the needs of in-person and virtual learners:

> At first I was super excited to have kids back, but then things spiraled and weren't working. Things still aren't working out but we have fixed obstacles as we have come to them. I have had to ask myself "What could I do better?" over and over everyday. I have been feeling overwhelmed and want to give up lately. I feel unsuccessful as I take over [the teaching of] subjects. It feels like it is not working for me. I [need to] re-evaluate my way of doing things and attempt to try something new.

In our interview in late September, I inquired about the specific challenges of this split classroom format. Noelle explained that one of the main barriers was the limitations of the physical classroom space (Figure 1) and available technology:

> When you're trying to teach the kids online, they can't *hear*, because the kids in class are *talking*. And *also*, we have the *worst* classroom setup when it *comes* to this, because *our* SMARTboard hookup's on the *side* of the room. And the SMARTboard itself is at the *front* of the room. When you're trying to

> teach the kids online, they can't *hear*, because the kids in class are *talking*. There's no way to *sit* in *front* of our computer and *next* to the SMARTboard [at the same time]. So we're at the *side* of all of our kids. We've found an *easier* way to do it [though]. Like, the kids at *home* are watching us on Zoom. So we just put *ourselves* on the *SMARTboard*. Like, we [display] the *whole* Zoom screen up on the SMARTboard. So essentially, they're seeing the *same* thing *as* our Zoom kids. (personal communication, September 26, 2020)

Figure 1
Noelle's kindergarten student teaching classroom

Noelle went on to detail the difficulties of teaching students face-to-face through a digital 'wall' of sorts, including how she perceived her teaching as less engaging:

> *This* week has honestly been pretty *rough* as far as confidence goes. Because of the way that the students have been...[exhales] I feel like our *in-class* students are *missing* a piece of it. Because with our *traditional* students, like, the way we're *doing* it, it is like leveling the playing field. [But the in-person students] get distracted from that *screen*. And they don't do *well* looking at us, because we're sitting *down*. So to them, it feels *boring*. It's *hard* to teach sitting down. I *feel* less fun and I know that they *think* I'm less fun. (personal communication, September 26, 2020)

5.2. Adopting and Adapting

As the semester progressed, however, Noelle collaborated with her cooperating teacher to adopt new technologies, making the classroom space more functional and conducive to engage face-to-face *and* virtual learners at the same time. They installed a new digital camera that captured a 180-degree view of the room (Figure 2), which opened up new opportunities for student participation and engagement in Noelle's lessons.

Noelle could now move about the room and utilize the SMARTboard as an instructional tool in whole class lessons and activities, as the new camera could more effectively capture what the class was doing for the virtual learners as they interacted and participated along with Noelle and their in-person classmates. At the recommendation of a peer who was student teaching in the classroom next door, Noelle also began wearing a wireless headset while teaching. "We were just like, 'Hmm, that's a very *simple* solution for being able to hear your [virtual] kids wherever you are,'" (personal communication, September 26, 2020) remarked Noelle.

Figure 2
180-degree web camera in Noelle's kindergarten student teaching classroom

5.3. Participation across Physical Distance

As Noelle began to target equitable student participation and engagement in her instructional designing, she felt less anxious about classroom management and the upheaval of what she had expected to be 'normal' about her student teaching experience. This shift in Noelle's pedagogical thinking was evident in an early-October journal entry in which she expressed concerns about the challenges of safety protocols but also described solving problems of practice and meeting students' needs:

> We are making progress one week at a time. A lot of effort [is required] to overcome the challenges of this new way of teaching. As time goes on, it is beginning to feel normal for us and the students. I have been trying to differentiate for the students despite these challenges. I am trying to use different websites to assign differentiated work for our virtual students that we were not able to put in packets for them. I have also tried to start giving work based on ability level since that is how I chose to group the students at their tables at the beginning of the year. Since we are not able to rotate stations, I went ahead and made pairs of ability groups for each table so that when we made it to this point, we could do some form of differentiated group work.

Since the new webcam simplified interactions between the virtual and face-to-face sides of Noelle's classroom, she felt more equipped and confident in brainstorming ways to facilitate more equitable participation for all learners, regardless of how they attended school that semester. When we spoke in late-October, Noelle described a sharing activity in which all students, regardless of their physical location, could equitably participate and interact with her and the rest of the class:

> For the letter of the *week*, on *Fridays*, we have the students kind of go on a letter hunt at their *home* and bring *in* something for show-and-tell. With that new *camera*, it's *amazing*, because I can *spotlight* our *Zoom* friends and [display them] on the *SMARTboard* and [they share] one at a *time*. And then with the *camera*, the *Zoom* friends can even see our *in-class* friends come to the *front*. (personal communication, October 24, 2020)

Figure 3
Screenshot of Halloween-themed 'Write the Room' Powerpoint

Noelle also shared an interactive Halloween-themed 'Write the Room' activity (Figure 3) she had adapted on Powerpoint so all of her learners could participate:

> Noelle: [In the] Write the *Room* activity *in* class, we had "*ghosts*" and "*pumpkins*." And the words were, like, written on those cut-outs, and they were *numbered* and there was a sheet that was numbered one through *ten*. And it just had *lines* and, like, a little pumpkin face at the top. And we would send the kids *around*, and they would have to look for the number and write that *word*. Try to, like, sound it out, *that* sort of thing. So, *we* do those quite a bit in kindergarten [because] it gets them up and moving...Those are one of the things we *can* do. Because we can send *one*, wait until they get to number three, send the [next] one, and they're still spaced *out*. So it's the *easiest* way to get them moving. So we've been using those a *lot*. But we don't want our at-*home* friends to not feel left out. So I made *this* one. I put it in *Canvas* as a link, and then they could click on the link. And then it will open up.
> Author: Ohh! Got it…So, I'm guessing then that you wouldn't have had the *digital* version of this if you had everybody in the same *room*. Is that a correct *assumption*?
> Noelle: Yes.
> Author: Okay.
> Noelle: Yeah, it would not exist. *That's* why, I mean, that's why I thought these were so *cool*, is, like…[pauses] 'Cause some of the *other* teachers, they didn't even *make* the digital Write the Rooms. They just made it, like, it takes away the *movement* -
> Author: Mm-hmm.
> Noelle: - which is what helps 'em get the wiggles out. It's, like, allowing them to practice *writing* and get some wiggles out as they get to walk around. But for the *in*-class friends, because they couldn't *write* the *room*, they just did it all together. And they're just like, "Alright! *This* is the school bus. Find the *school* bus. We're gonna' write *bus*." And it wasn't as fun. Didn't get any wiggles out. So they're just *writing* what you tell them to write, essentially.
> Author: It's more passive, whereas they -
> Noelle: Mm-hmm.
> Author: - could still be active. So, when they click on one of the images, it's like a *hyperlink* to a specific slide [of] where that word's at?
> Noelle: Mm-hmm. So if you click on, I think, the black cat takes you to "cat." I think that the *ghost* takes you to "boo." And then they write the word.
> Author: And did you find they were pretty invested and engaged in this? Your *virtual* kiddos?
> Noelle: Yeah, I think they liked it a *lot*. Especially this little girl, *Melody* (pseudonym). She is obsessed with iPad and some days I have to be like, "Melody, you can't watch your iPad and *me*." So...
> Author: Yeah.
> Noelle: But, like, anything like this. Like, any *videos* that I show or anything like this, she really *loves*.
> Author: Did you think of kids like her when you were creating this, or was it more just a matter of principle for you to make sure they were *roughly* as [participatory] as your *in*-person kids?
> Noelle: I just want to make sure they're included as much as possible. Yesterday in [our grade level] *planning*, we were talking about *candy*. Like, handing out candy to the kids. And *one* teacher was like, "Well, the *in-class* kids, they can't participate, so we shouldn't do it *all*." And I just wanna' make sure that it's as fair as possible. I understand that they didn't make the choice [to attend school virtually]. Their *parents* did. So the *least* we can do is make sure it's balanced and fair as *possible*. I *love*

> my Zoom kids, and I hate that I don't get to see them in person except once in nine weeks when they come and pick up their [work] packet. But I *also* just want to make sure the *in*-class kids don't feel like they're in a prison. (personal communication, October 24, 2020)

With the young age of her kindergarteners, Noelle and the teachers in her district were advised to limit, within reason, the amount of time virtual learners were logged on for digitally-mediated participation in class; however, she made exceptions when virtual students requested to stay on longer:

> I did this cool math review game, because they've been learning about "what's one more," and also, like, "what's greater and less." And all the kids in class had Play-Doh. And most kids at home have Play-Doh or at least something they can use. So I kept [the virtual learners] on and played the review game. And I was like, "Put a number that is," like, I had the kids in class roll their Play-Doh in little balls, and same with the kids at home if they had Play-Doh. If not, one [virtual student] was using stickers, and she really wanted [to keep playing]. I was like, "You don't have to stay on! You can go!" And like, "But you can stay on and play this game." And she was using stickers and she was puttin' 'em down and pickin' 'em back up! (personal communication, October 24, 2020)

Noelle also began exploring how to optimize her differentiation approaches, especially with her virtual learners who she felt were not receiving adequate writing support and enrichment while she was working with in-person students during her synchronous lessons. She discussed steps she had taken to challenge her advanced writers, the majority of whom were virtually attending class:

> A lot of my *in-class* kids can't really *write* that well yet. They're *kindergarteners* and they're still learning to write words. So we're doing, like, simple sentences, [such as], "I like *this*." And *I'm* trying to *help* 15 students. And before I can even get back *to* the computer to *conference* with them, they're like, "I'm *done*!" And they've written, like, three sentences. So I'm just going to [design] a *daily* writing prompt, journal-type-thing, *for* them. Or maybe an end-of-the-day *writing* prompt for them so they can continue *growing*, because they can obviously *write* what we're working on in *class*. Like, they can write above and *beyond that* level. (personal communication, October 24, 2020)

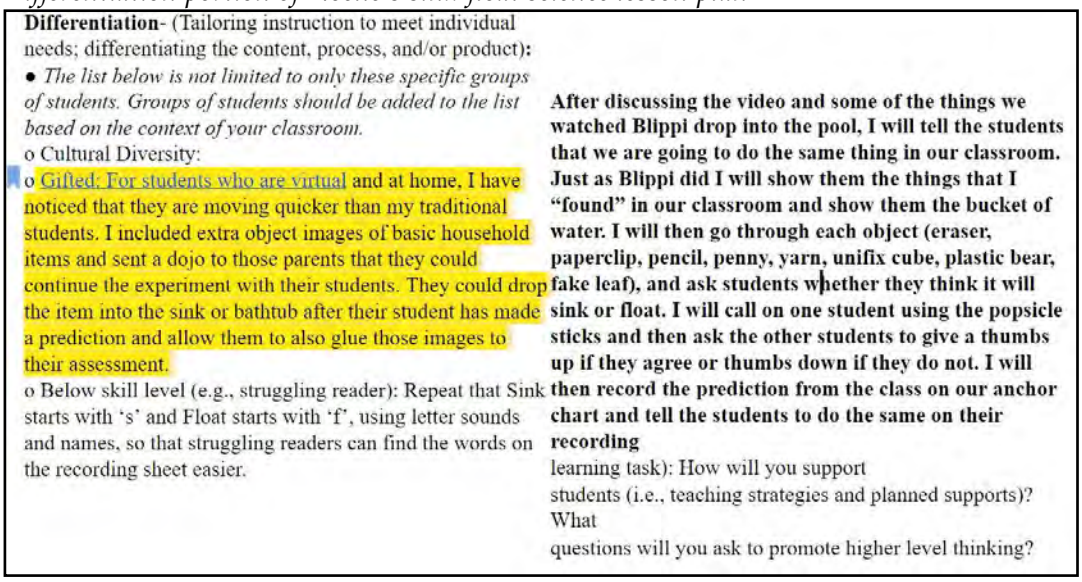
Noelle shared a pair of science lesson plans that she taught mid-semester in which students predicted whether different objects would sink or float in water. She positioned the classroom document camera directly above the water container they used. Not only did this allow for the virtual learners to be able to make observations, but it also facilitated the in-person learners' observations while adhering to social distancing protocols rather than crowding around the basin.

Noelle had also noticed that virtual learners were completing science investigations much more quickly than students in the physical classroom. In the "Differentiation" section of one of her lesson plans (Figure 4), she linked additional images of common household items that virtual learners could find and place in water to test their buoyancy, providing more opportunities for these students to enact their burgeoning science skills.

Noelle felt that some of the challenges of virtual teaching could not be mitigated or overcome by the use of digital technologies. For example, there were many instances in which she felt virtual students' parents provided too much support or did not reinforce specific skills and behaviors as she would have done if these children were physically present in her classroom on a day-to-day basis. In the following interview exchange, Noelle discusses ways she and her cooperating teacher were attempting to administer math assessments for virtual students with integrity:

> Noelle: You can send [the test] home on SeeSaw, but it will *record* them *take* the test. So you -
> Author: They'll be more accountable.
> Noelle: Yeah. You can *see* and *hear* everything that's going *on*. So, like, if a *parent's* telling them the answers, we have it on *video*. Like, "Okay, well, *obviously* you didn't know that." Because [my cooperating teacher] used it last year and said, "Well, I...have so many videos of kids just goin, 'Mama!'" -
> Author: Yeah.
> Noelle: - And *screamin'* things, like, "Oh *Lord!*" So…
> Author: Does *that* make you *feel* like you can *assess* with more *integrity*? By holding them more accountable?
> Noelle: Definitely. (personal communication, October 24, 2020)

Figure 4
Differentiation portion of Noelle's sink-float science lesson plan



Differentiation- (Tailoring instruction to meet individual needs; differentiating the content, process, and/or product):

- *The list below is not limited to only these specific groups of students. Groups of students should be added to the list based on the context of your classroom.*

o Cultural Diversity:

o Gifted: For students who are virtual and at home, I have noticed that they are moving quicker than my traditional students. I included extra object images of basic household items and sent a dojo to those parents that they could continue the experiment with their students. They could drop the item into the sink or bathtub after their student has made a prediction and allow them to also glue those images to their assessment.

o Below skill level (e.g., struggling reader): Repeat that Sink starts with 's' and Float starts with 'f', using letter sounds and names, so that struggling readers can find the words on the recording sheet easier.

After discussing the video and some of the things we watched Blippi drop into the pool, I will tell the students that we are going to do the same thing in our classroom. Just as Blippi did I will show them the things that I "found" in our classroom and show them the bucket of water. I will then go through each object (eraser, paperclip, pencil, penny, yarn, unifix cube, plastic bear, fake leaf), and ask students whether they think it will sink or float. I will call on one student using the popsicle sticks and then ask the other students to give a thumbs up if they agree or thumbs down if they do not. I will then record the prediction from the class on our anchor chart and tell the students to do the same on their recording

learning task): How will you support students (i.e., teaching strategies and planned supports)? What questions will you ask to promote higher level thinking?

Noelle also felt the virtual learners were missing out on the social aspects of face-to-face classroom learning and maintaining a sense of belonging in the classroom community:

> Our [virtual learners] are all super *sweet*. *We* keep them as included as possible and make them *feel welcomed* in our classroom. [But] they definitely *are* missing out on a lot of things. The first thing that you would think of that they're missing out on it is the socialization, like, with the other students. Making *friends* and gaining *social* skills and that sort of thing. Rules—like, *that's* the first thing that you *think* of when you think of, like, "What would they be missin' *out* on?" Like, that's a big one. They're missing *that*. We started these things called '*table* points.' And, it was one of those things that just, like, I *did* because there are a few *trouble* tables [with] *one* student who won't do what they are supposed to, but there's one [student] that's *perfect* and just *does* everything they're supposed to do. So I feel like instead of giving them *individual* Dojo points, I [organized them into] groups. And I was just, like, "Alright! So we're just giving Dojo points out by the tables! So you don't get *any* Dojo points unless the *whole* table's doing what [they are] supposed to." If one student wasn't *listening* and wasn't following directions because he missed the instructions, his tablemate would be like, "We want *Dojo* points, but she said to do *this*!" And it kind of *helps* the kids manage each *other* and themselves. And so I've created table points and it started working so well. Like, it really *drives* them. But our *Zoomers* were missing out on that. When they [meet the points goal], they get *free* time to play with *Play-Doh*, play with *STEM* bins, *draw*, *color*. They get to *do* those kinds of things that the kids love to do. And our Zoomers were missing out on that. Of course they're hearing me talk about it. They probably wondered what it *was*. So we added *them* to our little table points board [as individuals]. So if they earn *their* points, they get, like, 'Free Friday,' where they get to come and show-and-*tell*, just to make them feel special. Because they know they get up on our *SMARTboard* when *they* share. I'm just like, "Alright! Let's [check in with] our *Zoomer* friends! All of our friends in class can *see* you now. They're *listening* and they're *ready*!" And let them *share*. Let our *class* ask them some questions to kind of *get* them [interacting], maybe. They'll remember one or two kids' *names*. Our *Zoomers* are just missing out on that so *much* and, like... [pauses] It just makes me *sad*, because I always liked classrooms that feel like *home*, that kind of feel like...*family*. And not *every*, every class is like that. Some students don't get as attached to each other. But when you *do* find a class that *does* love each other and *do* get along really well, and to make that *possible*, it's sad that we *have* one this year, and some of our students aren't getting to be a *part* of it. (personal communication, September 26, 2020)

Noelle recognized that she could bring the entire class together interactively to a certain extent by leveraging available technologies; however, she felt that there were limits to how much she could replicate the contexts in which students develop social skills and work habits and maintain a tangible place in the classroom community.

In spite of these challenges, Noelle shared a renewed sense of passion and purpose in her teaching as the semester concluded. She remarked, "I still feel as passionate as I did when I *started* this. The global pandemic has made me, like, *see* the passion for *teaching* more than *anything*" (personal communication, December 22, 2020).

Shortly after student teaching ended, Noelle began working as a maternity leave substitute teacher in a different kindergarten classroom within the same school. She hoped to secure a position at that school for the following academic year; however, she was also looking ahead to future career goals inspired by her experiences during her student teaching semester:

> I have wrestled with going [to grad school] and becoming a school counselor. That was my original goal. Another thing is I've been put in an inclusive class this semester. And I am [going] to take my [special education state exam]. I have [worked with a few students with autism]. They were just my whole world over there. Like, I loved teaching them, and just getting to experience victories with them. I had one that used to cry under the desk every time [they] would get frustrated. And I was able to get [them] out from under and teach [them] a breathing strategy that would keep [them] from… Like, [they haven't] been under the desk crying in a really long time. I think I might want to go that route eventually. You have to have a lot of patience to have them in the classroom. Like, I felt like [that] took more patience than I had, but this semester's really [proven] me wrong. That I had more patience than I thought I had. (personal communication, December 22, 2020)

6. Dialogic Findings

Analyzing Noelle's narrative of digital pedagogy through the theoretical lens of Britzman's (2003) dialogic theory of teacher practice, I derived the following themes: classroom management, student needs, and expectations and outlook.

6.1. Classroom Management

In the weeks following the return to face-to-face attendance for some students, Nicole lamented about her effectiveness in managing the classroom and creating a learning environment to meet all of her learners' needs. She felt she was not effectively managing the classroom due to the restrictions of socially distanced seating and the limitations of where she and the in-person students could engage with the virtual learners in the classroom given the location of the original webcam. Noelle perceived her teaching as unengaging for her in-person and virtual students alike.

These challenges were somewhat mitigated by the adoption of a 180-degree view camera that allowed Noelle to be more mobile in the physical classroom space while still easily interacting with the virtual students on Zoom. She was always able to hear her 'Zoomers' after she began utilizing a mobile headset.

Noelle had to very quickly learn how to use new digital tools and platforms, such as the Canvas learning management system, in the initial weeks of student teaching. She collaborated with a peer to learn the ins and outs of Canvas, consulting YouTube tutorials as she designed the digital side of her classroom environment.

Noelle felt that some challenges could not be entirely overcome by using digital tools and approaches. For example, while Noelle and her cooperating teacher could give directions and suggestions for how virtual students' parents and guardians should provide guidance and support, she had no direct control on how and to what degree they would intervene. Some provided too much support on academic work and assessments or did not reinforce social skills and work habits that in-person students were developing under her direct guidance each day. She also felt that it was difficult to fully replicate the social interactions and camaraderie of the classroom environment for virtual students (e.g., developing friendships, earning classroom rewards, etc.).

6.2. Student Needs

As Noelle felt more equipped to teach and effectively engage all of her students, she began curating digital resources that could be differentiated for individual students' needs. She

reorganized the classroom seating arrangement to facilitate differentiated group work within the mandated social distancing structure.

As the semester progressed, Noelle began designing writing extension prompts to challenge the advanced virtual learners. She also integrated additional images of common household items virtual learners could find and place in water to extend their investigation of the science concepts of floating and sinking.

As mid-semester approached, Noelle began designing activities in which virtual learners could participate and interact with their peers in the classroom, such as the 'letter of the week' activity she facilitated over Zoom using the 180-degree webcam. She took extra steps to actively engage both groups of students with the Halloween 'Write the Room' activity. Also, Noelle 'bent the rules' and allowed virtual learners to stay on longer with the rest of the class for activities such as the Play-Doh number adding activity.

6.3. Expectations and Outlook

Noelle had expected her student teaching semester to be way different than how she actually experienced it during the pandemic. She began the semester in quarantine due to a contact tracing precaution. When students were able to return to school for face-to-face instruction, some remained at-home and participated virtually; students' families switched children between the two options each month of the semester. For students in the classroom, Noelle had to enforce social distancing and mask requirements

Part of Noelle's frustration during the initial weeks of student teaching was that she did not feel prepared by her teacher education coursework and to meet students' needs in the context of the pandemic. She recalled the technology teaching methods course she had taken early in her program of study that focused more on digital tools and inauthentic assignments rather than digital pedagogy and how to effectively design and implement digitally-mediated instruction.

As her student teaching experience concluded, Noelle shared a renewed sense of purpose in her work as an elementary teacher, expressing an interest in pursuing a special education certification. She discovered more patience in herself than she thought existed and felt an increased passion and commitment in meeting the needs of diverse learners.

7. Conclusions and Implications

As the COVID-19 pandemic continues to evolve, some virtual teaching and learning strategies used since Spring 2020 will remain to varying degrees depending on the needs of students and families as well as practitioners and institutions. Digitally-mediated approaches that have "resonance" (Stornaiuolo et al., 2017, p. 80) should emphasize the hybridized, flexible affordances of modern technologies (OECD, 2020b) and remove barriers to equitable participation for all learners (Lee & Brett, 2015). The pandemic revealed that these hybridized approaches can upend the ways teachers design and manage the classroom learning environment, especially when that space extends in abstract ways across time (synchronously and asynchronously) and space (e.g., virtual learning environments), which Kabat (2014) called the "electronic chronotope" (p. 171).

Therefore, teacher education programs must forge greater connections and partnerships with practicing teachers to frame pre-service coursework experiences more closely to contemporary classroom contexts (Darling-Hammond, 2006b). Practicing classroom teachers should be invited into course meetings to share their instructional design strategies and digitally-mediated teaching approaches (Campbell & Dunleavy, 2016). Subsequently, teaching candidates might enter field experiences and student teaching with more informed preconceptions of classroom teaching in a mid- and post-COVID society (Darling-Hammond, 2010).

Given that digital technologies have historically been utilized as a means of transmitting and imparting rote knowledge and skills (Chandler, 2012; Currin & Schoeder, 2019; Finn, 1953), it is critical that teacher education programs design courses that foster critical digital pedagogy throughout the entire program experience (Gill et al., 2015) rather than in a single-course offering

(Angeli & Valanides, 2013; Beschorner & Kruse, 2016). As candidates enter the field and begin integrating digital technologies in their teaching, programs and supervisors should consider alternative evaluation and feedback approaches rather than relying on traditional instruments and rubrics originally designed primarily for face-to-face teaching (Goldhaber & Ronfeldt, 2021).

The Centers for Disease Control and Prevention (2021) cited social-emotional challenges experienced by virtual learners as a reason to return to traditional in-person learning. Teachers struggled to "replace all of the informal ways that they typically orchestrate the social and community dimensions of their classrooms" (Gallagher & Cottingham, 2021, p. 3) with the shift to virtual teaching and learning (Gastager et al., 2017). Researchers and teacher educators should continue to explore how practitioners can foster classroom communities, even if some students continue to virtually attend school. Likewise, practitioners should be more involved with school and district decision making, including identifying and solving problems of practice (University of Georgia, 2022).

Rather than leading them to expect teaching in today's classrooms to look and feel a certain way, teacher education programs should foster candidates' flexible mindsets and a creative, adaptive repertoire of digitally-mediated and 'analog' approaches to effectively take on any challenges they encounter. Students must tread what Rugg (1952) referred to as "the Creative Path" (p. 267), exercising flexibility in classrooms that have become increasingly standardized rather than relying on procedural steps and rote methods (Darling-Hammond, 2006b, 2010; Scollon, 2001; Smith, 1966). Supporting candidates' engagement in reflection before and after teaching while also remaining perceptive during moments of active teaching can support the development of pedagogical flexibility (Van Manen, 2015).

It is equally important for researchers, teacher educators, and teaching candidates to engage in "historical thinking" (Currin & Schroeder, 2019, p. 15), looking back at the experiences of student teachers during the COVID-19 pandemic. Considering the already complicated dynamics of student teaching (Hart, 2020), we must reflect on how we succeeded and how we failed to support student teachers in negotiating the highly cacophonous dialoguing of designing and implementing digitally-mediated instruction with face-to-face and virtual learners during the pandemic. Noelle's student teaching narrative was fraught with challenges but was also punctuated by her development of digitally-mediated teaching approaches that likely would not have come to fruition if not for the circumstances of the pandemic.

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