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Olt, Phillip Allen; Teman, Eric D

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A Duoethnographic Exploration of Persistent Technological Failures in Synchronous Online Education

Phillip A. Olt & Eric D. Teman

Abstract: While higher education becomes increasingly reliant upon technology to deliver instruction, technological failures profoundly affect faculty members and students. We used duoethnography to explore the student-instructor dynamic during persistent technological failures within a synchronous online course, which occurred during a semester-long, qualitative research methods course. Duoethnography allowed us to first explore our own experiences and then engage in a continuous dialogue to interrogate the same event without privileging one voice over the other. We provide a series of dialogues of our shared understandings and different perspectives, taken from discussions and reflections on the experience. We then provide deeply personal insight into how faculty members and students may be affected by technological failures in distance education.

Table of Contents

1. Introduction

During a mid-class break in one of the first class meetings, Phillip, the first author went upstairs from his basement where, as a doctoral student, he was attending a lecture-based class mediated by Zoom. His four-year-old daughter asked an insightful question: "Daddy, how do you go to school in the basement? I heard some talking down there." It was an insightful question, as he was attending a class being taught live in Wyoming, USA, while sitting in his basement in another state far away. On the other end, Eric, the second author and a professor with several face-to-face students, was teaching him from that room in Wyoming, USA. As coauthors of this article, we now ask, "Were we doing it together, or were there two inherently different experiences? Would this even work?" [1]

Synchronous online education occurs when physical distance separates the faculty member from students and deliberate interactive elements engage all participants at the same scheduled times (OLT, 2018). As we were both new participants in the emerging education trend of synchronous online education, we were eager to experience this method of delivering interactive instruction. From the beginning of the course, we realized an unfortunate opportunity for empirical investigation—what was it like for the faculty member and distance students when technology fails consistently in a technology-dependent class? Technological failures in our course occurred when hardware or software at the classroom or student sites did not function properly in a way that inhibited learning. [2]

One of the great challenges in distance education is interaction: How will the faculty member and students interact, and how will the students interact with each other (HWANG & ROTH, 2004)? Whereas traditional face-to-face classes have relied on classroom discussion and asynchronous online classes have used discussion forums, synchronous online classes disperse the live discussion across a large geographic area. Synchronous online interaction is relatively new, as its usage to deliver entire synchronous courses only began to gain momentum in the mid-2010s, with such notable examples as ONLINE VIRGINIA NETWORK (2017) and the UNIVERSITY OF TEXAS DEPARTMENT OF PSYCHOLOGY (2016). The popular higher education news site, *Inside Higher Ed*, then declared in 2017 that Zoom—the technology tool used for our synchronous class—was the technology of the year (KIM, 2017). Zoom brands itself as a cloud-based video conferencing platform "that always works—no matter what" (ZOOM VIDEO COMMUNICATIONS, 2018, §2). Despite this emergence on the higher education scene, there is minimal research into synchronous online education, especially when utilized in classes that blend face-to-face and distance students. [3]

NORRIS and SAWYER (2012) articulated multiple broad purposes for duoethnographic research, and this study aligns as using "one's self as a site for inquiry into sociocultural socialization and inscription ... duoethnographers articulate their emergent thinking and changes in perception to their readers in the form of dialogic storytelling" (p.10). While synchronous online education continues to grow, it has a small pool of research (HRASTINSKI, KELLER &

CARLSSON, 2010), and none of that research explores it from an insider view or focuses on the experience. This duoethnography then serves as an important piece, bringing insider views of the faculty member and distance student with a focus on the phenomenon to be explored (NORRIS & SAWYER, 2012). [4]

In this article, we present the perspectives of faculty member and distance student as we experienced failures in the technology that our educational interaction depended upon. We begin with the theoretical framework of THEMELI and BOUGIA's (2016) tele-proximity (Section 2). This is followed by an explication of our duoethnographic methodology (Section 3). In the findings (Section 4), we describe the technological failures and their affects upon us. Finally, we provide a discussion of the study's contribution to understanding synchronous online education, how the experience itself and subsequently writing this study affected us, and recommendations to research and practice (Section 5). [5]

2. Theoretical Framework

Community of inquiry is a model of how student learning occurs when affected by the social, cognitive, and teaching presence of the instructor (GARRISON, ANDERSON & ARCHER, 2000). Through THEMELI and BOUGIA's (2016) theory of tele-proximity as an extension of the community of inquiry model, we gained insight into the benefits of synchronous online education and the "need for human to human (embodied) interaction through tele-operations to promote learning objectives, improve communication, and bridge transactional distance" (p.150) to explain the connectedness of faculty members and students in synchronous online education. They identified three domains of presence that were essential to understanding interactions in synchronous online education—tele-teacher presence, tele-cognitive presence, and tele-social presence. The authors defined tele-teacher presence as "the study as expression of an embodied identity (audiovisual presence) that mirrors or imitates thinking process, behaviors, emotions, and aesthetics for the purpose of realizing personally meaningful learning outcomes and a sense of 'place' for online students and educators" (pp.150-151). This then is the extension of the perception of a teacher to their distance students. THEMELI and BOUGIA defined tele-cognitive presence as "the extent to which learners and educators are able to make their thinking and feelings visible, construct and confirm meaning, learn skills, and play roles through sustained sensory rich reflection (offline embodiment) and discourse" (p.151). Taking a step beyond teacher presence, the focus of this second presence is upon building meaning and understanding at a distance. They defined the third presence—tele-social presence—as "the ability of participants to create their identity in a sensory rich 'stage,' communicate purposefully in a trusting environment and develop inter-personal relationships by ways of projecting their individual experiences, ideas, and feelings" (p.152). Beyond learning, their emphasis in the final presence focused on relationships and connections with others inside of a learning environment. Because we focused this study on technological barriers to interaction in synchronous online education, the three conditions of presence described in the theory of tele-proximity provided a baseline for evaluating our undesirable experiences.

Through this framework, we gained insight into what effective interaction looks like in a synchronous online course. Upon comparison with our experiences described in the findings, technological failures interrupted the ideal conditions for synchronous online interaction expressed in the theory of tele-proximity, leaving us frustrated and limiting the educational effectiveness. [6]

3. Methodology

To investigate the impacts of technological failures in synchronous online education from an insider perspective, we utilized a duoethnographic methodology. NORRIS and SAWYER (2012) defined duoethnography as "a collaborative research methodology in which two or more researchers of difference juxtapose their life histories to provide multiple understandings of the world" (p.9). Further, the methodology has been suggested as an effective means of promoting authentic dialogue between faculty members and students, promoting growth among both (LUND et al., 2017). In this duoethnographic study, Eric served as the faculty member and Phillip as a distance student in "Phenomenology, Case Study, and Grounded Theory," a doctoral research methods seminar course offered by the University of Wyoming in the fall semester of 2017. The course was delivered as a synchronous online course, using Zoom to share video and audio. Eric met face-to-face with several students in a classroom on the campus in Wyoming, USA, while Phillip attended through Zoom from his home in Wisconsin, USA. [7]

NORRIS and SAWYER (2012) identified the four primary tenets of duoethnography: currere, polyvocal and dialogic, disrupts metanarratives, and difference. Currere occurs when one's life is viewed as a curriculum, which assumes "one's present abilities, skills, knowledge, and beliefs were acquired/learned" (p.12). Duoethnographers are then able to "recall and reexamine that emergent, organic, and predominantly unplanned curriculum in conversation with one another" (ibid.). In this study, we engaged in currere via self-interrogation, whereby each of us invited the Other to "assist in an act of mutual reclaiming" (p.13). In contrast to autoethnography (ALSOP, 2002; ELLIS, ADAMS & BOCHNER, 2010), the researcher is situated differently—the focus is not about oneself; rather, the researchers are the sites (as opposed to the topic) of the research (KIDD & FINLAYSON, 2015). We used our experiences to assist others in better understanding the role of technological failures in synchronous online education. [8]

For the polyvocal and dialogic tenet of duoethnography, "dialogue within duoethnography functions as a mediating device to promote researchers' development of higher forms of consciousness" (NORRIS & SAWYER, 2012, p.13). To form a polyvocal and dialogic text, each of the two voices in a duoethnography is given equal status. For example, in autoethnography, a researcher would endeavor to "construct one story out of two" (ELLIS, 2004, p.72). To stay true to this tenet, we alternated our stories, each taking turns serving as the narrator. Furthermore, we never strove to reach consensus in the form of an agreeable conclusion in the end; instead, in line with autoethnographic

prescriptions, we made our "disparate opinions explicit" (NORRIS & SAWYER, 2012, p.14). [9]

By disrupting metanarratives, the third tenet of duoethnography, researchers are able to better interrogate their held beliefs—this permits duoethnographers to "juxtapose the solitary voice of an autoethnographer with the voice of an Other" through which "neither position can claim dominance or universal truth" (p.15). By disrupting each of our perspectives on technological failures in our experience with a synchronous online doctoral course, each of us was able to tell our story, but, at the same time, we were each able to respond and reflect on the Other's narrative as well. As such, duoethnography affords the reader the ability to engage critically with the narratives provided by the duoethnographers rather than simply aligning with the authors' stories. This oscillation on the part of the reader between each of the author's stories thwarts the accidental creation of empiricist texts. Rather than each of us writing about the failures of technology in a synchronous online classroom in, perhaps, separate autoethnographies, duoethnography provided us a methodology through which we could situate each of our narratives in a way such that we did not act to superimpose one's belief on the Other—this allowed us to call into question our own knowing and acknowledge a "state of perpetual inquiry" (p.17). [10]

According to NORRIS and SAWYER, difference, the fourth and final tenet of duoethnography, is expected between the authors and in some way important to a better understanding of the phenomenon. This difference between us was one of professor versus student—by articulating these differences and making them explicit, we demonstrated how two individuals experienced the same phenomenon in different ways. Through juxtaposing our different experiences, we were able to maintain an open text, affording the reader with "theses and antitheses" allowing the reader to "form their own syntheses" (p.18) of our findings. While this duoethnography was informative for both of us, we further gleaned insight into the experiences of the Other, using the dialogue to transform ways of thinking and practice (BREAULT, 2016). [11]

These four primary tenets were driving forces for us as we constructed this study. By working together, we were able to assist each other in developing our own understanding of synchronous online education amidst pedagogical crises brought about by technology failures. Our different perspectives came out in the dialogue, which helped us to make sense of the technological failures throughout the semester and to change our understanding of technology failures in a synchronous online doctoral course. [12]

3.1 Ethical considerations

Issues of ethics become manifest somewhat differently in a duoethnographic context. Because of the dialogic nature of researching oneself and Other, researchers who engage in duoethnography are conducting research *with* another, not *on* another (KIDD & FINLAYSON, 2015; NORRIS & SAWYER, 2012). The duoethnographic approach affords the dual researchers to avoid the usual research–researched dichotomy, where traditionally the researcher has some power—intentional or otherwise—over the researched (NORRIS & SAWYER, 2012). The methodological choices relating to duoethnography should emerge from the relational activities engaged in (PARK, CAINE, McCONNELL & MINAKER, 2016) as coresearchers while simultaneously being ethically mindful of the coresearcher relationship. In our study, we engaged in conversations which positioned the Other in dialogue, rather than talking about the Other—through this approach, we maintained equal status throughout the study (STITH & ROTH, 2006). During our collaborations, we each remained open and receptive to what the Other was saying. Our use of this approach facilitated an open and honest relationship between the two of us. [13]

In terms of ethical issues relating to handling of data, we engaged in our data collection in such a way that no sensitive or identifying information of individuals other than ourselves was included in our files. We password protected the Google Docs file, and only we could access it; however, this file was written in such a way that its raw form could be published without implicating anyone else beyond us two. [14]

3.2 Data collection procedures

During the spring semester of 2017, Phillip first encountered the concept of duoethnography during an asynchronous online course on ethnography and narrative inquiry that Eric was teaching. Inspired by professional and intellectual curiosity, Phillip proposed using duoethnography to explore their experiences doing synchronous online education in their next course together, and Eric agreed. [15]

We used two methods to capture dialogue. Primarily, we posted asynchronously in a shared Google Docs file to have instantaneous access to one another's thoughts and ruminations. This permitted each of us to respond to the other without waiting to receive files via e-mail. We would post before and after class; however, Phillip sometimes posted during class while prolonged technology failures played out, such as sound feedback, microphone issues, or Internet disconnections. Both were free to add topics to discuss, pose questions of the other, or just chronicle their thoughts and experiences. A rich dialogue emerged, informed by immediate data entry and subsequent co-reflections to produce a transformative experience. Secondarily, we utilized Zoom, the same video-teleconferencing system used for the class, to have and record live dialogue. While the asynchronous nature of the Google Docs file was very effective at capturing thoughts and communicating, the Zoom conversations provided a

forum for natural conversation to occur between us. After this period of raw data collection, we analyzed the data for themes and key statements, while further weaving our co-constructed narratives into a coherent dialogue. We found that circumstances had further refined our topic to focus on the experiences of technology failures in such a course. [16]

3.3 Trustworthiness

In a fashion common in qualitative research, NORRIS and SAWYER (2012), the cocreators of duoethnography, recommended a focus on trustworthiness rather than validity. They suggested considering the "rigor of collaborative inquiry... [and] the depth of researcher involvement with and accompanying praxis related to her or his study" (p.20) for evaluating such works. Generalizability then must fall on the reader to find elements of commonality in the report or those items that apply to their own situation. [17]

We used consistent and sometimes instantaneous written reflections of our experience with technological failures to maintain trustworthiness. We strove to maintain high levels of rigor in our collaborations by meeting regularly via Zoom outside of class to discuss the technological failures we had experienced during each class and how those issues affected learning for Phillip and teaching for Eric. In the end, duoethnographers strive to provide depth of "involvement with and accompanying praxis related to her or his study" (ibid.). [18]

4. Findings

In this duoethnography, we explored our different experiences and perceptions regarding a new synchronous online education option offered through the University of Wyoming, wherein distance students participated live in a face-to-face class. Against the backdrop of our prior experiences, we found that technological failures at both ends of the connection created barriers to distance student engagement and frustration for all. These findings illuminate how technological failures can be interruptions to THEMELI and BOUGIA's (2016) tele-proximity, undesirably affecting the distance students and faculty member. When technology failures occur, interaction becomes impossible, inhibiting tele-teacher, tele-cognitive, and tele-social presence. [19]

4.1 Situating ourselves

Phillip: At the time we began writing, I was an advanced doctoral student in my last class at the University of Wyoming, and I had completed the entire program as a distance student. All my other courses were delivered asynchronously, until the course in this study. In addition to my student status, I was the director of distance learning at a different institution. In that role, I managed a program where the institution delivered synchronous online education to undergraduate students who lived and worked around the country, as they participated in live residential classes through video-teleconferencing. In that professional role, I discovered that there was insufficient volume, depth, and breadth to research

literature on synchronous online education, so it was difficult to establish best practices. Additionally, I had been a part-time faculty member in teacher education, where I taught one course per semester, either face-to-face or via asynchronous online education. [20]

Eric: I am an assistant professor of educational research in my fourth year. During my time at the University of Wyoming and at previous other universities, I have taught numerous doctoral courses asynchronously online. I quickly grew tired of online discussion boards early on but could not find a satisfactory alternative. Some faculty began talking about using Zoom as a teaching medium, but I was not keen on sitting in front of my computer for three hours each week lecturing and discussing from my home or office. However, prior to this course, I taught one synchronous course that way. I then learned that my university was in the process of creating Zoom classrooms over the summer, where distance students could join in-person students in the same classroom instead of my office! I was excited to be one of the faculty pioneers in testing out this new technology and bringing our online classes into modern times. Phillip asked me to write this duoethnography with him, and I agreed—what a fascinating opportunity to reflect and co-reflect as new participants in the synchronous classroom experience. [21]

4.2 Planning and preconceptions

Synchronous online education is an emergent method of delivering online learning, so there is limited research on the topic. The segregation of face-to-face and online learners is, however, beginning to crumble. There is sizable body of research on the effectiveness of synchronous methods used as a supplement to an asynchronous online course (ACOSTO-TELLO, 2015; AKARASRIWORN & KU, 2013; BAILIE, 2015; BRIERTON, WILSON, KISTLER, FLOWERS & JONES, 2016; CLARK, STRUDLER & GROVE, 2015; FORONDA & LIPPINCOTT, 2014; MADDEN, JONES & CHILDERS, 2017; McBRIDE & MUHLBACH, 2008). Synchronous online education has also been used to reduce face-to-face meetings where students are geographically separated (STEWART, HARLOW & DeBACCO, 2011). There is, however, much less research on the effectiveness of fully synchronous online courses or those with mixed face-to-face and distance learners (HRASTINSKI et al., 2010). POLITIS and POLITIS (2016) noted that synchronous online education appeared to assist with knowledge acquisition among distance students. While WOODCOCK, SISCO and EADY (2015) gathered graduate student perceptions of the experience, their focus was on themes such as the ease of use, convenience, and participation. GILLIES (2008) examined the students' perceived effectiveness and value of synchronous online education. Though not focusing on coursework but rather professional development workshops, GAVREAU, HURST, CLEVELAND-INNES and HAWARANIK (2016) noted a greater sense of community and described learning new skills among the graduate students who participated. Similarly, another study explored the experiences in synchronous online professional education but from the perspective of the instructor (EVANS, KNIGHT, SØNDERLUND & TOOLEY, 2014). [22]

Having neither experienced synchronous online education before, we were unsure of what to expect. Both of us had experienced face-to-face and asynchronous online courses, and those experiences served as filters for our imaginations. Space and place were of significant concern. For Eric, there was confusion about whether such a class would just be held in his office or in some classroom with added technology. For Phillip, there were challenges with timing. [23]

Phillip: This class was scheduled on worst day and time of the week for me, but I had to make it work to finish out my course of study. In a flexible online program for adults and professionals in higher education, it was difficult for me to fit in. I had not taken a face-to-face class in about eight years, so, as an online student, there were a lot of feelings and emotions brought up. Online discussion forums were "safe." They gave me time to process my thoughts and write my best. It feels somewhat naked to have to talk and think on my feet. [24]

Eric: I was a bit apprehensive about making online teaching part of my career trajectory. I greatly anticipated becoming a professor teaching in a traditional classroom with extraordinarily high standards for student preparedness and classroom interaction, and I didn't believe I could challenge students in that same way online. At first, I was excited to learn how I could incorporate Zoom into my online teaching, but I quickly felt it was no good substitute for in-person, live teaching—only a bit more acceptable than mind-numbing discussion forums. Where would I do the classes, though? I was told to just use Zoom from my office. "I can't," I said. I wanted students who studied in-person at the university to come, and they couldn't all fit around a computer in my office. "Well, we'll find a conference room somewhere, then." Amidst my frustration, I heard from information technology (IT) stuff that they were working on creating Zoom-ready classrooms. I was so excited to be able to teach a distance course live to students across the country as well as actual bodies in the classroom. What a great compromise to those irksome discussion forums—good riddance once and for all to an outdated mode of teaching! [25]

4.3 Technological issues

Avoiding technological failures may be one of the most important keys to success in synchronous online learning (ACOSTO-TELLO, 2015), though problems are common with this delivery method (PENNELL, THAKORE & WEST, 2015). While the first day of our class together served as a rude awakening, or perhaps a baptism by fire, the technological issues continued to pervade the class each week. Even as solutions were found, new problems popped up. [26]

MOORE (1993) made an early application of transactional distance to online education. Originally conceived by MOORE in 1972, transactional distance focuses on the structure, dialogue, and autonomy in an educational setting. Recognizing that technological media played a significant role in those three factors, MOORE proposed that teleconferencing in higher education would provide greater autonomy for learners, improve dialogue, and provide a flexible structure. Unfortunately, we did not find that to be the case, despite the massive

technological evolution between 1993 and 2018. That is not to say the technology cannot provide MOORE's proposed benefits, but it did not for our class. When those failures happened, they were exacerbated by the educational nature of the setting, which created the pressures of learning, grades, and the high cost to students and the institution. [27]

Synchronous online education may overcome the barriers of time and distance presented by asynchronous online education by facilitating real-time interaction (ACOSTO-TELLO, 2015). However, we found that it was often difficult for the face-to-face and distance students to pick up on the subtle visual and audio cues of each other. MEHU and VAN DER MAATEN (2014) noted the importance of such cues in discussion to establish social presence. For distance students in our class, the camera was pointed at the professor, and if the face-to-face students were seen, it was the back of their heads. Thus, these cues were lost, reintroducing many of the social barriers and often leading to confusion. [28]

While we both experienced frustration at ongoing technological problems, we had two totally different experiences. Eric was under intense pressure to perform, feeling ill equipped to troubleshoot technological problems on his own while being broadcast and recorded. Phillip, however, was a passive spectator. The ongoing technological issues led him to sometimes feel like he was wasting time and money to watch the problems unfold. The key differential aspect to consider is that of role and the associated expectations—performer versus audience member. [29]

4.3.1 The first class

First impressions are essential. As we both were new to synchronous online education, the first night was approached with a nervous excitement. That excitement was met, however, with a flop. [30]

Phillip: The first 20-30 minutes of the first class were the classic unhelpful stereotype of video-teleconferencing—technology problems. We [distance students] were sent two different Zoom links, one that was posted in the class page on the learning management system and the other directly e-mailed to student before class. There was no technological help on-call during this evening class. Really, the only means of interaction that worked for us [distance students] was the chat feature in Zoom, which we used until the class was running. [31]

Eric: I began the Zoom session, and everything worked great—except the sound! You [distance students] could hear me, hear my in-class students, and each other —but I couldn't hear anything through Zoom! I tried to relocate the class to the room next door, and as I hauled all my stuff there, I thought to myself, "I really hope this works." It didn't! It was even worse. The students could not hear me, and I still couldn't hear them. I used the chat feature of Zoom to tell them I was moving back to the original classroom, because at least they could hear me there. Then, "We can barely hear you," someone wrote via chat. I moved closer to the microphone on the ceiling and began to speak more loudly. My throat hurt mid-

way through my lecture. I kept thinking to myself, "I hope this issue is remedied by next class. If not, though," I told myself, "I could live with a bit of a sore throat each week if I never have to do another discussion thread in my life." [32]

Phillip: I just wanted the technology to work for you and for us! I was rooting for someone from IT to get there and fix the problems, which did not happen. I was rooting for you to be able to get on to what you wanted to get on to. Of course, I also wanted it to work, because I really want the content and need to meet a requirement. I'm worried that every class is going to go like this—losing 30 minutes to start. [33]

Eric: Yeah, me too. How can I continue to effectively teach if I have to be the technician as well? I can't do a good job at both. [34]

4.3.2 Building frustration

Though the first class was fraught with technology issues, we were both hopeful that it would all be resolved before the next class meeting. Unfortunately, the problems took many more weeks to begin to resolve, leaving us frustrated and worried for the rest of the semester. [35]

Phillip: We had a different technology issue the second night—no sound from the host room. At least it was only a five-minute delay! I was the first distance student in, and it was frustrating seeing people present in the host room talking but not being able to hear them. It was definitely an outsider experience; I was different. There were frequent small issues throughout the class period related to technology, such as audio system feedback and not being able to hear certain individuals when they spoke. Ideally, I think you'd like to feel like the technology was not even there in a synchronous online class like this, but it seems like technology doesn't want it to be so. It keeps popping up its head like a little child begging for your attention. [36]

Eric: After the class, a technician showed me some obscure button on the control panel, which controls the volume—apparently, all distance mics are muted by default. And—you've got to be kidding me—there was a wearable microphone in the drawer which easily connects with the system! Why wasn't any of this crucial information communicated to me before the first class?! What a nightmare! When distance students speak, I now have to manually adjust the volume, so we can hear them live in the classroom. But, apparently, if I don't first mute my personal microphone, the "screeching" starts—and it's loud. It shocks the senses. [37]

Phillip: At least you've figured out what the problems were! Hopefully, all the issues are fixed now, and we can just get on with the class. From my end, the technology seems so simple in Zoom. It's odd to me that the problems seem to come from the campus side that has an IT department and spends millions of dollars on this stuff. [38]

Eric: Zoom is *supposed* to be easy, or so I was told. This makes it even more frustrating, because it's not something I can fix from week to week. [39]

Phillip: Now in the third class, I really don't understand what's going on with the problems, because they seem random. From what I can tell, there's nothing different that you are doing on your end. Probably the most confusing issue is why distance students can't really hear the face-to-face students consistently. At this point though, there's a bit of an aggregated effect from three weeks of very noticeable technological issues. I anticipated minor things each week, but these problems have been significant and distracting! [40]

Eric: I feel myself losing my thoughts whenever I have to stop talking to address some Zoom feature. Surely my lecture must seem disjointed. [41]

Phillip: I do think we're picking up the content, but I'd agree that it's *in spite of* the technology. I'm really starting to have mixed feelings about these synchronous online classes. It's nice to come together and be able to interact live with the professor, but at the same time, it's hard to learn amid this sea of distractions. [42]

Eric: I find it extra irritating that the technician even spent 20 minutes in the class before I got there tonight, and things still didn't work right. [43]

Phillip: One of the key challenges in this synchronous online education seems to be the plethora of variables. Problems can be batteries in your portable microphone, the Internet strength in Casper, or anything in between. [44]

Eric: This variability in the sound quality makes me worry, though, that distance students are not hearing what they need to hear. Sometimes, I get comments after class that my sound was excellent, but that the Laramie students' voices go "in and out" in terms of quality. Can't we have some consistency here? [45]

Phillip: Now in the fifth class meeting, the technology problems were on my end. My Internet went down six minutes before class, and it took about 10 minutes to get back in to class. I was worried I'd be late for class. I am not sure why I am surprised anymore, but when I got in a minute or two late, there was a technician in front of the camera with no sound. It took about 20 minutes to fix the unknown issue. This seems to be the "new normal," except I don't think there was a previous normal that was better. [46]

Eric: Yes, Phillip, "the new normal" is quite apt. I was nervous when a new technician I'd not met before showed up. He was the first one to admit that the ceiling microphones were not working properly; the other technician always said they were working fine. This new tech opened the podium cabinet, hooked up his laptop to the system, and used sophisticated software to make changes to the system. When he left, everything worked! I was lost for words, quite honestly. [47]

Phillip: For the start of our sixth class, I thought to myself, "Yay! Everything is working well tonight!" However, reality then kicked in, and I realized I had passed

judgment too soon. The group gathered at another location had terrible audio feedback. [48]

Eric: I know—what's with the microphone thing? I now have my own backup batteries in my briefcase. I must say, I love technology, but it annoys me to no end sometimes. I'm still more pleased with this Zoom option as compared to asynchronous online classes via a learning management system. You're probably right though; bugs will always be there, but hopefully fewer of them over time. [49]

Phillip: The worst problem was when we came back together after discussion groups tonight. People who been perfectly clear before the break were unintelligible after we got back together. Again, technology failures seem to never completely dissipate. [50]

Eric: So frustrating! [51]

4.3.3 Mutual despair

As the class continued from the fifth week, we began to feel that the technology had become more a hindrance than a help for learning. Problems were almost always present, but they were rarely the same. This made troubleshooting, especially in the middle of class, difficult. Our concerns now came to the point of wondering if everything would ever work and whether students would really learn all they needed. [52]

Phillip: About two months into our class, the sound is still a significant issue. With how bad the sound problems were tonight, I was just listening to other people have a discussion in a room with no ability to participate. I found myself distracted and getting a lot less out of it, feeling more like a passive observer than a participant. [53]

Eric: How awful—I wondered why you were so quiet. I missed your comments in class! I will contact IT yet again. I feel the need to send an apology letter regarding the audio, although the resolutions are out of my control. [54]

Phillip: No need for an apology letter; we know it's not your fault! Last night, I was just afraid that, if I spoke more, there would be blaring feedback like happened the first two times I spoke. [55]

Eric: While I'm pleased my own audio is generally working well, I feel much of the important learning occurs when students speak—if they're not heard, I fear a lot is missed. [56]

Phillip: There was a lot of discussion you had with the face-to-face students, and I didn't really hear one word they said. After my initial question in chat if it affected other distance students, one had a private chat with me about it. That student noted that "it drives me crazy that we can't hear the Laramie students—a waste of time" and "when the sound is so bad, it's hard to break in to the conversation. I

get discouraged and just keep quiet." There was a lot of participation by the face-to-face students tonight, and that probably resulted in an hour or more of time that felt wasted to those at a distance not being able to hear them or interact. [57]

Eric: I feel sick thinking that any students feel this is a waste of time! This has to get better. [58]

4.3.4 Resolution and stability

Thankfully, things did eventually get better, as IT was able to minimize the problems for the last third of the course. Small issues continued throughout, but technology failures finally ceased to be a dominant theme of the class. We were then able to have productive interactions between distance students–faculty member and distance students–distance students. [59]

Phillip: It has been fascinating lately, because there have not been any significant technological issues to fixate on. One student's outgoing sound is still bad, but everything else has seemed to work as intended. I also thought some more about why distance students struggle to participate in discussion. I think part of it is that we can't see visual cues to indicate when face-to-face students are done speaking. You can't really tell if they're taking a long pause in the middle of a sentence or completely done. We can't even see who is talking, let alone visual cues from them. [60]

Eric: This just gave me an "a-ha" moment—visual cues! I had never even thought of this, probably because I'm always freaking out about the technology not working as it should. Next semester, I think I'll ask the face-to-face students state their names prior to speaking each time. This is good advice. In reflecting on the last class meeting, I can't believe that the technician stayed crouched under the podium for as long as he did. Although I truly appreciate the attention to try to diagnose and fix the audio problems, it was very distracting with him talking on his phone to someone else. I found it incredibly difficult to focus on what I was saying as well as listening to what others were saying. [61]

Phillip: I wasn't even aware he was in there except once or twice when I saw him go through the camera view. The audio output was apparently not strong enough for us to hear the technician's sound that was distracting you locally. [62]

4.4 Summary

Technology failures were pervasive in our synchronous online course. We acknowledge that this is neither a consistent experience at the University of Wyoming nor absent from other institutions attempting to deliver distance education in this way. However, it was the dominant theme in our experience together. [63]

From Phillip's perspective as a distance student, the experience of ongoing technological failures was othering. Distance students became passive observers

to the class when problems arose, sometimes not even being able to hear what was happening. This was especially frustrating, because the research methods content is so important to professional goals. Even as the problems dissipated near the end of the semester, it was easy for distance students to remain passive observers of the class, having developed that habit throughout the time with problems. This undermined the purpose of delivering the class in this way— promoting interactive communication among geographically dispersed students. [64]

From Eric's perspective as the faculty member, these technological failures caused a sense of embarrassment and generated intense pressure. His desire was for the interaction to feel fluid and comfortable, but rather, it was often inhibited by technological failures. Teaching in the evening, often without readily available support from IT, he was left to troubleshoot problems as they arose, done on the clock of the class period and while being recorded. Ultimately, teaching and learning occurred, but the synchronous technology did not perform seamlessly as he had been previously told it would. [65]

5. Discussion

At the beginning of this report, we reflected on Phillip's daughter's question—how was he doing school in the basement? Beginning with this consideration of "how," our duoethnography is a chronicle of difficult experiences, as well as significant changes in how we thought about synchronous online education. [66]

5.1 Contribution of this study

Unfortunately, our experiences with technological failures often undermined each of THEMELI and BOUGIA's (2016) tele-proximity presence, thereby limiting the effectiveness. Tele-teacher presence was broken when class time was lost to technological failures, interrupting the delivery of the instructor to distance students. Technological failures were also interruptions to tele-cognitive presence, as the instructor and students were unable to interact effectively, whereby they would have been able to construct meaning and develop qualitative research skills. Tele-social presence was, perhaps, the most inhibited, as the technology failures shut down some students from participating and generated a sense of frustration. [67]

Duoethnography, as a methodology, afforded us the ability to communicate and interpret these experiences from an insider perspective. While there is a small body of research on synchronous online education that acknowledges problems (EVANS et al., 2014; GILLIES, 2008; WOODCOCK et al., 2015), only OLT (2018) appeared to investigate the nature and causes of such technological failures. In that phenomenological study, these failures were not as pronounced as in this duoethnography, and the author emphasized what the phenomenon of such technological failures was like. Our study is an addition to the knowledge on technology failures in synchronous online education by exposing the emotional and pedagogical impacts. [68]

5.2 Transformed thinking

Viewing one's life as curriculum and dialogic change are two key elements of duoethnography, as proposed by that NORRIS and SAWYER (2012). To that end, we came back to our project after the class was completed to reflect on how our thinking had been changed by the experience itself and writing the duoethnography. [69]

Eric: I approached this synchronous distance course simultaneously with trepidation and extreme optimism. I knew there would be technological issues, being the first semester that the Zoom classrooms were put into place; however, I did not anticipate the level of constant and extraordinarily frustrating problems. By and large, I do feel that the course was successful. I reveled in the live discussions; as an instructor in otherwise asynchronous online courses, I never get to be "in the moment" dialogically with students. The ability to engage extemporaneously with students from a distance was invaluable for me. Being able to hear insights from students and judge their facial expressions for true, in-depth understanding was invaluable and far more in alignment with my teaching philosophy than are asynchronous discussion boards. [70]

I took away from this experience hope for a better experience in future semesters. As IT works out the bugs and kinks, I anticipate a forum where students and I can engage in rich and complicated dialogue. In retrospect, after each Zoom session, I would find myself worrying about student learning—the unreliable technology was impeding active learning all too often. Still, I felt my live engagement with the class was much more forceful and powerful than it is in asynchronous online courses: I was able to spontaneously adapt the lecture to student needs based on questions during the lecture, to engage live with the class as a whole on course readings to gauge understanding (or the lack thereof), and to provide immediate feedback to students' concerns about any unclear course expectations. [71]

In the end, I came away feeling quite optimistic and excited. Being early in my career as an assistant professor, I see this as the future. When we're testing out the future, it is always chaotic. This experience helped me to see the larger picture and the potential this mode of delivery has. [72]

Phillip: I came into this course having a lot of professional experience with synchronous online education and Zoom technology from my administrative duties; however, I had no first-hand experience as a student. I expected that there would be a few technological hiccups, but that everything would be better than my asynchronous classes. [73]

I came away most impressed by the degree to which technological failures inhibited distance students in a synchronous course. Without prior experience being a student in this way, I was worried that things would not work well, but then it was difficult to live through that fear becoming a reality. In my professional capacity, I work with the distance students when they have complaints about

technology failures in their synchronous online classes, and I now know just how disheartening it can be. This experience has led me to commit to further reducing those problems at my own institution. [74]

It was also very much an outsider experience when technology failures would occur. Even though I was able to participate in almost live-time, I was denied much of the human feel that I would have if I were in the classroom with the students there. I lacked the visual cues from the professor and other students. I was unable to adjust where I was looking, hostage to a static camera angle floating near the ceiling at the rear of the room. Before the class, I anticipated feeling like I was right there with them, but instead, I came away feeling more like I had watched a reality television show. [75]

5.3 Implications for research

5.3.1 Evolution of duoethnography / polyethnography

Joe NORRIS (2012), a cofounder of duoethnography, acknowledged that the emergent nature of the methodology meant that researchers would need to adapt it to their various circumstances. We had the unique opportunity to write our duoethnography intentionally as we experienced the phenomenon of synchronous online education. For research in the field of higher education, this phenomenological focus by skilled writers and researchers may allow more immediate research to be produced on emerging phenomena. For example, diverse faculty members at an institution experiencing a crisis event— nontraditional presidential hires, innovative practices, student protests, controversial speakers, and so on—could collaborate to write from the perspectives of insiders as those events unfold. Further examination of duoethnography, or polyethnography if more than two authors, for this application seems warranted. [76]

5.3.2 Synchronous online education

In this duoethnography, we explored the lived experience of technological failures experienced during synchronous online education using a dialogue between two insiders. That experience may provide generalizability as the reader sees our experiences and interpretations extend into their own setting; however, specific topics, approaches, software, settings, and demographics in the arena of synchronous online education should be investigated further to evaluate its effectiveness and inform best practices. This will necessitate focuses upon student perceptions, faculty perceptions, and empirical analysis of specific tools and approaches to synchronous online education. [77]

5.4 Implications for practice

The purpose of duoethnography is not to "claim universal understandings; rather, the intent is for emergent meanings and meaning making to become dialogic within the text and between the text and the reader" (NORRIS & SAWYER, 2012, p.10). We believe this study provides unique depth of insight into how faculty members and students may experience synchronous online education, but the responsibility then falls on the reader to find meaning in the text and apply it to individual situations. Each situation is different, and perhaps another institution has mastered delivering synchronous online education that blends face-to-face and distance students; however, it is our hope that reading this report will assist others as they deliver education in this way. Our lessons learned could help others plan to avoid the same problems. [78]

From our experiences, we recommend the following as implications to those attempting to provide synchronous online education for the first time:

- give adequate training to faculty members and students who will be using the technology that enables synchronous online education,
- ensure that adequate technological support is immediately available to faculty members during class meetings, and
- provide a teaching assistant to help monitor, assist, and facilitate the voice of distance students. [79]

5.5 Conclusion

While synchronous online education can be used to bring students into a live class who would otherwise not have been able to attend, technological failures—especially if persistent—create a profoundly unpleasant experience. Distance students can be rendered passive observers and feel excluded as the others. The faculty members teaching such courses are then under a far greater pressure to perform than is already present in post-secondary teaching. We used duoethnography to provide insight into the experiences of such technological failures from the student and faculty member perspectives. It is then imperative that those doing synchronous online education do their best to prevent problems and respond to them immediately as they arise, minimizing the undesirable situations and capitalizing on the greatest benefits that this course delivery method can offer. [80]

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Authors

Phillip A. OLT, EdD, is an assistant professor of higher education and student affairs at Fort Hays State University, United States. His research interests are in the interaction of students with faculty members in distance education, regulatory compliance in higher education, and the use of qualitative research in the education field.

Contact:

Dr. Phillip A. Olt

Fort Hays State University
Advanced Educational Programs
600 Park Street
Rarick Hall 232
Hays, Kansas 67601, United States

Tel: +1-785-628-4413

E-mail: paolt@fhsu.edu

Eric D. TEMAN, JD, PhD, is an assistant professor of educational research in the School of Counseling, Leadership, Advocacy & Design in the College of Education and Acting Co-director of the Social Justice Research Center at the University of Wyoming in Laramie, Wyoming. He specializes in arts-based qualitative inquiry, and his research interests include ethical and methodological appropriateness when studying queer individuals. Current research includes using autoethnographic poetic inquiry, screenplay writing, and ethnodrama to investigate various issues within the queer population, e.g., suicide, self-harm, homelessness, depression, helplessness, bullying.

Contact:

Dr. Eric D. Teman

University of Wyoming
School of Counseling, Leadership, Advocacy & Design
College of Education
Dept. 3374, Office # 313
1000 E. University Ave.
Laramie, Wyoming 82071, United States

Tel: +1-307-766-2004

E-mail: eteman@uwyo.edu

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