Pre-Service Teachers Examine Digital Equity Amidst Schools’ COVID-19 Responses

JACOB HALL, CESIA ROMAN, CHRISTIAN JOVEL-ARIA, AND CAYLEEN YOUNG
SUNY Cortland, USA
jacob.hall@cortland.edu
cesia.roman@cortland.edu
christian.jovelaria@cortland.edu
cayleen.young@cortland.edu

Responding to the COVID-19 pandemic, K-12 schools and higher education rapidly deployed distance education approaches. Persisting inequities were illuminated by overwhelmingly digital responses and became vivid sources for observation and analysis by pre-service teachers (PSTs). This brief article details a process and resources for facilitating discussion, analysis, and reflection on the digital divide. PSTs first explored diverse experiences with the digital divide. They then investigated data on access to devices and broadband internet. The process concluded with observations and analyses of districts’ responses to COVID-19 and attention to societal inequities. Early results indicate PSTs’ increased awareness of digital inequities and critical attention to societal contexts when assessing technology integration strategies.

RATIONALE

Context is an essential aspect of designing effective instruction with technology. The technological, pedagogical, content knowledge (TPACK) framework includes context as a dashed circle encompassing knowledge do-
mains for integrating technology into instruction (Koehler & Mishra, 2009). Context, however, has often been limited in scope or overlooked in TPACK scholarship. Of 193 studies reviewed by Rosenberg and Koehler, 5% of articles discussed societal factors and 16% incorporated student-related contextual factors (2015). Given TPACK’s prominence in teacher education (Kimmons, 2018), the literature’s scarce attention to context may leave pre-service teachers (PSTs) ill prepared for addressing digital inequities within a complex, widening digital divide (Dolan, 2016).

When integrated meaningfully, technology can support inclusive instructional practices and equitable learning experiences (Edyburn, 2013; Howland et al., 2011). Technology, however, can exacerbate pre-existing inequities, establish new ones, and further marginalize communities (Kimmons, 2019; Rogers, 2016). Thus, Gorski (2009) encouraged educators to challenge assumptions that more technology equals better outcomes for all and to question technology integration plans that ignore issues of equity and societal contexts. COVID-19 drew increased attention to issues of digital equity as distance education, in many cases, became the sole means for learning and instruction (Young & Noonoo, 2020). As inequities surfaced in responses to this pandemic (Ferlazzo, 2020), PSTs had unique opportunities to reflect on their own digital privileges, analyze data relevant to the digital divide, and critically observe local districts’ digital learning responses.

PROCESS

While some PSTs shared about firsthand experiences with digital divides, many were unaware of digital inequities. To facilitate PSTs’ learning, a three-part module was designed. The first step in this process was to provide vivid and diverse accounts of experiences with the digital divide. Excerpts of Brigitte Daniels’ talk (TEDx Talks, 2016), examples from schools, and personal narratives from peers generated much conversation amongst PSTs as they explored varying perspectives on the digital divide, its interrelated factors and continuing impact.
Table 1

Description of Digital Equity and COVID-19 Module Components

<table>
<thead>
<tr>
<th>Module Component</th>
<th>Description</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Overview</td>
<td>This page introduces the topic, its relevance, and common assumptions. The module structure and directions are reviewed.</td>
<td><a href="https://bit.ly/2AzSB6z">https://bit.ly/2AzSB6z</a></td>
</tr>
<tr>
<td>Part 1: Introduction to the Digital Divide</td>
<td>PSTs explore digital divide definitions, background and examples. They are prompted to reflect on its persisting nature and complexity.</td>
<td><a href="https://bit.ly/2z3iLOv">https://bit.ly/2z3iLOv</a></td>
</tr>
</tbody>
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Next, PSTs examined data on access to technology delineated by gender, age, socioeconomic status, community, race and ethnicity, and intersections of these demographics (Anderson & Kumar, 2019; Anderson & Perrin, 2019; Perrin, 2019; Perrin & Turner, 2019). The Pew Research Center digital divide reports afforded PSTs practice analyzing data and illustrated the widespread, systemic nature of the divide (2020). PSTs discussed their analysis on a text-based discussion board. They considered how the data elucidated digital inequities, observed patterns in the data, deconstructed overt or implied values in the reporting, and questioned what additional information could help contextualize these data.

In the final module component, PSTs analyzed how societal inequities surfaced within educational responses to COVID-19. To examine these dilemmas, PSTs engaged readings of school districts’ responses to the pandemic across the country. Education Week’s Coronavirus and Schools special collection was a trove of current, practical, and relatable snippets on pressing digital equity issues brought to light by the pandemic (2020). Using a video-based platform, PSTs discussed how the crisis highlighted social inequities, compared distance education approaches employed across the country, and reported ways their local districts have addressed inequity when transitioning to learning at home.
EARLY RESULTS

Sixty-one PSTs, enrolled in three sections of a required three-credit technology integration course, participated in this module. A thematic analysis of text-based discussion board responses was conducted to examine PSTs’ conceptions of technology integration contexts as they engaged the Digital Equity and COVID-19 Module. Demonstrated in PSTs’ discussions, this learning experience appears to have fostered (1) awareness of societal contexts for technology integration, (2) critical perspectives on how technology is integrated and (3) reflection on why technology should be integrated.

PSTs’ awareness of societal contexts was demonstrated as they situated digital inequities within broader systemic inequities. Roman wrote in her discussion response:

I overestimated how many people have access...It’s saddening to read that the communities that would need this kind of technology and access for more essential activities, have less access to this technology. It’s clear that these kinds of discrepancies are a reflection of the many other systems we have in this country, that are made harder and less accessible for Brown and Black people.

As Roman’s response illustrates, PSTs expressed newfound awareness of digital divides and began recognizing associated systemic inequities (Tichavakunda & Tierney, 2018). This form of critical inquiry is essential for PSTs to evaluate technologies’ impacts and engage in justice-oriented technology integration (Krutka et al., 2019; Wassell & Crouch, 2008).

Reflecting on technology-related experiences and digital equity, PSTs’ critical perspectives emerged. For example, Jovel-Arias questioned digital strategies implemented by his high school:

As educators (especially those who identify as white), we must always remember to reflect on our privilege, because this is not the case for a lot of students, and ways that we can use that privilege to better assist our students of color who may be suffering from institutional racism. The high school that I went to started giving out Chromebooks my senior year, and I thought it was an amazing investment...however, I remember thinking just giving Chromebooks wasn’t enough. I had fellow classmates who did not know how to utilize the technology that was given, or had no access to high speed internet at home.

Jovel-Arias highlights the range of experiences and privilege that may contribute to digital learner identities (McLay & Reyes, 2019). To keep
from perpetuating inequities, PSTs should similarly learn to evaluate technology initiatives with attention to issues of equity and advocate for digital solutions that empower all learners (Collin & Brotcorne, 2019; Gorski, 2009).

Lastly, PSTs reflected on technology’s potential to address social inequities. After analyzing broadband adoption rates, Young wrote:

Understanding how to use computers is the very bare minimum when it comes to media literacy. That said, providing technology training to those who feel they need to expand their knowledge in the subject should be a high priority. As educators, it is crucial for us to integrate technology into our lessons whether it is readily available to our students at home or not. Doing this will increase exposure to technology by 100% to those not exposed to it at home.

Young positions technology integration in schools as providing access and teaching skills to student populations who may otherwise be left disconnected. Teacher beliefs about technology’s relevance are strong predictors of their integration success (Ertmer et al., 2012). To foster perceptions of technology’s relevance, teacher educators should demonstrate its potential, when integrated with culturally responsive teaching practices, to address inequity (Scott et al., 2015).

**IMPLICATIONS**

Digital inequities and societal contexts will persist as critical topics for teacher development even after COVID-19 has passed. The pandemic affords unprecedented connections to the digital divide for PSTs, and teacher educators should seek to incorporate current equity issues even as students return to K-12 classrooms. As seen in this example, there are many sources of national data to support PSTs’ technoethical inquiry (Krutka et al., 2019); the additional integration of local data in such inquiries may poignantly emphasize the reality of digital inequities faced by communities.

Furthermore, collaborations between educational technology and multicultural education faculty are encouraged to better support PSTs’ ethical, equitable, and culturally responsive technology integration in post COVID-19 instruction (Scott et al., 2015; Wassell & Crouch, 2008). The Digital Equity and COVID-19 Module may be useful groundwork, but teacher educators should also consider extending the design with experiential learning
opportunities which engage PSTs in actively working toward digital equity in schools and society (Gorski, 2009). Involving PSTs in action research projects with partner schools and teachers can promote civic participation, PST empowerment, and essential progress toward digital equity (Collin & Brotcorne, 2019).

**FUTURE RESEARCH**

Given previous inattention to societal contexts of integration in educational technology scholarship (Rosenberg & Koehler, 2015) and the drastic shifts COVID-19 has prompted, more research is needed on best practices for integrating technoethics in teacher preparation (Krutka et al., 2019). Future iterations of this research will integrate digital equity related data from local schools in the module activities and include collaborations with faculty teaching culturally responsive pedagogy courses. Instructional necessity during COVID-19 induced innovation in many sectors. As certain educational innovations linger beyond the initial pandemic response, researchers should empirically gauge their impact and closely investigate interactions with the digital divide. Societal context, ever a critical component for effective technology integration (Koehler & Mishra, 2009; Rosenberg & Koehler, 2015), must ground COVID-19 scholarship and practice to avoid making technological progress synonymous with widening digital disparities (Dolan, 2016; Gorski, 2009; Pew Research Center, 2020).

**References**


Ferlazzo, L. (2020). What is and is not working as educators transition to online learning. Retrieved from http://blogs.edweek.org/teachers/classroom_qa_with_larry_ferlazzo/2020/03/what_is_is_not_working_as_educators_transition_to_online_learning.html


