

Culturally and Linguistically Responsive Online Teacher Learning and Professional Development

Faridah Pawan
Indiana University, USA

Belle Li
Purdue University, USA

Meika Billings Dopwell
Suliya Nijati
Alyse Harris
Tiana Iruoje
Indiana University, USA

Abstract

This literature review explores the landscape of online teacher learning and professional development (PD) that is responsive to cultural and linguistic differences. The researchers, a diverse group of doctoral students, instructors, and teacher educators, are motivated by the need to address racial inequities and disparities exacerbated by the recent pandemic. The review aims to understand the theories and conceptual models used in responsive online teacher preparation and PD, the utilization of technology and its affordances, and the intentional targeting of specific groups for responsive teacher preparation and PD. The study followed a systematic approach, resulting in the selection of 27 articles that met the inclusion criteria. The findings highlighted the significance of socioculturally inspired theories, frameworks, and practical models in addressing inclusivity. They, in turn, influenced various tools used to reduce barriers, create online communities, enhance accessibility, and promote engagement. Accordingly, the review also revealed that to foster inclusivity, intentional efforts were required to involve teachers from minority, majority, and international communities. The implications emphasized the importance of teacher preparation and PD in establishing responsiveness, refuting deficit thinking, and capitalizing on cultural and linguistic assets. They also underscored the need for equity in the design of online teacher training and professional development. Finally, the review concluded with the various ways AI could be looped into the process.

Keywords: Culturally inclusive, linguistically inclusive, responsive pedagogy, online teacher education, online professional development, systematic literature review

Pawan, F., Li, B., Dopwell, M. B., Nijati, S., Harris, A., & Iruoje, T. (2023). Culturally and linguistically responsive online teacher learning and professional development, *Online Learning*, 27(4), 171-200. DOI: <https://doi.org/10.24059/olj.v27i4.4003>

This literature review explores the landscape of online teacher learning and professional development that is responsive to cultural and linguistic differences. Our interest in understanding research and practice in this area emerged during a period of heightened racial tensions and increased awareness of racial inequities as well as pandemic-induced disparities. We are a group of doctoral students, instructors, and teacher educators with diverse backgrounds and ethnicities in the field of learning, design and instructional systems.

As teachers, our diverse identities are expressed pedagogically. The differences and uniqueness that we bring to the table individually as diverse online educators are critical components in our professional and intellectual dispositions. Through those lenses, the promise of the accessibility and flexibility affordances of the online medium has drawn us into the medium's universe. However, we also recognize that the online medium introduces new challenges as well as new inequities. It can even amplify and exacerbate those that already exist. Tate and Warschauer (2022) asserted that teachers "play a key role in mitigating the inequity in online education" (p. 202). This is the position that we, as online educators, assumed and strove to illuminate through this review.

Accordingly, we undertook the literature review research between 2018 and August 2022, during the height of racial tensions in the U.S. They served to remind us of our "socio-professional" (Freeman, 2009) role as educators to bring to light workable pathways helpful to others. We were constantly reminded of the Ubuntu philosophical concept of "Sawubona" (Power-Carter et al., 2019) in which our obligation to educate and inform others should take precedence, even during a time when we ourselves felt personally challenged for being who we were as individuals with diverse ethnic backgrounds.

We began our literature review in 2018 which coincided with the publication of Gunawardena et al.'s *Culturally Inclusive Instructional Design*, recipient of the AECT's distinguished book award in 2021. Gunawardena et al.'s (2018) publication was influential in our thinking, as it directed attention to building inclusive communities in the online medium. This is important not only because the medium was made pervasive by the pandemic but also because of the medium's potential to reach diverse communities. The components in Gunawardena et al. (2018) led us to explore the research in and the implementation of online programs to support culturally and linguistically responsive practices of diverse pedagogists (whether teachers in K-12 public schools or instructors in higher education).

The main argument of this literature review is that it is important to study cultural and linguistic (CL) responsiveness in online teacher preparation and PD, as teachers are the epicenters in the responsive teaching process. More specifically, we argue that teacher knowledge derived from theoretical and conceptual lenses strongly influence the way the teachers design and select the tools they use. The lenses also orient teachers to specific populations for whom their instruction could be most salient and meaningful.

Thus, in this literature review, we examined "Praxis," namely, how research and practice have been undertaken in CL responsive online programs for teacher/instructor learning and professional development. Accordingly, this literature review focuses on the theoretical lenses

used to guide research and practice. It also focuses on pathways of practice that show how technologies are used, how learning is addressed and the people to whom the programs are striving to be responsive.

Theoretical Framing

We were informed theoretically by Ladson-Billings' (1994) "Culturally Responsive Pedagogy" (CRP) and Geneva Gay's (2010) "Culturally Responsive Teaching" (CRT). Before we discuss CRP and CRT influences, we focus first on the concept of "responsiveness." Hollie (2017) identifies "validation" and "affirmation" as central to the responsiveness concept. Validation is the intentional legitimization of the home culture and language of the student. Affirmation is the intentional and purposeful effort to reverse the negative stereotypes, images and representations of marginalized cultures and languages (Hollie, 2017, p. 28). In this regard, by teaching responsively, educators refute deficit thinking as they become aware, acknowledge, and productively capitalize on cultural and linguistic assets of individuals in their classrooms, in their workplaces, and in their professional and social milieu (Hollie, 2017, p. 35).

Ladson-Billings's (1994) CRP and Gay's (2010) CRT converge on "social justice and the classroom as a site for social change" (Aronson & Laughter, 2016, p. 163). The two conceptual frameworks aim to create inclusive and equitable learning environments for students to succeed. CRP is the pedagogical reframing of an educational system that involves the problematization of existing teaching practices, curricula, assessment, and the micro- and macro-school and schooling cultures. Problematization is critical in that it addresses areas where underserved students, teachers, and other educators are not empowered but are neglected and oppressed by the intersection of many factors, including race as well as cultural and language backgrounds. To redress the situation, CRP focuses on culturally responsive efforts on the part of educators to support student success and to develop cultural competence by using and honoring their cultural beliefs and practices. One example of such an effort is scaffolding students' learning through the use of their existing funds of knowledge that they bring to classroom. The efforts also involve creating pathways for students to demonstrate socio-political consciousness to take a stand and to act against social inequalities. Photovoice projects (Wang & Burris, 1997), for example, are well-proven pathways for the purpose. In these projects, students are empowered to visually document and comment on inequities in their community.

Gay's (2010) CRT pushes the pedagogical agenda forward in the classroom by articulating instructional steps for educators to cultivate responsiveness. The central core of these steps are efforts to:

...bridge meaningfulness between home and school experiences; the use of a wide variety of instructional strategies that are connected to different learning styles; and the incorporation of multicultural information, resources, and materials in all the subjects and skills routinely taught in schools. (Gay, 2018, p. 36)

In doing so, educators create pathways of success, not only for underrepresented students but for all students peripheralized by status quo teaching approaches that do not validate, differentiate, and accommodate differences.

Teacher Learning and Professional Development as Concepts

Teacher learning and professional development (PD) are complementary phenomena. As a dialectical, teacher learning is an evolutionary process whereby teachers develop what they know about several aspects of learning: subject matter, students, classroom learning, micro- and macro-cultures, schooling experiences, and self-awareness (Johnson & Golombek, 2016). The situatedness of teacher learning lies in the synthesis between knowledge gained from education and lived experiences (Grangeat, 2008). Praxis thus defines teacher learning, in that subject matter knowledge, practice, and context dialectically inform the minds and actions of teachers at every stage of their preparation and professional undertakings.

Teacher PD is both a mechanism and a process of “deepening teachers’ content knowledge and developing their teaching practices” (Sancar et al., 2021, p. 8). It is an ongoing process that begins during college and continues throughout teachers’ professional lives. The literature on PD approaches is vast and diverse, with numerous studies providing various classification systems for PD approaches (Parkhouse et al., 2019; Schachter, 2015). Schachter (2015) identified 35 different approaches in 73 studies, with coaching, workshops, and curriculum implementation being the most frequently used methods. Parkhouse et al. (2019) identified nine types of PD experiences (i.e., workshop, action research, immersion experience, community of practice, coaching, self-rating, video-feedback, critical friendships, and online component) and found that over half of the programs included multiple components. Research suggests that effective PD requires the use of multiple training methods and intensive ongoing support that is embedded within practice and adapted to local needs and goals (Buysse et al., 2009; Parkhouse et al., 2019; Siraj et al., 2019).

Although teacher learning is often associated with pre-service teachers in the early stages of their professional preparation, it also underlies teacher PD in terms of the types of knowledge that emerge from both experiences. Cochran-Smith (2005) identifies three types of teacher knowledge, namely, “knowledge-for-practice,” “knowledge-in-practice,” and “knowledge-of-practice.” In knowledge-for-practice, teacher learning is the acquisition of formal knowledge and theory generated by researchers. In knowledge-in-practice, teachers learn to probe into, and reflect upon, the knowledge that emerges from their own and their mentors’ methods of designing curricula and classroom interactions in practice and/or authentic teaching situations. In knowledge-of-practice, teachers are the driving forces of their expertise in that they begin to generate new knowledge about teaching and connect it to the social, cultural, political, and intellectual context in which they work.

Teacher learning is also a process of personal identity learning (Beijaard, 2019). Pre- and in-service teachers’ embodiment of their “self-perceptions, and self-definitions” shape the purposes and possibilities for them to take action. Teacher learning also goes beyond the personal in that teacher identity is deeply situated in the complex interplay of factors in the dynamics of their lived experiences of the teachers. What teachers consider as salient and worthwhile in their learning is informed by who they are and their agency in bringing about changes, not only in the classroom but in all communities in which they feel personally and professionally invested.

Technology in the Online Medium

The online medium is defined by waves of change in emerging technologies. Over the decades “[s]ome of these waves are extended, some waves are connected, and other waves are repeated” (Bonk & Wiley, 2020, p. 1595). The manifestation of the waves, as described by Bonk and Wiley, can be seen in the incorporation and use of a myriad set of technological tools for multiple purposes in online teaching and learning. In the early 2000s as Constructivism took hold theoretically, key technologies enabled users not only to consume but also to partake in knowledge construction. This wave was extended to include collaborative tools which then enabled teachers and students alike to globally expand learning and access expertise beyond the classroom and their immediate communities. These waves are currently repeated in which the nodes of open expertise, resources, and content are further distributed through blended and hybrid learning platforms. We see the conceptual framing and infusion of Connectivism (see Siemens, 2005) particularly within the latter of the four waves.

In the “Findings” section of this literature review, we identify the various technological tools in the online medium used in articles we report upon. In particular, we illustrate how they were used toward responsiveness to address the third research question.

Problem Statement and Research Questions

Cultural and linguistic responsiveness remains challenging in teacher preparation and professional development (PD). For example, Doran’s (2016) survey of pre-service teachers indicated that half of the respondents had never heard of cultural and linguistic responsiveness, nor did they have a clear definition of these terms. Moreover, researchers have reported that in-service teachers were often missing specific competencies particularly in responding to learners of diverse backgrounds (Bunch, 2013; Turkan et al. 2014). Most disturbing of all, Wallace Brand (2012) argued that cultural and linguistic inclusivity is often approached by educational stakeholders, not as a responsible solution but as a problem. This disposition stigmatizes and devalues the effort to prepare and guide teachers to teach responsively. This review aims to inform, direct attention to, and consolidate support for responsive teaching. It does so by first showcasing how responsive research and teaching practices are guided by strong conceptual frameworks. Second, the review focuses on the affordances that technology has made possible, and third, the intentional research and teaching efforts to reach and to have targeted impact on specific populations. The questions are as follows:

- (1) What are the theories and conceptual models used to guide research and practice?
- (2) What and how are technology and/or technologically assisted environments used?
- (3) Who and how are teachers and instructors being guided to teach responsively?

We see these questions as interconnected as we focus on teachers’ preparation and PD programs in online cultural and linguistic responsiveness. We reiterate the argument already stated: the knowledge and practice of the programs’ designers, developers, researchers, and participant teachers are mediated by a tripartite of components, namely by the disciplinary theories they draw upon. Those theories, in turn, guide the selection of tools they choose to use

and whom they choose to instruct (Freeman & Johnson, 1998). “Responsiveness” as defined by Hollie (2017) above can only be accomplished if online research and practice are situated in this sociocultural Vygotskyian-inspired process that validates and affirms the individual, their macro context, and the practices that are “internalized” and “transformed” by them.

Research Methodology

Data Collection

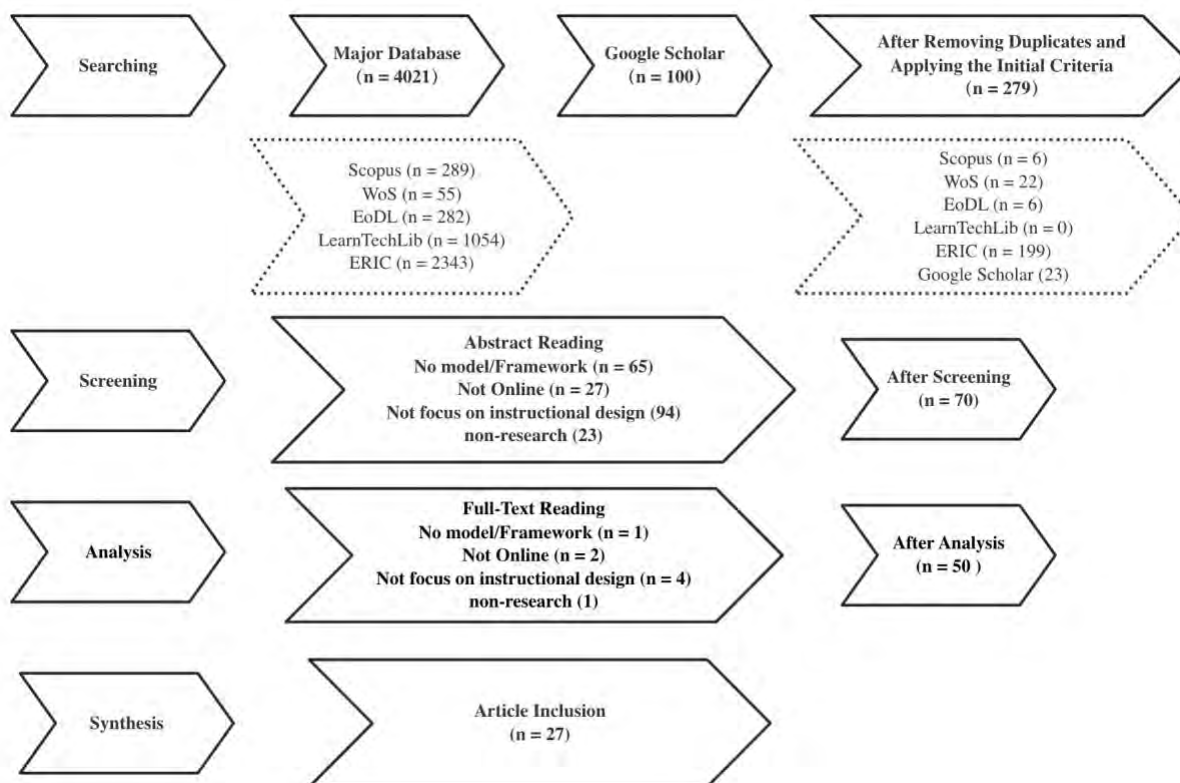
The literature review followed the systematic approach of clarifying review questions, performing broad and detailed literature searches, screening the abstracts of the studies identified in the searches, developing and refining inclusion and exclusion criteria, and subsequently reading the selected complete texts.

The process of identification of eligible studies began with an initial search in the six significant databases separately: LearnTechLib, Educational Research Information Center (ERIC), Web of Science (WoS), Encyclopedia of Distance Learning (EoDL), and Scopus. The Boolean operators used were the following:

- (1) “Culturally responsive” and (teaching OR pedagogy OR training OR continuing education OR professional development) and (online OR e-learning OR distance learning OR virtual learning) and “instructional design”
- (2) (“Cultural Awareness” OR “Culturally Relevant Education”) and (“Minority Group Students” OR “Professional Development”) and (“Online courses” OR “e-learning” OR “distance learning” OR “virtual learning”)

The initial search yielded 4021 results across the databases. A second round of searches was conducted on Google Scholar to remove duplicates. In this round, to narrow the search further, we focused on articles published between January 1, 2018 and August 27, 2022. As noted, this was the period we considered to be the height of racial tensions. Researchers and educators were most engaged in identifying ways to address the tensions as well as to find responsive educational pathways. AECT’s 2022 recognition of the timeliness of Gunawardena et al.’s (2018) book is one example. These articles were (1) available via full text, (2) published in journals, (3) written in English and, (4) peer reviewed. The first 10 pages of Google Scholar results were scanned to ensure no additional studies were left out in this initial phase across the 6 databases. Thus, 279 peer-reviewed journal articles were identified (See Figure 1).

Figure 1
Process of Article Identification



To ensure that the articles were relevant to the target of our search, we screened the articles a third time, resulting in a final collection of 27 articles, using the criteria below that specified that they must:

- (1) Be conducted in internet-based learning environments (i.e., synchronously, asynchronously, hybrid, etc.). These included studies with online activities using learning management systems.
- (2) Include a model, framework, or theory focused on instructional design that helped trainers and designers to develop, design, or lead teacher training and development.
- (3) Address teacher learning and professional development of teachers of culturally and linguistically diverse learners.

Coding and Analysis

We then coded the 27 articles in accordance with the research questions that flowed from our central argument.

Based on Onwuegbuzie et al. (2016), we undertook two cycles of coding. In the first cycle, we undertook a descriptive coding in which the codes were based on word, short phrases based on our research questions i.e. (1) Theories, conceptual models, frameworks; (2) technology, applications; (3) people and groups included. In the second cycle, we themed information we abstracted information from the articles. We strove to maintain trustworthiness in

the coding by referring to Elo et al.'s (2014) recommendations to have multiple coders that check each other's coding. As per their suggestions, the following steps were undertaken to enhance trustworthiness, namely

1. Six researchers on the team first coded two articles together to calibrate coding;
2. The researchers were paired and separated into three groups;
3. In each pair, one researcher coded first and the second, undertook a follow up in the role of an audit trailer;
4. When there were divergent opinions, all researchers discussed in scheduled weekly meetings as to how to proceed next.

An example of the code book is below for technology and applications in the online medium:

Table 1

Author	Phan, T	Technology, Applications, Platforms	Sample Quotes
Year of Publication	2018		
Title	Instructional strategies that respond to global learners' needs in massive open online courses		
Journal	<i>Online Learning</i>		
Country	USA		
Method	Qualitative		
Audience	Instructors & Instructional Designers		
Code (Cycle 1)	Technology, Applications & Platforms	<ul style="list-style-type: none"> • Coursera, Facebook, • Google Hangout, • PowerPoint 	
Usage	<ul style="list-style-type: none"> • Discussion, • Virtual office hours 		
Themes (Cycle 2)	<ul style="list-style-type: none"> • Reduce barriers • Increase accessibility 		...provide support and engage learners who have English language barriers, or those who did not have the necessary subject background to keep up with the course, or those who were not familiar with American educational culture (p. 95)

Context of the Studies

Geographical, Temporal and Publication Distribution

The majority (79.35%) of the responsive studies (N=27) were conducted in the USA, and one author was affiliated with a US-based institution although the study was not conducted in the US (See Figure 2). The remaining studies were conducted by authors from Korea, the United Arab Emirates, Australia, France, Pakistan, and New Zealand, with each country contributing one author.

Figure 2

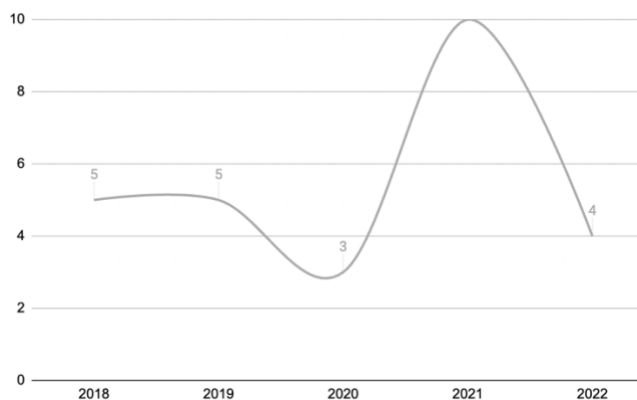
Geographical Distribution of Studies



Analyzing the year of each publication indicates there is an overall upward trend in the number of publications even though the number of publications fluctuates. Notably, this trend appeared to have accelerated in 2021, with a significant increase in the number of publications, from 3 in 2020 to 9 in 2021 (See Figure 3). It is worth noting that the highest number of articles were published in TechTrends (N =4) and Multicultural Learning and Teaching (N =2).

Figure 3

Temporal Distribution of Articles



Research Methodologies

The choice of research methods primarily depended on the research question and the nature of the phenomenon being studied. In general, the majority of the selected studies used qualitative (N=13) and mixed methods (N=5) methods. Four studies used quantitative approaches (N=4). The studies that adopted qualitative and mixed methods provided nuanced and context-specific insights into learners' experiences (e.g., Tsuda et al., 2022), perspectives (e.g., Howrey, 2018), and needs (e.g., Phan, 2018; Vail, 2018) and explored complex or dynamic phenomena, i.e., global collaboration (e.g., Gleason, 2021). Quantitative studies examined the effectiveness of online teacher education and PD programs in increasing faculty and staff members' cultural competence (e.g., Hode et al., 2018) or the effectiveness of an online intervention in changing preservice teacher beliefs about the education of culturally and linguistically diverse students (e.g., Polat et al., 2019; Suh and Michener, 2019).

Interviews and case studies were among the most used qualitative research methods in the included studies. It is also noteworthy that some studies used a self-study research approach, such as Donovan et al. (2021), while others used a combination of multiple methods. These included, for example, Hill et al. (2020) who used online curriculum review, test data, observation, and interviews, and Suh and Michener (2019) who used content and discourse analysis to analyze online discussions. Researchers also used quantitative approaches including Yoon (2021) who applied social network analysis while Polat et al. (2019), on their part, solely used surveys.

Methodological Limitations

The studies reviewed were not comprehensive and representative of responsive studies globally. However, they provided insights into the current state of research in the area. These studies highlighted, from a global perspective, how cultural and linguistic responsiveness can be effectively integrated into teacher education and PD programs worldwide.

The literature review was conducted up to August of 2022. We could not report on the trend following that period. Thus, our review could have excluded the delayed impact of the COVID pandemic such as a lengthier publication cycle and/or a shift in the responsive focus of articles.

Findings

Question 1: What Are Theories and Conceptual Models Used to Guide Responsive Research and Practice?

Cultural and linguistic responsiveness is a subject of scholarly inquiry and practical application approached through a plethora of theories and conceptual models. However, it was evident that the articles we analyzed approached cultural and linguistic responsiveness primarily from a sociocultural perspective and its associated dimensions. In this regard, teacher learning and PD were grounded in a social process of back-and-forth engagement situated in, and shaped by, context. It was significant, too, that the review revealed “prolepsis” (Vossoughi & Gutiérrez, 2016) or the “critical” in sociocultural thinking. In doing so, responsiveness was implemented when the sociocultural lens allowed for the problematization of past and lived experiences in

research and in the proactive design of practice. As in the percepts of responsiveness, prolepsis is multivocal and multi-contextual. Accordingly, the inclusion of indigenous and intercultural theoretical frameworks also underlay research and practices reviewed and reported in this section. In doing so, they also served to expand existing responsive frameworks.

The use of these theories revealed responsiveness as a socially negotiated process. Suh and Michener's (2019) research utilized Lucas and Villegas's (2013) framework for linguistically responsive (LR) teacher education and Bakhtin's (1981) dialogism framework. Dialogism is a lens through which teacher candidates' dialogues are a means to show tension for change toward responsiveness to diversity. These dialogues were based on the teachers' engagement with content that focused on sociolinguistic consciousness, the value of diversity, and advocacy for learners whose first language was not English. Similarly, Boada (2022) framed his research within the socio-cultural theoretical framework of the Community of Practice (CoP) (Lave & Wenger, 1991). Within CoP, teachers were engaged in Instructional Conversations the patterns of which were brought to the surface through Social Network Analysis (SNA). In essence, the lens enabled the observation of how teachers were inducted into a community to address responsiveness through online collaboration, conversation, and communal reflection.

The sociocultural framework was also used to reveal changes in specific areas. In Polat et al.'s (2019) study, the focus was on changes in teacher beliefs through their interactions with their diverse learners as E-Penpals. Interactions are necessary, as teachers' beliefs are symbiotically formed and informed by them (Borg, 2003). E-Penpals were undertaken to offset the limited experience that pre-service teachers had in multilingual and multicultural classrooms. In that regard, Polat et al. looked at changes through these interactions, in the teachers' beliefs about cultural and linguistic diversity and anti-deficit perspectives. Warren (2018) utilized "discursive psychology" (Potter, 2012) to expose teacher beliefs about teaching culturally and linguistically diverse students. These beliefs were uncovered through interpersonal discourse in an online PD course.

Frameworks that included criticality were also observed primarily through "critical reflection" as a concept in responsive online teacher education programs. Through the reflections, we see criticality in these frameworks as responsiveness that not only empowers and validates but also problematizes and interrogates positionality. In this regard, the basis for examining equity and inclusion are teachers "own experiences, life worlds, privileges, struggles, and positions in relation to others (their students as racialized and cultural beings, their students' parents, their students' communities, and their students' ways of knowing)" (Milner, 2006). Walker et al. (2021) situated their study in a constructivist-interpretivist framework that enabled the examination of those reflections in their study comparing teacher online and onsite preparation. In Braunstein's et al. (2021) research, the lens of "critical constructivism" enabled the researchers to observe teacher candidates' reflective use of the online medium as "counterspaces" to explore the dangers of essentializing race, culture, and identity in their teacher preparation program. Hill et al. (2018) reported on the Indigenous Cultural Competency Program (ICCP). The framework constituted mandatory training for all staff to undergo a reflective "journey within" to explore self-awareness about transformation and change in their perceptions of Australian indigenous student populations. In Goin Kono Taylor's (2021)

research, the “Ethos of Care” framework centered the analysis of faculty reflective narratives about their experiences as they learned to bridge the digital divide underlying diverse students’ access to online education during the pandemic. McCollough (2020) relied upon Kolb’s (1984) classic model of learning through disruption and cognitive dissonance. McCollough designed online reading exercises of seminal science education texts that required pre-service teachers to reflect on diversity and inclusion personally and critically when she juxtaposed those readings with culturally relevant readings (e.g., Ladson-Billings’s *The Dreamkeepers* (1994)). Finally, Howrey’s (2018) research of pre-service teachers’ discussion of literature with Mexican immigration themes in a hybrid class underscored the need for a reflective reading stance in developing responsive teachers. Drawing from the Rosenblatt’s (1978) Reader Response Theory, Howrey observed that the enactment of criticality and empathy occurred when teachers in the online class immersed themselves emotionally based on reflections of their own experiences (aesthetic reading) in contrast to approaching the reading as sources of information (efferent reading) in discussions.

The review also yielded frameworks used by researchers to train instructors, teachers, and all related staff members to address inclusiveness responsively and proactively on a larger scale in teaching and design. Brown et al. (2021) provided a “Virtual Professional Development” framework for social justice and equity training that included virtual “professional learning communities, personal coaching, classroom observations, and self-reflection” (p. 5). Westine et al. (2019) focused on instructors’ use of and familiarity with the principles of Universal Design for Learning (UDL) from CAST (2018). They included delivering materials and instruction through multiple means of representation, action and expression, and engagement. In essence, UDL was used as a responsive framework that guided the teachers in proactively and comprehensively planning, enacting instruction, and assessing learning.

Similarly, Donovan et al. (2021) approached responsiveness in the inclusion of culturally and linguistically diverse learners in online teacher education program from the lens of “Learning Ecology.” The lens enabled them to analyze the program’s design features from a holistic perspective by studying the relationship and intersectionality between curricula, policies, processes, individuals, and the relationships between all of them. Phan (2018) included Henderson’s Multiple Cultural Pedagogical Model of interactive multi-media design that considers the intersection of multiple identities based on ethnic, workplace, academic, and entrepreneurial cultures. Hode et al. (2018) created a model for use in an online diversity course that helped faculty and staff recognize and respond to diversity as a value from the individual/interpersonal (e.g., productivity) to the organizational and societal levels (e.g., dynamic economy, pluralistic democracy). Engerman and Otto (2021) promoted the recursive design model they saw in Bennet et al.’s (2017) study that included the iterative design processes of designing before, during, and after implementation. Such a model created pathways to reveal and include diverse social, cultural, and linguistic orientations into instruction and design.

Other research drew from intercultural and internationalization frameworks as foundations to understand and support instructors in being responsive. In terms of the former, Bunkowski and Shelton (2019) used the “indigenous epistemology” as a lens for contextualizing and identifying tribal leaders’ leadership strategies of online education in the Northwest Indian

College (NWIC) system. The epistemology consists of American Indian ways of knowing, values and beliefs derived from “relationships, connections between people, location/earth, time and spirituality” (p. 3). Kumi-Yeboah et al. (2020) drew on Bennett’s (2001) framing of multicultural research in Curriculum Reform, Equity Pedagogy, Multicultural Competence and Societal Equity. The framework was used to uncover the perceptions and challenges faced by university instructors to address and respond to diversity in their classroom. Responsiveness can be seen also through how frameworks guide teacher training by bridging understanding across borders or by creating spaces for new understandings. Yoon et al. (2021) used Cultural Intelligence (CQ) (Earley & Ang, 2003) as a measurement of cultural awareness outcomes (cognitive, motivational, and behavioral) by Korean science teachers’ online encounters with US minority students. Gleason and Jaramillo Chavez’s (2020) research used Hansen’s (2017) lens of Cosmopolitanism in studying teacher candidates’ collaboration and intercultural communication. The lens immersed teacher candidates in multiple perspectives as they did so. Tsuda et al. (2021) utilized Deardoff’s (2006) Intercultural Competence model that moved teachers from the personal plane of attitudinal development to observable interpersonal communication outcomes that reflected intercultural competence such as “flexibility, adaptability, ethno-relative perspective and empathy” (p. 3). Vail (2018) used Cohen et al.’s (2011) interpretive ontological stance in which “truth” was defined from different vantage points. In her research to help educators strive toward culturally responsive digital learning for international students, the stance allowed her to showcase both students’ and educators’ perspectives on responsiveness. Deng et al. (2021) developed and showcased the implementation of their collaborative “Pedagogical Design” developed to guide online intercultural collaboration between Hong Kong and Minnesotan pre-service teachers. The design included the use of existing cross-cultural awareness models, namely, Hofstede’s (1980) cultural dimensions, Hall’s (1989) low and high contexts cultures, and Lewis’ (2010) cultural types. The cross-cultural model formed one leg of the tripartite design that also included guidelines for technological tool selection and online strategies for sociability and communication.

The frameworks we saw in the review also acknowledged, augmented, and expanded the culturally responsive paradigms, where responsiveness is perceived through the lens of the efficacious utilization of online and technological affordances. Ardley and Repaskey’s (2019) research for example, juxtaposed Ladson-Billing’s CRP with models that enabled the inclusion of, and partnerships with, multiple stakeholders, namely, Ausburn et al.’s (2011) Tetrafocal Professional Development and Bailey et al.’s (2016) Intellectual Partnerships Models. The models provided a foundation for teacher educators to use video annotated technology to enhance their responsiveness in collaboration with teacher candidates in a Historically Black college. Ren’s (2022) study relied on Lee’s 2003 Culturally Responsive Design framework that placed culture at the core of design, technologically assisted, and online teaching. In the framework, students’ prior knowledge, ways of knowing, engagement and motivation needs, and social and civic empowerment interests were used as guides. Eppard et al. (2022) leveraged Dang’s (2010) Edtech Culturation concept which concluded that, in order to be effective, technologically assisted and online teaching had to be situated in local learning culture, including collaboration with individuals in the local context. In addition to referring to Ladson-Billings’s (1994) and Gay’s (2010) responsive pedagogical frameworks, Shelton et al. (2022) also paired them with the “Racial Platform Capitalism.” The pairing conceptually framed their research on

social justice in teacher professional learning (PL) on Instagram. It demonstrated capitalist principles underlying online platforms that can algorithmically yield content capable of reinforcing biases and extremist views. Thus, in undertaking responsive and inclusive PL, Shelton et al.'s research called for teachers and their influencers to be trained in “exercising critical agency in their social media behavior” (p. 852).

In this section, we identified theories and conceptual models used to guide responsive research and practice in teacher learning and professional development that took place in technologically assisted and online environments. The theories and models provided ways to understand and to guide research and design as well as to create pathways for practice.

Question 2: What and How is Technology Used Responsively in Online and/or Technologically Assisted Environments?

The review demonstrated that a contextualized and myriad set of tools were used to achieve online responsiveness. They were used to reduce barriers and foster inclusivity, create online communities and affinity spaces, enhance accessibility, broaden learning opportunities, foster engagement, and advance learning. In the concept of prolepsis mentioned earlier that juxtaposed sociocultural thinking and criticality, Vossoughi and Gutiérrez (2017) pointed out Freire's conception of the human capacity to change the environment through tools is not a neutral act. It is a “continuous movement toward humanizing social relations” (p. 147), to make it better, real, and responsive. The choices of tools made in online teacher training and PD to be discussed in this section demonstrate this mindset and the deliberate undertakings that flowed from it to provide guidance to teachers to teach responsively.

Contextualized and Individualized Myriad Use of Online Technologies as Central to Responsiveness

Multiple studies (e.g., Phan, 2018; Deng et al., 2021) made use of a combination of learning management systems (LMSs) alongside discussion forums, local messaging, communication tools (e.g., WeChat for China; KakaoTalk for Korean), and virtual meeting tools to complement and enhance the LMS features (See Figure 4). Ren (2022) highlighted the importance of integrating local messaging and communication tools, given the social and cultural preferences of students. Such tools were often deemed necessary to supplement the LMS and facilitate effective communication and collaboration among learners.

Figure 4
Integration of Online Systems and Tools

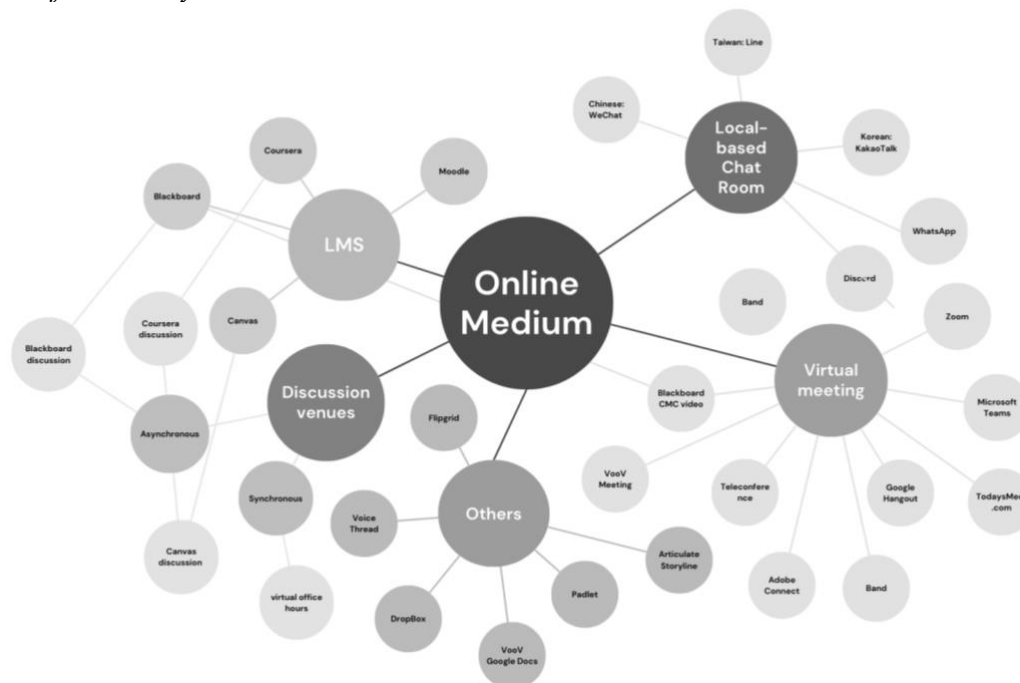


Figure 4 demonstrates the incorporation of multiple and myriad online systems and tools. Blackboard (N=5, e.g., Hode et al., 2018; Taylor & Yan, 2018; Walker et al., 2021) and Canvas (N=2, e.g., Braunstein et al., 2021; Walker et al., 2021) were two widely used LMSs to post course content, assignments, and assessments, and to provide a platform to engage in discussion and collaborate with their peers (e.g., Taylor & Yan, 2018). In addition, technical structures such as file sharing and video conferencing were also available. Sociability structures were added to online platforms, including blogging, group and private messaging, chatting in real-time, and personalized notifications. WhatsApp (N=2, e.g., Gleason, 2021), Instagram (N=3, e.g., Gleason, 2021; Shelton et al., 2022), Skype (N=3, e.g., Brown et al., 2021; Deng et al., 2021; Gleason, 2021), and other social media platforms were also used to facilitate asynchronous communication to increase sociability. Discussion venues, whether in an LMS or as an individual tool (e.g., Facebook page), were used to create online affinity spaces where learners could make, comment on, and share cultural artifacts (e.g., images, videos, and texts) and by doing so, adapted and added to these artifacts' multimodal designs. Collaborative tools (e.g., Google Docs and Padlet) facilitated small group collaboration and provided opportunities for students to engage in collaborative activities (e.g., Deng et al., 2021; Gleason, 2021).

Technology Used to Reduce Barriers and Bridge Differences

Online mediums have the potential to mitigate geographical, linguistic, and cultural barriers, thereby facilitating communication and collaboration among individuals from diverse backgrounds. Deng et al. (2021) explored the use of online tools to support cross-cultural pedagogy in the context of a project involving pre-service teachers in Hong Kong and the United States. The study reported the use of several online tools to facilitate communication, collaboration, and resource sharing among students, including Slack, Google Docs, and Zoom.

These tools were used for instant messaging, threaded discussion forums, video conferencing, and monitoring group progress. Braunstein et al. (2021) examined how online discussion boards can be used as a pedagogical strategy to build on the cultural and linguistic resources for pre-service teachers of color. The study analyzed thirty discussion board posts by pre-service teachers of color and highlighted how online tools can allow minority students to connect with online communities, share their identities, and augment their voices. The study found that the discussion board allowed participants to contribute to discussions of various topics in ways that traditional face-to-face lectures did not allow, and that technology allowed participants to freely reflect, critique, and extend knowledge. Phan (2018) illustrated how a massive open online course (MOOC) leverages discussion forums and virtual meetings to offer language assistance, content support, and various forms of online interactions to learners, using various online tools such as Coursera, Facebook page, Google Hangout, and PowerPoint for course delivery. The author suggested the use of translation and subtitle tools to increase accessibility for learners with different language backgrounds. The study highlighted the importance of building in-course components that provided flexibility for diverse learners, such as choices of language for assignment submissions and content materials categorized by levels. Similarly, Ren's (2022) study explored instructional design practices for distance teaching and learning in a cross-cultural context. She suggested the use of various technologies to facilitate cross-cultural learning, including video conferencing platforms like Adobe Connect and Zoom, e-learning authoring video tools like Articulate Storyline, and social media platforms like WeChat and KakaoTalk to facilitate communication among learners from diverse cultural backgrounds. In her practice, she established locally based chat rooms within a transnational education program to address challenges related to cultural differences and facilitate a smooth transition. The use of social media chat rooms like WeChat and KakaoTalk allowed learners to communicate in their native languages and use familiar communication tools. They provided learners with a sense of cultural and linguistic familiarity and consequently, enhanced their learning experience.

Technology Used to Increase Sociability, and Build Community

The community and networking features of educational technology tools can be leveraged to construct diverse online communities, providing multiple opportunities for dialogue and flattening communication hierarchies. In Gleason's (2021) study, a range of educational technology tools were used to facilitate virtual exchanges and global collaboration in a teacher education course. These tools included email, WhatsApp, Instagram, Skype, Snapchat, Discord, FaceTime, Flipgrid, Google Docs, Google Hangouts, Line, and Zoom. Video and audio tools such as Skype, Zoom, and FaceTime enabled “in the moment” communication which fostered a sense of presence and immediacy in engagement with others. Vail's (2018) article highlighted the importance of creating a globally accessible classroom platform and incorporating online case studies into the curriculum to create a third space online where students of varying nationalities can participate in inclusive and expansive dialogue. Student participation and engagement were encouraged by familiar shared spaces, and peer-to-peer responsiveness was evident through online postings and subsequent in-class discussions. Boada (2022) highlighted the fact that online platforms with sociability features, such as blogging, group and private messaging, real-time chatting, videoconferencing, and personalized notifications for new posts and activities were essential for fostering a sense of community and improving knowledge. By

cultivating an online community of practice, teachers were able to overcome barriers related to isolation and connect with others who shared similar pedagogical goals and challenges.

Technology Used to Increase Accessibility and Expand Opportunity

The online medium was employed to facilitate equitable access to educational resources across geographical regions and time constraints. Walker et al. (2021) conducted a qualitative cross-case study to examine the effectiveness of Blackboard and Canvas delivering courses to prepare teachers for culturally and linguistically diverse (CLD) urban schools. The study also found that online teacher education courses can effectively prepare teachers to work with CLD students in urban schools, which has implications for addressing educational inequities and improving outcomes for CLD students. In Gleason (2021), the focus was on designing and implementing an educational innovation, the Virtual Exchange (VE), which facilitated the development of global collaboration and empowered intercultural learning skills among pre-service teachers (PSTs). Incorporating the VE into the PSTs' teacher education program enabled them to engage in an intercultural exchange with Turkish counterparts. The VE platform allowed for synchronous and asynchronous communication, which accommodated different time zones and allowed for flexibility in scheduling participation. The VE also provided both groups with access to cultural and linguistic educational resources and materials which were previously not available to them.

Technology Used to Promote Engagement and Advance Learning

Online technologies and mediums were utilized to support just-in-time teacher learning, regular and continuous learning for in-service teachers to be responsive to cultural and linguistic differences. Brown et al. (2021) proposed a framework for continuous professional development for in-service teachers to promote culturally relevant and responsive teaching during the COVID-19 pandemic. Their virtual professional development framework included personal coaching, self-reflection, classroom observations, and professional learning communities facilitated through virtual platforms such as Zoom, Skype, Microsoft Teams, and Google Hangouts. In McCollough's (2020) study, online mediums such as discussion forums and digital presentation boards were used to support the implementation of Transformational Reading Exercises (TREs) in a science teacher preparation class at Texas A&M University. The use of technology facilitated the implementation of the TRE approach and provided opportunities for open discussions and authentic implementation of culturally relevant teaching.

The utilization of educational technology tools in the online medium enhanced cultural and linguistic responsiveness in teachers' learning. Consequently, technology also impacted their efforts to include diverse students in the online classroom.

Question 3: Who and How Are Teachers and Instructors Being Guided to Teach Responsively?

In responding to the first and second research questions, the review demonstrated the sociocultural theoretical underpinnings of responsive online teacher learning and PD research and practice, including technology choices and usage. In responding to the third question, the populations targeted for the support in the articles reviewed once again reflected sociocultural influences. The specific groups targeted and the types and goals of support they received were

mediated by the view that individuals are “sociohistorical beings” (Vossoughi & Gutierrez, 2016, p. 155). The review thus demonstrated that individuals’ identities, the contexts in which they lived and worked, and past and present experiences mattered in responsive online teacher education and PD programs.

Thus, in the articles reviewed, pre-service and in-service teachers from minority, majority, and international communities were the populations addressed in the online teacher learning and professional development (PD) that focused on CLI responsiveness. Minority communities were often referred to as “culturally and linguistically diverse groups” in the literature. We define the majority community as groups of people with social, economic, political, and educational access and advantages (Seyranian et al., 2008) and the international community as people living outside the United States. The literature review suggested ways the specific groups of teachers could improve their cultural and linguistic responsiveness.

Support for Instructors from Minority Communities

Online teacher learning and PD provided support for teachers from minority communities. The responsive approaches we identified centered on the empowerment of voice and values. For example, Braunstein et al. (2021) suggested strategies, such as using an online discussion board, that centralized the importance of voice for pre-service teachers of color. Teachers felt connected through online tools that allowed them to share their thoughts and ideas with people from other cultures. Shelton et al. (2022) collaborated with individuals from historically marginalized groups (e.g., teachers of color and non-cisgender individuals) to develop strategies to amplify their voices and social justice agenda with specific tools. For example, teachers were guided to use Instagram posts from “justice-oriented education influencers” to boost cultural competence in their students (Shelton et al., 2022, p. 840). This is because the authors found that the influencers’ content provided professional learning of social justice and inclusive pedagogy. They also shared resources that honored culture in students’ homes to support their diverse needs and inspire “critical consciousness” (Shelton et al., 2022, p. 849). Bunkowski and Shelton (2019) focused on the inclusion of valued voices from within Native American communities in their work on designing online teacher professional development in a U.S. tribal college. Cultural and linguistic responsiveness in the program was achieved through collaborating specifically with community leaders and incorporating their opinions in developing the online PD program for teachers. Leaders at the college shared their views on the most successful strategies they found that allowed the school “to achieve its mission, vision, and core values through online education” (p. 2).

Support for Instructors from Majority Communities

The development of a culturally responsive online classroom characterized by cultural awareness and responsiveness was equally valuable to teachers from majority communities. Researchers primarily targeted cultural awareness and cultural competence.

To best support students from culturally and linguistically diverse backgrounds (CLD), teachers from the community were engaged in self-reflection to increase cultural competence. Practices included the use of online journal entries that allowed pre-service teachers to review their interactions with students (Gleason, 2021). Donovan et al. (2021) used a self-study

approach to promote equity and inclusion among faculty via online synchronous meetings and asynchronous online conversations. For example, they were asked to reflect on pedagogical practices and other aspects of the course content for unintended biases as well as for practices that required improvements to scaffold students' learning. Other studies, such as those by Goldstein Hode et al. (2018) and Walker et al. (2021), reviewed practices in established training programs for faculty and teacher education graduate students, including self-reflections, in efforts to improve their diversity awareness and ways to enact the awareness in culturally and linguistically responsive ways.

Support for Instructors Working with Students from International Communities

The studies reviewed focused on teacher learning and PD by emphasizing that responsiveness can be achieved by focusing on cross-cultural competence and communication skills. Responsiveness was also about situating online instruction in local contexts and by using the medium as a "third space" (Bhabha, 2004).

Gleason (2021) created a virtual exchange program between pre-service teachers (PSTs) from a predominantly white institution and PSTs at an international university. Through this program, PSTs increased their cultural awareness and cultural competence while learning alongside overseas peers. Similarly, Tsuda et al.'s (2022) study showcased an example to be used by teachers pertaining to an online cross-cultural learning classroom community that increased intercultural communication. In the teaching example, elementary students from the U.S. and Japan introduced their own cultural activities to others by filming, uploading, and watching each other's videos with the support of online technologies (e.g., Google Drive). Results showed that students who participated in this project improved their communication skills both in and outside the classroom.

Studies reviewed also examined successful programs to illustrate to teachers and instructional designers the importance of incorporating culturally responsive pedagogy to facilitate intercultural communication skills. For example, in evaluating an online exchange program between African and U.S. students and faculty (Collaborative Online International Learning (COIL), Vahed and Rodriguez (2021) saw the impact of the pedagogical principles. The COIL program was successful because the use of the pedagogy fostered meaningful cultural exchanges and developed intercultural awareness across shared multicultural online learning environments. Similarly, Liu and Shirley (2021) observed that the incorporation of direct instruction on cultural diversity, cultural acceptance, and intercultural awareness led to a successful online exchange program between U.S. and German students learning to teach during the COVID-19 pandemic. This exchange program effectively increased intercultural competence in international communication, which in turn, supported learning.

Ren (2022) explored ways for online instructional designers (including teachers who design classroom interactions) to overcome the challenges in transnational and international communication in classrooms with international participants. The author pointed out that designers should be responsive to local specificities such as government regulations and availability of digital resources that may challenge reciprocity in student participation in online classrooms. Yoon's (2021) study demonstrated that contextualizing cultural differences may

need to precede online instruction. For example, Korean teachers were better able to teach in an online science classroom, in the Virtual and Open Integration of Culture for Education (VOICE) program, once they understood how American elementary students interpreted science concepts in ways that were culturally different from how the concepts were understood in Korea.

The studies also demonstrated that the online medium and technologies within them enabled the creation of third spaces to build bridges and promote communication across borders. Teaching responsiveness can happen in these spaces. Deng et al. (2021) conducted an online communication project of pre-service teachers from the U.S. and Hongkong through Slack and Zoom. The study showed that the application of web-based tools boosted and created “safe” and inviting spaces for the discussion of students’ understanding of cultural differences.

The literature review demonstrated that responsive online teacher education and PD supported, in specific ways, teachers from minority, majority, and international communities. The online medium and technology, as seen in the literature review, were being utilized to optimize their undertakings to do so.

Discussion and Implications

The literature review demonstrated to us, as researchers and practitioner scholars, that “Praxis” (Freire, 1989) guided online teacher training and PD programs in the articles we included. In this review, on the whole, we saw socioculturally informed theories and practices working in tandem with each other.

However, a discussion of the equity for the teachers themselves in gaining the training and professional development in teaching responsively would be beneficial. Teachers’ individual circumstances and needs require differentiated approaches and pathways for them to gain, take ownership of, and enact the expertise they gained in ways that are aligned with who they are as teachers and the specific demands of their teaching contexts. Like the resources identified in Tate and Warschauer (2022) as requirements for students, equity for teachers requires equitable access not only to physical (e.g., space, hardware, internet) and training resources (e.g., training in literacy, education, and self-regulated learning), but also, most of all, to social resources (e.g., support from community, teachers, peers).

To that end, online teaching education and PD programs should always incorporate learning as a socioculturally mediated process. Thus, it was reinforcing to see that, in studies reviewed, online Communities of Practice (CoPs) were essential sociocultural components of teacher learning and PD. CoP members can consist of practitioners at every level of expertise. Membership enables teachers to develop a shared repertoire of resources including experiences, stories, tools, ways of addressing recurring problems which are, in short, a shared practice based on experiences and disciplinary knowledge. They engage in sustained interaction over time. Learning in a community of like-minded people builds relationships that impact learning and provides a space to come together. Time spent in the community provides opportunities for the teachers to nurture and take ownership of a culture of responsive teaching practices of their own.

Most importantly in CoPs, teachers are able to interact with “more knowledgeable others” (MKOs) or as “temporary others” (Johnson & Golombek, 2016). An MKO includes anyone who possesses a higher or better understanding and/or ability, or a peer or even a novice teacher with similar interests and vision, or who shares the same circumstances. The MKO mediation enables teachers to reach Vygotsky’s Zone of Proximal Development (ZPD) (Vygotsky, 1978) through which they can achieve more than they can achieve alone. Thus, embedding MKOs or temporary others in online teacher education and PD are responsive acts in that it empowers teachers by affirming their expertise and validating their contributions to move knowledge and best practices forward.

At the beginning of the literature review, we referred to Bonk and Wiley’s (2020) waves of technological changes impacting online teaching and learning. We are riding now on the new wave of Artificial Intelligence (AI) which provides a ready opportunity for novel ways to use MKOs and temporary others in responsive online teacher education and PD programs. Instead of the human-to-computer interactions, AIs’ “human-to-human-like” interactional capacities can be useful. These interactions are defined by personalized, customized back-and-forth engagement, and reciprocity that could simulate for teachers’ interactions with live MKO human peers or with temporary others. The 2023 report from the US Department of Education on AI and the future of teaching and learning provides several ideas as to how AI can be of assistance. They include the following:

- a) Assist teachers to identify and analyze models of responsive practices; patterns of their own responsive practices and that of others; and possible biases in their own and the practices of others; recommendations/resources to rectify the biases.
- b) Assist teachers to access online information through learner analytics that can help them to be responsive and specific in addressing the different needs of diverse students.
- c) Support teachers to select and adapt technological tools to be used in the online medium in ways appropriate to students’ interest, purposes, and circumstances.
- d) Inform teachers through alert tools that bring their attention to events in the macro context that could affect the daily lives of diverse students. The information can help teachers with attending responsively to the ways they impact students’ classroom performance.

The suggestions above demonstrate that for online teachers, AI can provide a readily available support network in their efforts to teach responsively. To do so will take everyone and everything that the teachers can muster.

Declarations

The authors (Pawan, Li, Billings Dopwell, Nijiati, Harris & Iruoje) declare no conflicts of interest. The authors (Pawan, Li, Billings Dopwell, Nijiati, Harris & Iruoje) declare no funding for this research. This research did not require ethics board permission because it did not enroll human subjects.

References

- Ardley, J., & Repaskey, L. (2019). Video annotated technology: Exploring teacher candidates' adaptation to a new tool in student teaching. *i-Manager's Journal of Educational Technology*, 16(2), 35.
- Aronson, B., & Laughter, J. (2016). The theory and practice of culturally relevant education: A synthesis of research across content areas. *Review of Educational Research*, 86(1), 163-206.
- Beijaard, D. (2019). Teacher learning as identity learning: models, practices, and topics. *Teachers and Teaching*, 25(1), 1-6.
- Bhabha, H. (2004). *The location of culture*. Routledge.
- Bennett, C. (2001). Genres of research in multicultural education. *Review of Educational Research*, 71(2), 171-217.
- Boada, D. A. (2022). Cultivating an online teacher community of practice around the instructional conversation pedagogy: a social network analysis. *Educational Technology Research and Development*, 70(1), 289-319.
- Bonk, C. J., & Wiley, D. A. (2020). Preface: Reflections on the waves of emerging learning technologies. *Educational Technology Research and Development*, 68(4), 1595-1612.
- Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, 36, 81-109.
DOI:10.1017/S0261444803001903
- Braunstein, L. B., Ozdemir, O., & Garcia, C. (2020). "Danger of a single story": Pre-service teachers' of color use of an online discussion board to discuss the essentialization of culture. *Multicultural Learning and Teaching*, 16(1), 5-27.
- Brown, C., Correll, P., & Stormer, K. J. (2021). The "new" normal: Re-imagining professional development amidst the COVID-19 pandemic. *Middle School Journal*, 52(5), 5-13.
- Bunch, G. C. (2013). Pedagogical language knowledge: Preparing mainstream teachers for English learners in the new standards era. *Review of Research in Education*, 37(1), 298-341.
- Bunkowski, L., & Shelton, K. (2019). Mission, vision, and core values through online education: A case study on tribal college leadership. *Quarterly Review of Distance Education*, 20(4), 1-26.

- Buyse, V., & Hollingsworth, H. L. (2009). Program quality and early childhood inclusion: Recommendations for professional development. *Topics in Early Childhood Special Education, 29*(2), 119-128.
- Cochran-Smith, M. (2005). Teacher educators as researchers: Multiple perspectives. *Teaching and Teacher Education, 21*(2), 219-225.
- Deng, L., Shen, Y. W., & Chan, J. W. W. (2021). Supporting cross-cultural pedagogy with online tools: Pedagogical design and student perceptions. *TechTrends: Linking Research & Practice to Improve Learning, 65*(5), 760–770. <https://doi-org.proxyiub.uits.iu.edu/10.1007/s11528-021-00633-5>
- Donovan, L., Green, T.D., Besser, E & Gonzalez, E. (2021). The whole is greater than the sum of the parts: A self-study of equity and inclusion in online teacher education. *Studying Teacher Education, 17*(1), 57-81. DOI: [10.1080/17425964.2021.1897975](https://doi.org/10.1080/17425964.2021.1897975)
- Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Stanford University Press.
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open, 4*(1), 1-10. <https://doi.org/10.1177/2158244014522633>
- Engerman, J. A., & Otto, R. F. (2021). The shift to digital: designing for learning from a culturally relevant interactive media perspective. *Educational Technology Research and Development, 69*, 301-305.
- Eppard, J., Kaviani, A., Bowles, M., & Johnson, J. (2021). EdTech cultururation: Integrating a culturally relevant pedagogy into educational technology. *Electronic Journal of e-Learning, 19*(6), 516-530.
- Freeman, D. (2009). The scope of second language teacher education. In A. Burns and J. Richards, *The Cambridge Guide to Second Language Teacher Education*, 11-19. Cambridge University Press.
- Freeman, D., & Johnson, K. E. (1998). Reconceptualizing the knowledge-base of language teacher education. *TESOL Quarterly, 32*(3), 397-417.
- Freire, P. (1989). *Education for the critical consciousness*. Continuum.
- Gay, G. (2010). Acting on beliefs in teacher education for cultural diversity. *Journal of Teacher Education, 61*(1-2), 143-152.
- Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice*. Teachers College Press.

- Gleason, B., & Jaramillo Cherrez, N. (2021). Design thinking approach to global collaboration and empowered learning: Virtual exchange as innovation in a teacher education course. *TechTrends: Linking Research & Practice to Improve Learning*, 65(3), 348–358. <https://doi-org.proxyiub.uits.iu.edu/10.1007/s11528-020-00573-6>
- Goin Kono, K. & Taylor, S. (2021). Using an ethos of care to bridge the digital divide: Exploring faculty narratives during a global pandemic. *Online Learning*, 25(1), 151-165. <https://doi.org/10.24059/olj.v25i1.2484>
- Goldstein Hode, M., Behm-Morawitz, E., & Hays, A. (2018). Testing the effectiveness of an online diversity course for faculty and staff. *Journal of Diversity in Higher Education*, 11(3), 347–365. <https://doi.org/10.1037/dhe0000063>
- Grangeat, M., & Gray, P. (2008). Teaching as a collective work: analysis, current research and implications for teacher education. *Journal of Education for Teaching*, 34(3), 177-189.
- Gunawardena, C., Frechette, C., & Layne, L. (2018). *Culturally inclusive instructional design: A framework and guide to building online wisdom communities*. Routledge.
- Hill, B., Tulloch, M., Mlcek, S., & Lewis, M. (2020). The “within” journey: assessment of the online Indigenous Australian cultural competence training programme at Charles Sturt University. *The Australian Journal of Indigenous Education*, 49(1), 14-22.
- Hofstede, G. (1980). *Culture’s consequences: International differences in work-related values*. Sage.
- Hollie, S. (2017). *Culturally and linguistically responsive teaching and learning: Classroom practices for student success*. Shell Education.
- Howrey, S. T. (2018). Pre-service teachers’ changing perspectives of Mexican immigration following an online multicultural literature experience. *Multicultural Learning and Teaching*, 15(1), 20170012
- Johnson, K. E., & Golombek, P. R. (2016). Mindful L2 teacher education: A sociocultural perspective on cultivating teachers' professional development. *Routledge*.
- Kumi-Yeboah, A., Dogbey, J., Yuan, G., & Smith, P. (2020). Cultural diversity in online education: An exploration of instructors’ perceptions and challenges. *Teachers College Record*, 122(7), 1-46.
- Ladson-Billings, G. (1994). What we can learn from multicultural education research. *Educational Leadership*, 51(8), 22-26.
- Liu, Y. & Shirley, T. (2021). Without crossing a border: Exploring the impact of shifting study abroad online on students’ learning and intercultural competence development during the

- COVID-19 pandemic. *Online Learning*, 25(1), 182–194.
<https://doi.org/10.24059/olj.v25i1.2471>
- McCollough, C. (2020). Using culturally relevant transformational reading in a COVID-era online science teacher preparation class. *The Electronic Journal for Research in Science & Mathematics Education*, 24(4), 6-21.
- Milner, H. R. (2006). Preservice teachers' learning about cultural and racial diversity: Implications for urban education. *Urban Education*, 41, 343-375.
- Onwuegbuzie, A. J., Frels, R. K., & Hwang, E. (2016). Mapping Saldana's coding methods onto the literature review process. *Journal of Educational Issues*, 2(1), 130-150.
- Parkhouse, H., Lu, C. Y., & Massaro, V. R. (2019). Multicultural education professional development: A review of the literature. *Review of Educational Research*, 89(3), 416-458.
- Phan, T. (2018). Instructional strategies that respond to global learners' needs in massive open online courses. *Online Learning*, 22(2), 95-118. <https://doi.org/10.24059/olj.v22i2.1160>
- Polat, N., Mahalingappa, L., Hughes, E., & Karayigit, C. (2019). Change in preservice teacher beliefs about inclusion, responsibility, and culturally responsive pedagogy for English learners. *International Multilingual Research Journal*, 13(4), 222-238.
- Potter, J. (2012). Discourse analysis and discursive psychology. In H. Cooper (Ed.), *APA Handbook of research methods in psychology: Quantitative, qualitative, neuropsychological and biological* (pp. 111-130). American Psychological Association Press.
- Power-Carter, S., Zakeri, B., & Kumasi, K. (2019). Theorizing and languaging Blackness: Using the African philosophy of Ubuntu and the concept of Sawubona. In *Languaging relations for transforming the literacy and language arts classroom* (pp. 195-215). Routledge.
- Rosenblatt, L. (1978). *The reader, the text, the poem: The transactional theory of the literary work*. Southern Illinois Press.
- Ren, X. (2022). Autoethnographic research to explore instructional design practices for distance teaching and learning in a cross-cultural context. *TechTrends*, 66(1), 47-55.
<https://doi.org/10.1007/s11528-021-00683-9>
- Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. *Teaching and Teacher Education*, 101, 103305.
- Schachter, R. E. (2015). An analytic study of the professional development research in early childhood education. *Early Education and Development*, 26(8), 1057-1085.

- Seyranian, V., Atuel, H., & Crano, W. D. (2008). Dimensions of majority and minority groups. *Group Processes & Intergroup Relations*, 11(1), 21–37. <https://doi.org/10.1177/1368430207084>
- Shelton, C. C., Curcio, R., Carpenter, J. P., & Schroeder, S. E. (2022). Instagramming for justice: The potentials and pitfalls of culturally relevant professional learning on Instagram. *TechTrends*, 66(5), 837-854. <https://doi.org/10.1007/s11528-022-00758-1>
- Siemens, G. (2005). Connectivism: Learning as network-creation. *ASTD Learning News*, 10(1), 1-28.
- Siraj, I., Kingston, D., & Neilsen-Hewett, C. (2019). The role of professional development in improving quality and supporting child outcomes in early education and care. *Asia-Pacific Journal of Research in Early Childhood Education*, 13(2), 49-68.
- Suh, S., & Michener, C. J. (2019). The preparation of linguistically responsive teachers through dialogic online discussion prompts. *Teaching and Teacher Education*, 84, 1-16.
- Tate, T. & Warschauer, M. (2022). Equity in online learning. *Educational Psychologist*, 57(3), 192-206. <https://doi.org/10.1080/00461520.2022.2062597>
- Tsuda, M., Olsen, E. B., Sato, M., Wyant J. D. & Watanabe, R. (2022). Developing intercultural competence in elementary physical education: An online international collaboration between the U.S. and Japan. *Curriculum Studies in Health and Physical Education*, 13(2), 138-155. <https://doi.org/10.1080/25742981.2021.1992291>
- Turkan, S., De Oliveira, L. C., Lee, O., & Phelps, G. (2014). Proposing a knowledge base for teaching academic content to English language learners: Disciplinary linguistic knowledge. *Teachers College Record*, 116(3), 1-30.
- Vahed, A. & Rodriguez, K. (2021). Enriching students' engaged learning experiences through the collaborative online international learning project. *Innovations in Education and Teaching International*, 58(5), 596-605. <https://doi.org/10.1080/14703297.2020.1792331>
- U.S. Department of Education, Office of Educational Technology (2023). *Artificial Intelligence and future of teaching and learning: Insights and recommendations*. <https://tech.ed.gov/>
- Vail, H. (2018). Examining the need for culturally responsive digital learning. *Waikato Journal of Education*, 23(2), 17-23.
- Vossoughi, S., & Gutiérrez, K. D. (2016). Critical pedagogy and sociocultural theory. In *Power and Privilege in the Learning Sciences* (pp. 157-179). Routledge. <https://doi.org/10.4324/9781315685762>
- Vygotsky, L. S. (1978). The role of play in development. In *Mind in Society* (pp. 92–104). Harvard University Press.

- Walker, D., Mahon, E., & Dray, B. (2021). Can we prepare culturally and linguistically responsive teachers online? A cross-case analysis of online and on-campus courses. *Urban Education*, 56(7), 1015–1041. <https://doi.org/10.1177/0042085917735970>
- Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369-387.
- Warren, A. N. (2018). Exploring experienced teachers' constructions of culturally and linguistically diverse students in an online class. *International Journal of Multicultural Education*, 20(2), 58-80.
- Westine, C. D., Oyarzun, B., Ahlgrim-Delzell, L., Casto, A., Okraski, C., Park, G., ... & Steele, L. (2019). Familiarity, current use, and interest in universal design for learning among online university instructors. *International Review of Research in Open and Distributed Learning*, 20(5), 20-41.
- Yoon, J., Ko, Y., & Lee, H. (2021). Virtual and Open Integration of Culture for Education (VOICE) with Science Teacher Candidates from Korea during COVID-19, *Asia-Pacific Science Education*, 7(2), 384-420. <https://doi.org/10.1163/23641177-bja10031>

Appendix A

Table A1*References Included in the Systematic Review*

	Author	Title	Journal
1	Phan (2018)	Instructional strategies that respond to global learners' needs in massive open online courses	<i>Online learning</i>
2	Hode et al. (2018)	Testing the effectiveness of an online diversity course for faculty and staff.	<i>Journal of Diversity in Higher Education</i>
3	Vail (2018)	Examining the need for culturally responsive digital learning.	<i>Waikato Journal of Education</i>
4	Warren (2018)	Exploring Experienced Teachers' Constructions of Culturally and Linguistically Diverse Students in an Online Class.	<i>International Journal of Multicultural Education</i>
5	Howrey, Shannon Tovey (2018)	Pre-Service Teachers' Changing Perspectives of Mexican Immigration Following an Online Multicultural Literature Experience	<i>Multicultural Learning and Teaching</i>
6	Suh (2019)	The preparation of linguistically responsive teachers through dialogic online discussion prompts	<i>Teaching and Teacher Education</i>
7	Polat et al. (2019)	Change in preservice teacher beliefs about inclusion, responsibility, and culturally responsive pedagogy for English learners.	<i>International Multilingual Research Journal</i>
8	Ardley, Jillian; Repaskey, Lisa (2019)	Video Annotated Technology: Exploring Teacher Candidates' Adaptation to a New Tool in Student Teaching	<i>i-Manager's Journal of Educational Technology</i>
9	Bunkowski, Lisa; Shelton, Kaye (2019)	Mission, Vision, and Core Values through Online Education.	<i>Quarterly Review of Distance Education</i>

- | | | | |
|----|---|---|---|
| 10 | Westine, Carl D., et al. (2019) | Familiarity, Current Use, and Interest in Universal Design for Learning among Online University Instructors | <i>International Review of Research in Open and Distributed Learning</i> |
| 11 | Hill, Barbara; Tulloch, Marian; Mlcek, Susan; Lewis, Melinda (2020) | The 'Within' Journey: Assessment of the Online Indigenous Australian Cultural Competence Training Programme at Charles Sturt University | <i>The Australian Journal of Indigenous Education</i> |
| 12 | McCollough, Cherie (2020) | Using Culturally Relevant Transformational Reading in a COVID-Era Online Science Teacher Preparation Class | <i>The Electronic Journal for Research in Science & Mathematics Education</i> |
| 13 | Kumi-Yeboah, A., Dogbey, J., Yuan, G., & Smith, P. (2020) | Cultural Diversity in Online Education: An Exploration of Instructors' Perceptions and Challenges. | <i>Teachers College Record</i> |
| 14 | Yoon (2021) | Virtual and Open Integration of Culture for Education (VOICE) with Science Teacher candidates from Korea during COVID-19 | <i>Asia-Pacific Science Education</i> |
| 15 | Gleason (2021) | Design Thinking Approach to Global Collaboration and Empowered Learning: Virtual Exchange as Innovation in a Teacher Education Course | <i>TechTrends</i> |
| 16 | Brown et al (2021) | The “New” Normal: Re-imagining Professional Development amidst the COVID-19 Pandemic | <i>Middle School Journal</i> |
| 17 | Eppard et al. (2021) | EdTech Culturation: Integrating A Culturally Relevant Pedagogy into Educational Technology. | <i>Electronic Journal of e-Learning</i> |
| 18 | Engerman and Otto (2021) | The Shift to Digital: Designing for Learning from a Culturally Relevant Interactive Media Perspective. | <i>Educational Technology Research and Development</i> |
| 19 | Braunstein, Lauren B.; Ozdemir, Ozgur; Garcia, Chad (2021) | “Danger of a Single Story”: Pre-Service Teachers' of Color Use of an Online Discussion Board to Discuss the Essentialization of Culture | <i>Multicultural Learning and Teaching</i> |

- | | | | |
|----|---|--|--|
| 20 | Deng, Liping; Shen, Ying Wang; Chan, Jackie W. W. (2021) | Supporting Cross-Cultural Pedagogy with Online Tools: Pedagogical Design and Student Perceptions | <i>TechTrends</i> |
| 21 | Donovan, Loretta; Green, Tim. D.; Besser, Erin; Gonzalez, Edward (2021) | The Whole Is Greater than the Sum of the Parts: A Self-Study of Equity and Inclusion in Online Teacher Education | <i>Studying Teacher Education</i> |
| 22 | Goin Kono, Kari; Taylor, Sonja (2021) | Using an Ethos of Care to Bridge the Digital Divide: Exploring Faculty Narratives During a Global Pandemic | <i>Online Learning</i> |
| 23 | Walker, Dana; Mahon, Elizabeth; Dray, Barbara (2021) | Can We Prepare Culturally and Linguistically Responsive Teachers Online? A Cross-Case Analysis of Online and On-Campus Courses | <i>Urban Education</i> |
| 24 | Boada, D. A. (2022) | Cultivating an Online Teacher Community of Practice around the Instructional Conversation Pedagogy: A Social Network Analysis. | <i>Educational Technology Research and Development</i> |
| 25 | Tsuda et al (2022) | Developing Intercultural Competence in Elementary Physical Education: An Online International Collaboration between the US and Japan | <i>Curriculum Studies in Health and Physical Education</i> |
| 26 | Shelton et al. (2022) | Instagramming for Justice: The Potentials and Pitfalls of Culturally Relevant Professional Learning on Instagram | <i>TechTrends</i> |
| 27 | Ren (2022) | Autoethnographic Research to Explore Instructional Design Practices for Distance Teaching and Learning in a Cross-Cultural Context | <i>TechTrends</i> |
-