Empowering Online Teaching: A System Review of Online Instructors' Professional Development in Higher Education

Abstract

This paper begins with the introduction of online education development in U.S. higher education. It examines the challenges of online learning, highlighting that online education often yields poorer outcomes, with lower completion rates and fewer educational learning outcomes. It identifies key determinants impacting online learning outcomes: student agency, the level of interaction within online courses, and digital literacy. The study emphasizes the importance of professional development (PD) for online instructors, especially in community colleges. Critical pedagogy serves as the conceptual framework for the PD, advocating for educational systems that empower students and teachers to challenge oppressive structures and to contribute to educational equity. It stresses the need for instructors to be facilitators of learning, promoting active dialogue and collaborative knowledge construction. The paper discusses scaffolding strategies, promoting student agency, enhancing interaction, and integrating technology-enhanced learning (TEL) as essential components of PD for online instructors. The paper concludes by arguing for the necessity of humanizing online education, aligning it with the principles of critical pedagogy to create more inclusive and empathetic online classrooms. It suggests that as online education evolves, there is a responsibility to ensure that PD programs reflect these humanizing principles, contributing to a more equitable and reflective education system.

Keywords: Online Education, Professional Development, Critical Pedagogy

Introduction

Online education in post-secondary education has witnessed an unprecedented surge in the past fifteen years (Xu & Xu, 2019). Although the popularity of online courses signals greater accessibility and pedagogical flexibility, it also raises concerns about the quality of instruction and learning outcomes in these virtual learning environments. In other words, the increasing acceptance of online learning has not always been matched by improvements in student learning outcomes. This gap makes critical pedagogical approaches essential for improving the quality of online learning.

The rapid growth of online education, catalyzed by COVID-19, has increased attention to the quality of teaching and learning in virtual settings. The increase in professional development (PD) training programs aimed at improving online teaching skills reflects the education community's efforts to address concerns about the quality of online education (Bulman & Fairlie, 2022; Kang & Im, 2013). However, the research on online PD programs in higher education fields remains limited, particularly in the context of community colleges. Given the current educational environment, there is a pressing need for more studies on PD programs that address online teaching.

Incorporating the critical pedagogy of Paulo Freire into the study of PD programs for online instructors in higher education, this review emphasized the critical evaluation of such initiatives within higher education. This paper began with a historical exploration of online education development in U.S. higher education. Then, it examined the challenges and determinants of online learning outcomes. Leveraging a critical pedagogy framework, it delved into the specific content

and methods of professional development for online educators. This review aims to provide a detailed look at the online instructors' PD training to promote a more humanized online education.

The Landscape of Online Education

In the broad sense, post-secondary institutions started exploring the use of computer conferencing for delivering undergraduate courses in the mid-1980s. According to Harasim's (2000) seminal research about online education, key milestones include the invention of ARPANET (Advanced Research Projects Agency Network) in 1969, and the birth of e-mail and computer conferencing in 1971.

Building on these early developments, online education underwent transformative innovations in the late 20th century. It laid the foundation for the current landscape of online learning (Harasim, 2000). Notably, in the late 1980s, the Virtual Classroom project was initiated by Roxanne Hiltz. This project underscored the effectiveness of computer conferencing the undergraduate education through empirical research (Hiltz, 1994). Concurrently, institutions like the Ontario Institute for Studies in Education (OISE) at the University of Toronto and Connected Education affiliated with the New School for Social Research in New York, pioneered graduate-level courses using computer conferencing, promoting collaborative learning despite technological limitations (Harasim, 1987). During this period, the Open University successfully incorporated computer conferencing into extensive distance education, impacting 1500 students and nurturing online collaborative learning and community development (Harasim, 2000). These innovations collectively represent the transformative changes that occurred in online education, showcasing the evolution from traditional educational models to more dynamic, interactive, and collaborative forms of learning.

Online Education Development in U.S. Higher Education

The landscape of U.S. online education has undergone a significant transformation over the last decades. The trajectory of online education's development is marked by pivotal legislative milestones and technological advancements that have collectively shaped its current form (Xu & Xu, 2019).

A significant lead occurred in 1996 with the establishment of Western Governor's University (WGU), which was arguably the first "virtual university" in the United, supported by nineteen state governments (Meyer, 2009). WGU initially functioned as a repository of distance education courses from higher education institutions but later transitioned to a provider of competency-based programs and offered its own courses. Concurrently, several state university systems began to develop online courses derived from their existing curricula (Garn, 2009). These early online courses, often reliant on competency-based assessment, provided alternative educational pathways for students unable to participate in traditional, place-based universities.

Legislation has played a critical role in the development of online education. The Higher Education Act (HEA) of 1992 implemented the "50 percent rule", which restricted federal funding for institutions heavily reliant on discant education reliant on distance education. Meanwhile, HEA also restricted eligibility for federal financial aid and loans for students whose course enrollment consisted of more than half through distance education (Sen. Pell, 1992). The rule was amended in 1998 to allow for the Distance Education Demonstration Program (DEDP), which enabled select

institutions to bypass the 50 percent limitation. The 50 percent rule's eventual repeal in 2006 catalyzed the growth of exclusively online education, with online bachelor's degree offerings rising from a mere 0.5% in 2000 to over 6% in 2012 (Deming et al., 2016; Parsad & Lewis, 2008; Xu & Xu, 2019).

The period between 2012 and 2016 witnessed a remarkable surge in online course enrollment, from 5.4 million to 6.4 million students, indicative of the escalating demand for flexible learning modalities (Xu & Xu, 2019). COVID-19 has also boosted online education. In fall 2021, 61% of undergraduates enrolled in at least one online course, and 28% studied exclusively online, a decline from the pandemic's peak but an increase over pre-COVID-19 figures, indicating a sustained boost in online education due to the pandemic (NCES, 2021).

Regardless of one's perception of online learning, advancements in educational technology, such as learning management systems (LMS), have facilitated a pedagogical shift toward more interactive and student-centered teaching methods. The advent of Massive Open Online Courses (MOOCs) by leading universities has further expanded access to educational resources (Palloff & Pratt, 2011). The impact of these developments has been profound, democratizing access to education and enabling a broader reach to diverse student populations.

Online Education Growth in Community Colleges

Community colleges serve a critical role in U.S. higher education, catering to over 7 million students in 2022, which represents more than 30% of all postsecondary enrollments (NCES, 2022). The open-access institutions have historically provided educational opportunities to diverse and often nontraditional students, many of whom face barriers to attending four-year colleges due to financial, time, or work constraints (Jaggars, 2018).

Embracing the need for flexibility, community colleges have been pioneers in distance education, transitioning from mail correspondence in the 1970s to sophisticated online platforms by the 1990s (Jaggars, 2018). The online courses offered are primarily asynchronous to accommodate the schedules of students, who are predominantly employed part-time and balancing multiple life demands (Parsad & Lewis, 2008; Jaggars, 2018; Xu & Xu, 2019). This has allowed for both increased scheduling flexibility for students and curricular expansion for colleges, especially for rural and small community colleges (Johnson & Berge, 2012).

The trend in online education across community colleges aligns with broader patterns observed in postsecondary institutions. As of 2012, around 10% of community college students were exclusively enrolled in online courses, while nearly half had taken at least one online course during their first several academic years (Jaggars, 2018; Jaggars & Xu, 2010). The private nonprofit sector saw a dramatic increase in online enrollment at two-year community colleges, skyrocketing from 7% to 40%. Community colleges had slightly higher online course enrollment than four-year institutions, with 31% vs. 29% in 2016 (Xu & Xu, 2019).

To support this trend, significant investments have been made, such as in California, where $100 million was allocated to create an online community college, with an additional $20 million for expanding online offerings at brick-and-mortar campuses (citation here). These efforts signify a

strong commitment to enhancing the accessibility and flexibility of community college education, ensuring that it continues to meet the evolving needs of its student body (State of California, 2018).

The evolution of online education is marked by a dynamic interplay between policy, technology, and institutional practices. Despite its roots in economic and political imperatives, online education has transcended its original confines to become a staple of contemporary higher education. This transition has compelled educators to adapt to new educational paradigms that prioritize flexibility, accessibility, and the integration of technology with pedagogical practice.

Foundations of PD Training for Online Instructors

In the quest to enhance the landscape of online education, a deep understanding of the multifaceted challenges and determinants that influence learning efficacy is significant. As U.S. higher education continues to expand its digital horizons, educators face the pressing need to adapt pedagogical strategies that resonate with the diverse needs of online learners. This section delves into the intricacies of online learning outcomes, exploring both the empirical evidence of performance disparities and their root causes. Then this section will explore how professional development inspired by critical pedagogy can become a catalyst for enhancing the effectiveness and empowerment of online educators.

Challenges of Online Learning Efficacy in Higher Education

Many studies examining student performance in online versus traditional courses concentrate primarily on 4-year institutions and community colleges. The majority of this research indicates that online education generally yields poorer outcomes compared to traditional face-to-face instruction. Specifically, students enrolled in online courses are less likely to complete the program, receive an educational award, or transfer to a four-year institution (Figlio et al., 2013; Jaggars & Bailey, 2010; Xu & Jaggars, 2011; Hart et al., 2018; Xu & Xu, 2019).

Various studies shed light on the challenges of online learning outcomes in 4-year universities. Figlio et al. (2013) discovered that students in a large introductory microeconomics course at a major research university exhibited modestly better performance in live lectures as compared to online formats, with this difference being pronounced among Hispanic students, male students, and lower-achieving students. These differences may be due to the live lectures offering better engagement and support for students who might otherwise struggle with the self-regulated nature of online learning. Additionally, a meta-analysis spanning seven studies revealed inconsistent differences in learning outcomes between online and face-to-face courses (Jaggars & Bailey, 2010), with some studies showing no significant differences (e.g., Caldwell, 2006) and others indicating varying degrees of efficacy based on course design and instructional strategies (e.g., Cavus et al., 2007). These studies collectively emphasize the complex and varied efficacy of online learning in selective university settings and underscore the necessity for tailored approaches to enhance student engagement and outcomes.

The challenges of online learning efficacy in community colleges are highlighted by several key studies, each revealing different aspects of student performance and outcomes in online versus traditional course formats. Xu & Jaggars (2011) found that students who took online courses at Washington State's community and technical colleges were more likely to fail or withdraw than those in face-to-face courses, with a reduced likelihood of returning for subsequent terms or

achieving educational awards or transfer to four-year institutions. Similarly, Johnson and Mejia (2014) observed that while online learning increased access to higher education in the California Community College system, it did not effectively address achievement gaps. Students were less likely to complete online courses with a passing grade and achievement gaps were even larger in online settings compared to traditional classes. Hart et al. (2018) reinforced these findings, noting that students in the California Community College system had poorer outcomes in online courses in terms of completion and passing grades, and were more inclined to repeat courses taken online but less likely to enroll in new courses in the same subject. These studies collectively suggest that while online courses offer flexibility and increased access to education, they also pose significant challenges in terms of student retention, performance, and progression, especially within community college settings.

Determinants Impacting Online Learning Outcomes

The determinants impacting online learning outcomes encompass a variety of factors that contribute to the successes and challenges students face in virtual education environments. A critical component is student agency, which refers to the capacity of learners to manage their educational experience proactively (Knowles, 1975). This aspect of online learning is crucial as it demands high levels of self-motivation, discipline, and time management skills (Jaggars, 2018; Jaggars & Xu, 2010; Xu & Xu, 2019). Students, who often balance multiple responsibilities, find it challenging to stay on track in less structured online courses (Fetzner, 2013; Jaggars & Xu, 2013). The responsibility of managing tasks and deadlines typically falls solely on students, as online instructors may provide minimal guidance on prioritizing tasks and interpreting assignment requirements (Bork & Rucks-Ahidiana, 2013).

Another significant determinant is the level of interactions within the online courses. Bernard et al. (2009) conducted a meta-analysis of 74 studies of interactions in online learning environments. They found that enhanced interpersonal interactions, whether with instructors or peers within the course structure, significantly benefit student learning outcomes. Online learning theories, such as those proposed by Anderson (2003) and Moore (2013), also underscore the vital role of interpersonal interaction. This interaction is believed to support the development of the learning community, enhancing critical thinking, problem-solving, and promoting a deeper understanding of the material (Bereiter & Scardamalia, 2006; Friesen & Kuskis, 2013; Kearsley et al., 1995).

The availability of technology and its ease of use are also a key determinant impacting online learning outcomes. Technical difficulties and the lack of familiarity with online learning systems often emerge as significant barriers for students (Jaggars & Xu, 2016; Jaggars & Xu, 2013; Lewis-Kraus, 2016). These challenges are further compounded for students who lack access to reliable high-speed internet, a problem that remains prevalent, particularly among rural and low-income populations. Additionally, the most engaging online tools and technologies, while beneficial for learning, are often the most susceptible to technical issues, necessitating robust technical support from educational institutions (Green et al., 2010; Keengwe & Kidd, 2010). These results imply that simply integrating modern technology into a course does not guarantee enhanced student learning outcomes; instead, it is crucial to thoughtfully utilize this technology to aid student learning, aligning with clearly defined learning objectives.

In summary, the efficacy of online learning is influenced by a confluence of factors including student agency, the level and quality of interaction within the online learning environment, and digital literacy. A multifaceted approach that enhances student self-management, fosters meaningful and quality interaction, and ensures access to technology is essential. By focusing on these key areas, educational institutions can significantly improve online learning outcomes for a diverse range of students.

Why Do Online Instructors Need Unique Professional Development Programs?

Improving online course quality is especially important in light of the increasing popularity of broad-access institutions such as community colleges. The growing popularity of online courses, combined with the historically lower learning outcomes in those courses, has prompted questions about how online course quality can be improved at scale. And there are some nuances to the role of higher education online instructors and higher education faculties. A systematic literature review conducted by Bawane and Spector (2009) concludes a list of online instructors' roles, including (1) teaching role, designing and developing online courses to facilitate student learning, (2) professional role, adhering to ethical and legal standards, (3) evaluation role, monitoring and evaluating student learning progress, (4) social role, maintaining a positive atmosphere and facilitating interactions, (5) technological role, selecting appropriate tools and resources for learning, (6) counseling role, providing guidance based on individual needs and development better study habits, (7) administrative role, managing curriculum and logistics, (8) research role, conducting research to continuously improve instruction. The diverse roles of online instructors determine the pedagogical complexity of online education and the urgent need for online instructors' professional development.

Although the number of established teaching and learning development units (TLDUs) is growing fast, faculty members report consistent frustration about professional development for online instruction. In a study conducted with 10,700 faculty from 69 colleges and universities, nearly 70% of faculty report their online instruction support from institutions as average or below, and 20% of all institutions do not provide any online teaching support (Seaman, 2009). Prior literature has shown that more than 80% of faculty with online course development experience reported it takes "somewhat more" or "a lot more" effort to teach online compared to a face-to-face course (Seaman, 2009). In this study, faculty report that the additional effort to develop and teach online courses is the greatest barrier to engaging in online education. This report also indicates several strategies to facilitate successful strategic online learning initiatives at higher education institutions, such as (1) identifying, recognizing, and appreciating the additional efforts and time faculty put into online education, (2) developing effective communication mechanisms to integrate online education into the structure and mission of the institution, and (3) utilizing effective learning outcome measures (Seaman, 2009).

Although there is an increasing understanding of faculty professional development in higher education, online instructor professional development programs are less investigated. While researchers generally agree on the important role of learning communities for online professional development programs, there is a lack of clear understanding of how to design effective online learning courses and practical design principles.

Critical Pedagogy as Conceptual Framework for Online PD Training

Most of the time, instructors post course materials and modules on a particular LMS. Students must complete a course within a set amount of time in order to receive certification as competent in that subject. For example, Massive Open Online Courses (MOOCs), which combine independent modules, quizzes, automated assessments, and other features to make online education more accessible, provide little opportunity for students to participate in critical reflection, information retrieval, and concept mastery (Boyd, 2016). This model of teaching and learning, which Freire calls "banking education," fails to recognize or encourage students' creative, exploratory, and critical skills (Freire, 2011).

Although Freire established his pedagogical concepts, including problem-posing, dialogue, praxis, conscientization, and the politics of education in a pre-Internet era, his critical pedagogical theories remain highly instructive for today's online education. Emphasizing problem-posing, and constructivist teaching approaches, encourage students to critically engage with their world and each other. This mutual engagement between students and teachers promotes cooperative learning (Freire, 2018). For example, Swan (2003) found that interactive online environments, which incorporate these principles, significantly improve student satisfaction and learning effectiveness. Freire critiqued the banking model for failing to recognize students' experiential and cultural knowledge, thereby making them passive receivers in the learning process (Boyd, 2016). Critical pedagogy, on the other hand, emphasizes the value of conversation, which begins with the student's experiences rather than the teacher's knowledge. Technologies such as LMS might unintentionally support the banking model by presenting the teacher as the sole expert. The critical pedagogy approach is important in online contexts to ensure that students' voices are heard and valued.

The conceptual framework of critical pedagogy provides a solid foundation for the PD training of online instructors. This paradigm stresses a transformative approach to education, with a focus on discourse, problem-solving, and the development of critical consciousness. This review draws on evidence from existing studies to explain how PD training programs could facilitate online instructors' teaching practices – broadly categorized into four main domains: (1) scaffolding self-directed learning skills and guiding the learning process, (2) promoting student agency, (3) enhancing instructor and student presence and interactions, and (4) technology-enhanced learning.

Designing Course Structure and Scaffolds

The concept of "scaffolding" in education, introduced by Vygotsky (1987), refers to the instructional strategies that support learners' progression through their Zone of Proximal Development (ZPD) – the gap between the learner's current level of psychological and cognitive functioning and the potential level that the student can reach with instructor guidance. In the context of online learning, instructors' scaffolding could be regarded as providing a system that assists learners in advancing to more complex levels of understanding.

Several guidelines and tactics for designing the structure of online courses have been established by previous studies. For example, Swan (2003) reviewed the literature on the learning effectiveness of asynchronous online environments. She synthesized six principles for online education: (1) clear objectives and expectations for learners, (2) frequent constructive feedback, (3) multiple expressions of course content, (4) instructor guidance and support, (5) frequent opportunities for active learning, and (6) flexibility and choice in meeting course objectives. The

incorporation of scaffolding techniques, such as community-building activities, regular content updates, and flexible learning pathways, can facilitate a learning environment that is both exploratory and communal, reflecting Freire's vision of a collaborative and transformative learning process (Boyer, 2003; Kellen & Antonenko, 2018). Furthermore, Anderson (2008) proposed the Community of Inquiry Model, which emphasizes the integration of social, cognitive, and teaching presences in online courses, aligned with critical pedagogy's emphasis on co-construction of knowledge, supporting a learning community where students and instructors engage in meaningful discourse and critical reflection. These guidelines and models provide a framework for designing effective online courses.

Previous research has indicated that the structures and design of online courses can significantly influence student satisfaction and learning outcomes. For instance, Lee (2014) pointed out that some specific course design factors, such as clear assignment instructions, instructors' knowledge about course materials, as well as useful rubrics, and constructive feedback, are positively associated with student satisfaction and learning outcomes in online courses. Furthermore, Kellen and Antonenkon (2018) discussed how procedural scaffolds, such as interactive checklists, enhance student learning by supporting the completion of assignments and fostering self-directed learning, which is a key component of critical pedagogy. The finding suggested that the custom-designed interactive study checklists were more effective in aiding students to submit their core assignments compared to the use of a non-interaction calendar tool.

Therefore, in order to create an environment that is conducive to effective online learning and promote student learning outcomes in online courses, course design and scaffolding are crucial components for online instructors' PD training. In summary, course design should be user-friendly, easy to navigate, incorporate clear rubrics and constructive feedback, and leave ample space for interaction.

Promoting Student Agency

Agency, defined as the fundamental psychological need for individuals to make choices and act according to their own volition (Lee, 2014), is a critical factor influencing student satisfaction in online courses. This concept is closely related to self-directed learning – a process where learners independently identify their learning needs, establish learning goals, identify learning resources, implement learning strategies, and evaluate learning outcomes (Knowles, 1975). Online courses, epitomizing a highly learner-autonomous environment, present an opportunity to embrace the principles of critical pedagogy by providing students with a platform for exercising agency—a space for their voices and choices to shape their learning journey (Lindgren & McDaniel, 2012; Ryan & Deci, 2000). Within the critical pedagogical framework, online instructors should develop course materials that foster self-directed learning, offering diverse activities and assessments, and encouraging self-reflection.

Previous research within the domain of online education has elucidated four main pedagogical guidelines to promote students' agency. The initial guideline posits that offering various course contents and activities tailored to learners' unique needs and preferences is vital for nurturing autonomy (Hartnett, 2015; Lindgren & McDaniel, 2012). Hartnett (2015) found that the perceived lack of choices could impinge upon students' autonomy, while Lindgren & McDaniel (2012) discovered that students rated positively the opportunity to select topics that resonated with their

interests. The second guideline underscores the necessity of transparently conveying the design of the course and its requirements for students, which could clarify the connection between course activity and educational objectives (Lee, 2014; Ryan & Deci, 2000). The third guideline emphasizes the integration of students' perspectives within the course, echoing the critical pedagogy that values each learner's voice (Cook-Sather, 2020). Student agency in online courses is enhanced when students are supported in setting their own learning objectives (Zimmerman, 1989). These guidelines could bolster student agency and reflect the interactive, participatory core of critical pedagogy in online learning.

Taken together, these studies provide important insights into the elements and factors that could influence student agency and how that agency is critical to consider when designing and teaching an online course. While there is a large volume of literature that has investigated the concept of student agency and how to promote it, there are relatively few studies that specifically address how online instructors can develop student agency in an online education context.

Enhancing Interaction

One of the most essential elements of online education is the construction of a "virtual learning community" (Grandzol & Grandzol, 2006). This concept coincides with the critical pedagogy approach in its capacity to facilitate meaningful dialogue. Freire posited that through dialogue and interaction with fellow learners, one could come to a critical consciousness (conscientization) of their role within the broader social, political, and economic landscape (Boyd, 2016). However, unlike traditional education, active interaction does not occur automatically in online education environments; it requires technology and online instructors to set the scaffolding to facilitate the interaction (Bol & Garner, 2011).

Existing literature pointed out that the digital realm often lacks nonverbal and relational cues present in face-to-face interactions, potentially leading to student isolation (Bambara et al., 2009). The geographical disperse of online learners further made it difficult to ensure the timeliness and effectiveness of online interaction. This underscored the need for instructors to craft a virtual presence that invites inquiry and reflection and promotes interpersonal connections. Kang and Im (2013) identified that the presence of the instructor during learner-instructor interaction could be an important predictor of learners' perceived satisfaction in an online learning environment.

A seminal study by Moore and Kearsley (2011) described three different types of interaction in an online environment. The first type is student-content interaction which requires that online instructors pay close attention to learners' questions and course feedback. The second type is instructor-student interaction, requiring online instructors to facilitate discussions, give constructive feedback, design group activities and assignments, and assist the group in building team contracts and morale. The third type is student-student interaction, which is often achieved through teamwork and peer review assignments in online education courses. The three forms of interaction work together to promote active dialogue and facilitate the communal construction of online learning.

Previous literature indicated strategies within online education that are conducive to fostering meaningful interactions. Rios et al. (2018) proposed several practical ways for online instructors, including posting a preannouncement and instructor's contact information before the class, posting

weekly announcements to clarify the aim of each module, posting instructions on participation requirements, and posting an announcement with the expected time for grading time and publishing grades. In addition, recognizing the diversity of learners, as noted by Rovai and Barnum (2003), is crucial; this includes acknowledging gender-related communication variances and catering to a spectrum of learning styles. Thus, online instructors, following a critical pedagogical approach, should tailor their course offerings to accommodate the diverse needs of their students rather than defaulting to a one-size-fits-all model of interaction (Rovai & Barnum, 2003).

These collective studies emphasize the critical role of interaction in online educational environments, affirm the positive correlation between interaction and student achievement, and define educational strategies that instructors can employ to foster the three elements of critical interaction: student-content, student-student, and student-teacher. Within the framework of critical pedagogy, these dimensions of interaction are critical to fostering dialogic and transformative learning environments and should be an integral part of professional development programs for online educators.

Facilitating Technology-enhanced Learning

Critical pedagogy also focuses on empowering marginalized communities. Typically, areas experiencing concentrated poverty and racial or ethnic segregation are more likely to face limited access to digital technology (Boyd, 2016). This highlights the importance of equitable access to digital technology, particularly as technology-enhanced learning (TEL) becomes increasingly integral to online education. Extensive research has shown that technology offers support for online learning and teaching, including personalizing learning for students, automating instructors' routine tasks, and powering adaptive assessments (Schneckenberg, 2009; Seo et al., 2021). These advancements facilitate high-quality multimedia content, interactive discussions, and immersive virtual environments, thus enhancing teaching and learning (Lindgren & McDaniel, 2012).

Existing research has recognized that TEL plays a critical role in promoting online course interaction. For instance, Borup et al. (2012) found that video communication technologies can deepen the connection between students and instructors, making interactions seem more tangible. Echoing this, Rios et al. (2018) suggested that TEL can align with both the asynchronous nature of online learning and faculty workloads, enhancing interactions akin to real-life experiences. Specifically, Flipgrid (flipgrid.com) and Remind (www. remind.com) are two TEL applications for online education. The former provides a social learning environment based on a video discussion platform, and the latter is a messaging app that facilitates easy push notifications to students in an assigned class (Rios et al., 2018).

Recent research has delved into the integration of Artificial Intelligence (AI) in online education, spanning from streamlining teacher tasks to customizing student assessments (Seo et al., 2021). Notable innovations include Goel and Polepeddi's (2018) AI teaching assistant, Jill Watson, which augments teacher-student interaction by managing routine communications, and Ross et al. 's (2018) adaptive quizzes that personalize learning and enhance engagement. Some literature discusses the application of an AI companion, as explored by Woolf et al. (2010), designed to offer emotional support to students concerned about their academic performance and the stress associated with their studies. This AI companion focuses on providing effective support, which is geared towards motivating students by emphasizing the importance of diligence and persistence,

as well as promoting the idea that intelligence can be developed rather than being an innate and unchangeable attribute. Despite the potential of AI and TEL in online education, there is still a lack of utilization in online education.

Numerous studies indicate that the underutilization of TEL in online education can be attributed to insufficient competence among many online instructors. This deficiency is characterized by a lack of skills necessary to understand and determine the appropriate circumstances and methods for implementing TEL (e.g., Allen & Seaman, 2014; Jenkins et al., 2011). Jenkins et al. (2011) argued that targeted professional development for faculty is a key strategy for addressing this issue. Therefore, fostering online instructors' professional development is critical for the effective integration and expansion of TEL within the online education field, ensuring that technology serves as a tool for liberation and not merely a medium for content delivery.

Discussion and Conclusion

The shift from traditional brick-and-mortar classroom setting to online teaching has prompted a re-examination of pedagogical approaches for online instructors. Humanized online education serves as a pivotal concept that aligns closely with the principles of critical pedagogy. It involves creating a learning environment where students are seen as whole individuals with diverse backgrounds and experiences (Li et al., 2022). This approach promotes a more inclusive and empathetic online classroom, which is essential for meaningful learning and critical engagement.

Leveraging critical pedagogy, this review identified several key PD training areas that could promote humanized online education: scaffolding online courses, fostering student agency, facilitating interactions, and integrating technology. It emphasizes the importance of equipping instructors with skills to create coherent online modules, recognize and cater to student diversity, and engage students through technology. Inspired by critical pedagogy, online instructors' PD training emphasizes that teachers are not just providers of knowledge, but facilitators of student learning (Boyd, 2016). This shift could foster student agency and critical thinking in online education, ensuring that their voices are heard and valued.

Moreover, critical pedagogy emphasizes the transformative role of education in empowering both students and educators to recognize and challenge the oppressive structures within their own contexts (Freire, 2000). Students from economically disadvantaged and technologically under-resourced high schools often find themselves at a marked disadvantage in the realm of online learning (Bambara et al., 2009; Jaggars, 2018). Without deliberate efforts by online instructors to bridge disparities in students' digital literacy and access to advanced technology, online education risks perpetuating and even deepening existing educational inequalities. By integrating practices that allow for critical dialogue, collaborative knowledge construction, and action that extends beyond the digital space, online education can serve as a powerful tool for addressing educational inequity.

In conclusion, as online education continues to evolve, we have the opportunity and responsibility to ensure that the principles that humanize online education ultimately contribute to a more equitable and reflective education system. This study addresses this need by shedding light on multiple techniques instructors can use to design course structures, promote student agency, enhance online interactions, and facilitate technology-enhanced learning. The implications of this

research call for further inquiry into the link between these educational strategies and student achievements, offering a roadmap for educators dedicated to enriching the online learning experience.

References

Allen, I. E., & Seaman, J. (2014). Grade Change: Tracking Online Education in the United States. In *Babson Survey Research Group*. Babson Survey Research Group.

Anderson, T. (2003). Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction. *The International Review of Research in Open and Distributed Learning*, *4*(2).

Anderson, T. (2008). *The Theory and Practice of Online Learning*. Athabasca University Press.

Bambara, C. S., Harbour, C. P., Davies, T. G., & Athey, S. (2009). Delicate Engagement: The Lived Experience of Community College Students Enrolled in High-Risk Online Courses. *Community College Review*, *36*(3), 219–238.

Bawane, J., & Spector, J. M. (2009). Prioritization of online instructor roles: Implications for competency-based teacher education programs. *Distance Education*, *30*(3), 383–397.

Bereiter, C., & Scardamalia, M. (2006). Education for the knowledge age: Design-centered models of teaching and instruction. *Handbook of Educational Psychology*, 695–713.

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A Meta-Analysis of Three Types of Interaction Treatments in Distance Education. *Review of Educational Research*, *79*(3), 1243–1289.

Bol, L., & Garner, J. K. (2011). Challenges in supporting self-regulation in distance education environments. *Journal of Computing in Higher Education*, *23*(2), 104–123.

Bork, R. J. H., & Rucks-Ahidiana, Z. (2013). *Role Ambiguity in Online Courses: An Analysis of Student and Instructor Expectations*.

Borup, J., West, R. E., & Graham, C. R. (2012). Improving online social presence through asynchronous video. *The Internet and Higher Education*, *15*(3), 195–203.

Boyd, D. (2016). What Would Paulo Freire Think of Blackboard: Critical Pedagogy in an Age of Online Learning. *The International Journal of Critical Pedagogy*, *7*(1), Article 1.

Boyer, N. R. (2003). The Learning Contract Process: Scaffolds for Building Social, Self-Directed Learning. *Quarterly Review of Distance Education*, *4*(4), 369–383.

Bulman, G., & Fairlie, R. (2022). The Impact of COVID-19 on Community College Enrollment and Student Success: Evidence from California Administrative Data. *Education Finance and Policy*, *17*(4), 745–764.

Caldwell, E. R. (2006). *A comparative study of three instructional modalities in a computer programming course: Traditional instruction, Web-based instruction, and online instruction*. The University of North Carolina at Greensboro.

Cavus, N., Uzunboylu, H., & Ibrahim, D. (2007). Assessing the Success Rate of Students Using a Learning Management System Together with a Collaborative Tool in Web-Based Teaching of Programming Languages. *Journal of Educational Computing Research*, *36*(3), 301–321.

Cook-Sather, A. (2020). Student voice across contexts: Fostering student agency in today's schools. *Theory Into Practice*, *59*(2), 182–191.

Deming, D. J., Yuchtman, N., Abulafi, A., Goldin, C., & Katz, L. F. (2016). The Value of Postsecondary Credentials in the Labor Market: An Experimental Study. *American Economic Review*, *106*(3), 778–806.

Fetzner, M. (2013). What Do Unsuccessful Online Students Want Us to Know? *Journal of Asynchronous Learning Networks*, *17*(1), 13–27.

Figlio, D., Rush, M., & Yin, L. (2013). Is It Live or Is It Internet? Experimental Estimates of the Effects of Online Instruction on Student Learning. *Journal of Labor Economics*, *31*(4), 763–784.

Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed). Continuum.

Freire, P. (2018). *Teachers As Cultural Workers: Letters To Those Who Dare Teach*. Routledge.

Freire, P. (2011). *The banking concept of education. In Thinking about schools. Routledge*.

Friesen, N., & Kuskis, A. (2013). *Modes of Interaction*.

Garn, M. (2009). On the Edge of Innovation: Transition and Transformation in Statewide Administrative Models for Online Learning. *New Directions for Higher Education*, *146*, 55–64.

Goel, A., & Polepeddi, L. (2018). *Jill Watson. Learning engineering for online education: Theoretical contexts and design-based examples*. Routledge.

Grandzol, C. J., & Grandzol PhD, John. R. (2006). Best Practices for Online Business Education. *The International Review of Research in Open and Distributed Learning*, *7*(1).

Green, N. C., Edwards, H., Wolodko, B., Stewart, C., Brooks, M., & Littledyke, R. (2010). Reconceptualising higher education pedagogy in online learning. *Distance Education*, *31*(3), 257–273.

Harasim, L. (1987). *Teaching and Learning On-Line: Issues in Computer-Mediated Graduate Courses*.

Harasim, L. (2000). Shift happens: Online education as a new paradigm in learning. *The Internet and Higher Education*, *3*(1–2), 41–61.

Hart, C. M. D., Friedmann, E., & Hill, M. (2018). Online Course-taking and Student Outcomes in California Community Colleges. *Education Finance and Policy*, *13*(1), 42–71.

Hartnett, M. K. (2015). Influences that undermine learners' perceptions of autonomy, competence and relatedness in an online context. *Australasian Journal of Educational Technology*, *31*(1), Article 1.

Hiltz, S. R. (1994). The virtual classroom: Learning without limits via computer networks. *(No Title)*.

Jaggars, S., & Bailey, T. R. (2010). *Effectiveness of Fully Online Courses for College Students: Response to a Department of Education Meta-Analysis*.

Jaggars, S. S. (2018). Online Learning in the Community College Context. In M. G. Moore & W. C. Diehl (Eds.), *Handbook of Distance Education* (4th ed., pp. 445–455). Routledge.

Jaggars, S. S., & Xu, D. (2016). How do online course design features influence student performance? *Computers & Education*, *95*, 270–284.

Jaggars, S., & Xu, D. (2010). *Online Learning in the Virginia Community College System*.

Jaggars, S., & Xu, D. (2013). *Predicting Online Student Outcomes from a Measure of Course Quality*.

Jenkins, M., Browne, T., Walker, R., & Hewitt, R. (2011). The development of technology enhanced learning: Findings from a 2008 survey of UK higher education institutions. *Interactive Learning Environments*, *19*(5), 447–465.

Johnson, H., & Mejia, M. C. (2014). *Online Learning and Student Outcomes in California's Community Colleges*.

Johnson, S. G., & Berge, Z. (2012). Online Education in the Community College. *Community College Journal of Research and Practice*, *36*(11), 897–902.

Kang, M., & Im, T. (2013). Factors of learner–instructor interaction which predict perceived learning outcomes in online learning environment. *Journal of Computer Assisted Learning*, *29*(3), 292–301.

Kearsley, G., Lynch, W., & Wizer, D. (1995). The Effectiveness and Impact of Online Learning in Graduate Education. *Educational Technology*, *35*(6), 37–42.

Keengwe, J., & Kidd, T. T. (2010). *Towards Best Practices in Online Learning and Teaching in Higher Education*. *6*(2).

Kellen, K., & Antonenko, P. (2018). The role of scaffold interactivity in supporting self-regulated learning in a community college online composition course. *Journal of Computing in Higher Education*, *30*(2), 187–210.

Knowles, M. S. (1975). *Self-Directed Learning: A Guide for Learners and Teachers*.

Knowles, M. S. (1986). Using learning contracts: Practical approaches to individualizing and structuring learning.

Lee, J. (2014). An Exploratory Study of Effective Online Learning: Assessing Satisfaction Levels of Graduate Students of Mathematics Education Associated with Human and Design Factors of an Online Course. *International Review of Research in Open and Distributed Learning*, *15*(1), 111–132.

Lewis-Kraus, G. (2016). The Great A.I. Awakening—The New York Times. *The New York Times*.

Lindgren, R., & McDaniel, R. (2012). Transforming Online Learning through Narrative and Student Agency. *Journal of Educational Technology & Society*, *15*(4), 344–355.

Meyer, K. A. (2009). Western Governors University: Creating the First Virtual University. *New Directions for Higher Education*, *146*, 35–43.

Moore, M. G. (2013). *The theory of transactional distance. In M. G. Moore, Handbook of Distance Education, 3rd ed*. Routledge.

Moore, M. G., & Kearsley, G. (2011). *Distance Education: A Systems View of Online Learning*. Cengage Learning.

NCES. (2021). *NCES Blog | Distance Education in College: What Do We Know From IPEDS?*

NCES. (2022). *Digest of education statistics 2022, Table 308.10*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Palloff, R. M., & Pratt, K. (2011). *The Excellent Online Instructor: Strategies for Professional Development*. John Wiley & Sons.

Parsad, B., & Lewis, L. (2008). *Distance education at degree-granting postsecondary institutions: 2006-07* (pp.90-95). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Rios, T., Elliott, M., & Mandernach, B. J. (2018). Efficient Instructional Strategies for Maximizing Online Student Satisfaction. *Journal of Educators Online*, *15*(3).

Ross, B., Chase, A.-M., Robbie, D., Oates, G., & Absalom, Y. (2018). Adaptive quizzes to increase motivation, engagement and learning outcomes in a first year accounting unit. *International Journal of Educational Technology in Higher Education*, *15*(1), 30.

Rovai, A. P., & Barnum, K. T. (2003). On-line Course Effectiveness: An Analysis of Student Interactions and Perceptions of Learning. *International Journal of E-Learning & Distance Education*, *18*(1), 57-73.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, *25*(1), 54–67.

Schneckenberg, D. (2009). Understanding the real barriers to technology-enhanced innovation in higher education. *Educational Research*, *51*(4), 411–424.

Seaman, J. (2009). Online Learning as a Strategic Asset. Volume II: The Paradox of Faculty Voices--Views and Experiences with Online Learning. Results of a National Faculty Survey, Part of the Online Education Benchmarking Study Conducted by the APLU-Sloan National Commission on Online Learning. In *Association of Public and Land-grant Universities*. Association of Public and Land-grant Universities.

Sen. Pell, C. (1992). *S.1150 - 102nd Congress (1991-1992): Higher Education Amendments of 1992* (1991-05-23) [Legislation].

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education*, *18*(1), 54.

State of California. (2018). *Budget Act of 2018, S. 840, California Legislature*.

Swan, K. (2003). Learning effectiveness: What the research tells us. *Elements of Quality Online Education: Practice and Direction*, *4*.

Vygotsky, L. S. (1987). *The Collected Works of L. S. Vygotsky: Problems of the Theory and History of Psychology*. Springer Science & Business Media.

Woolf, B. P., Arroyo, I., Muldner, K., Burleson, W., Cooper, D. G., Dolan, R., & Christopherson, R. M. (2010). The Effect of Motivational Learning Companions on Low Achieving Students and Students with Disabilities. In V. Aleven, J. Kay, & J. Mostow (Eds.), *Intelligent Tutoring Systems* (Vol. 6094, pp. 327–337). Springer Berlin Heidelberg.

Xu, D., & Jaggars, S. (2011). *Online and Hybrid Course Enrollment and Performance in Washington State Community and Technical Colleges*.

Xu, D., & Xu, Y. (2019). *The Promises and Limits of Online Higher Education*.

Zawacki-Richter, O., & Bozkurt, A. (2022). Research Trends in Open, Distance, and Digital Education. In *Handbook of Open, Distance and Digital Education* (pp. 1–23). Springer Nature Singapore.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, *81*(3), 329–339.