Spring 05-31-2023

Reviewing Teachers' Competency for Distance Learning during COVID-19: Inferences for Policy and Practice

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Abstract

Following the COVID-19 pandemic outbreak in March 2020, distance learning has gained more attention from national and international education policies. This timely paper aimed to review the literature about digital competencies that K-12 and pre-service teachers require in order to succeed in supporting online learners during and post COVID-19. A critical question in this review pertained to how contemporary teacher education programs and teacher professional development can respond to the evolving needs of online learners. The findings showed that currently practicing K-12 teachers need more support around the technical, pedagogical, and content development associated with distance learning. In contrast, teacher education programs are urged to ensure that Information and Communication Technology (ICT) knowledge is well integrated into their curricular courses. Further, teacher educators must have the necessary ICT skills and experience to prepare competent K-12 teachers for distance learning. Conclusion and recommendations for teacher education policy and practice for distance learning are offered.

Suite à l'épidémie pandémique de la COVID-19 en mars 2020, l'enseignement à distance a fait l'objet de davantage d'attention concernant les politiques sur l'éducation nationales et internationales. Cet article opportun vise à passer en revue les publications de recherche sur les compétences numériques que les enseignants et les enseignantes des écoles, de la maternelle à la douzième année, devaient posséder afin de réussir à soutenir les élèves en ligne durant et après la COVID-19. Une question critique dans cet examen porte sur la manière dont les programmes de formation des enseignants et des enseignantes contemporains, ainsi que les programmes de développement professionnel des enseignants et des enseignantes, peuvent correspondre aux besoins en évolution des élèves en ligne. Les résultats indiquent que les enseignants et les enseignantes qui enseignent à l'heure actuelle à des classes de la maternelle à la douzième année avaient besoin de davantage de soutien en matière de technologie, de pédagogie et de développement du contenu associés à l'apprentissage à distance. En contraste, les programmes de formation des enseignants et des enseignantes doivent faire en sorte que les connaissances en matière de technologie de l'information et de la communication (TIC) sont bien intégrées dans les cours. De plus, les professeurs et les professeurs qui forment les enseignants et les enseignantes doivent posséder eux-mêmes les compétences et l'expérience requises en TIC pour préparer des enseignants et des enseignants compétents en enseignement à distance, de la maternelle à la douzième année. Des conclusions et des recommandations sont offertes pour l'établissement de politiques et de pratiques relatives à la formation des enseignants et des enseignantes pour l'enseignement à distance.

In the midst of a global health crisis, namely the COVID-19 pandemic that humanity is experiencing, relying on distance learning is undoubtedly at its peak. According to the United Nations Educational Scientific and Cultural Organization (UNESCO) Institute for Statistics, more than 90% of student population across the world were affected by school closure following the pandemic outbreak (UNESCO, 2020). With this critical situation, K-12 teachers "are also increasingly seen as knowledge professionals, working at the frontline of one of society's most important knowledge creation and transfer systems: education" (Guerriero, 2017, p. 3). Consequently, it becomes necessary to understand how K-12 teachers involved in distance learning can better support their online learners, what Information and Communication Technology (ICT)-related skills teachers need to be equipped with, and how current teacher education programs and policies may innovatively contribute to a rapidly evolving distance education.

Research studies selected for this review included those that focused on distance learning in teacher education; teacher professional development and digital competencies; and online learners in the K-12 system and their needs in the digital age, as an attempt to offer insights that would benefit the Canadian and international contexts. In this paper, the term 'pre-service' refers to future teachers while 'in-service' refers to currently practicing teachers in the K-12 system. This study draws from the conceptual framework of teacher's professional competence proposed by Guerriero and Révai (2017). Guerriero and Révai (2017) defined teacher competence as:

> A broad term referring to the ability to meet complex demands in a given context by mobilizing various psychosocial (cognitive, functional, personal and ethical) resources. In this sense competence is dynamic and process-oriented, and includes the capacity to use and to adapt knowledge. (p. 261)

For the purpose of this study, these complex demands may be attributed to the unprecedented challenges faced by current teachers involved in distance learning during COVID-19.

Theoretical Framework

Teachers' professional competencies for the 21st century classrooms have been addressed in various policy documents (Organization for Economic Cooperation and Development, 2010; Eurydice, 2015; European Union, 2015). These competencies include, but are not limited to, teachers' adopting and using ICT, meeting diverse learners' needs, managing student learning, as well as contributing to the development of lifelong learners.

Conceptualizing Teachers' Competencies for Teaching and Learning

Guerriero and Révai (2017) noted that research on teachers and learning achievement revealed that "being able to adapt to different students and environments, engaging students, using various forms of evaluation and classroom management are shared elements of teachers' competence across the professional standards" (p. 255). Added to these elements and crucial to classroom instruction are teachers' motivation and self-regulation skills (Guerriero & Révai, 2017). Undoubtedly, these competencies and skills allow us to conceptualize teachers' competence as a comprehensive, multi-dimensional construct.
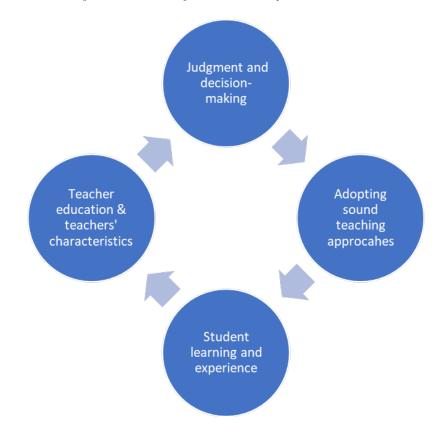
Simply put, for today's classrooms, teachers' pedagogical knowledge and subject expertise have proven to be insufficient. Teachers are required to have quality social, personal, cognitive, digital, and motivational skills that allow them to cope with the different emerging forms of teaching and non-teaching demands.

The Framework

The theoretical framework adopted is grounded in empirical and theoretical research about pedagogical knowledge and processes as well as professional competencies for quality teaching practice. Guerriero and Révai (2017) believe that a framework of teachers' professional competence is built upon four interrelated constructs (Figure 1). These include 1) Teacher education, 2) Judgment and decision-making, 3) Teaching approaches adopted, and 4) Student learning. What follows is an elaboration on these constructs, describing how they collectively inform teachers' instructional and non-instructional practices to support their learners.

Figure 1
Interrelated Constructs of Teacher's Professional Competence

Note. Constructs are adopted from Guerriero and Révai (2017).

Teacher Education

This construct emphasizes the crucial role of teacher education programs as the first step in supporting pre-service teachers' development through theoretical and professional learning opportunities. These programs provide pre-service teachers with the content and pedagogical knowledge that would inform their decision making and judgment processes on issues that relate to teaching and learning. Further, Guerriero and Révai (2017) argue that meeting the expectations of teaching in diverse classrooms, teachers must be lifelong learners who continuously engage in professional development to improve their knowledge. Motivational and self-regulation characteristics for Guerriero and Révai (2017), are equally important qualities that influence teachers' instructional beliefs and practices, their well-being and their self-perception, all of which impact students' learning experiences.

Judgement and Decision-making

This construct attends to the ways teachers' prior learning experiences correlate with their decision-making processes about pedagogy and assessment in their situated classroom contexts. Figure 1 shows how this construct is shaped by teacher education which plays a key role in K-12 education systems.

Teaching Approaches

The construct of teaching approaches refers to the assemblage of student-teacher interactions such as 1) organizing and managing teaching strategies in response to students' needs, and 2) the tools and materials used in classroom instruction, all of which are based on teachers' professional judgment (Guerriero & Révai, 2017). This construct is crucial as it implies the extent to which learners who possess diverse needs are included in classroom instruction and the assessment strategies used.

Student Learning

The framework adopted in this study shows that student learning is central to both teacher education and teachers' approaches for teaching and learning (Guerriero & Révai, 2017). That is, on the one hand, student learning experiences in schools provide the grounds for empirical research that informs how teachers need to be prepared in contemporary teacher education programs. On the other hand, students' learning relates to teachers' professional judgment and knowledge of their students' individual needs. Hence, we need to understand that students' learning is the outcome of a series of processes that start with teacher education and ends with teachers who express qualities and capacities that respond to the evolving schooling context.

Literature Review

This review examines previous studies about distance learning, the challenges and opportunities of distance learning among in-service and pre-service teachers. Further, it explores how teachers can support diverse learners in the digital age and how policies may inform future

programmatic development in teacher education around technology and its associated teaching and non-teaching practices.

Method

To establish a clear account of the status of teachers' skills and knowledge about the use of technology to support online learners, the researcher has selected specific studies with specific inclusion criteria. Studies included in this review pertained to those conducted in the last 15 years and had the following keywords: Teacher education, distance learning, international context, digital technology, policy, and professional development. Further, the researcher was keen on selecting studies that focused on both pre-service and in-service teacher preparation to support the needs of online learners. Studies that focused on the general aspects of distance learning have been excluded from this review.

International Perspectives on Teacher Competency for Distance Education

Globally, teacher competency to support the needs of diverse learners in distance education has become a pressing policy concern. A recent study by Starkey (2020) found that "the agenda underpinning initial teacher education research is evolving as digital tools are introduced, integrated or infused into schooling and education systems" (p. 52). Distance learning which is commonly known as e-learning, online learning, or web-based learning, affords flexibility in responding to the needs of diverse learners, and increases their access to education (People for Education, 2019). Distance learning entails new forms of communication using technology and the embodiment of collaborative practices.

The conceptualization of teachers' competency appears to be "linked with visions of professionalism, theories of teaching and learning, quality cultures and socio-cultural perspectives - with tensions between diverse approaches" (European Commission, 2013, p. 11). According to Inclusive Education Canada (IEC), the provision of effective policies about inclusive education constitutes an advocacy approach that builds capacity and promotes learning for all, making inclusion a reality in the Canadian classrooms. Therefore, advancing the knowledge and skills of pre-service teachers around distance learning and how to support diverse learners is indeed a professional and ethical commitment of the governing institutions. Moreover, this advancement resonates with the international evolution of teaching and learning practices and how students come to learn following the pandemic outbreak (Sapon-Shevin & SooHoo, 2020; Schwartzman, 2020).

Teacher Education and Distance Learning

Historically, digital technology tools had limited capacities in supporting teaching and learning and meeting the educational objectives of schooling practices (Cuban, 2001). However, the advancement of these tools in the recent years has influenced teachers' practices and led to the design and the development of enormous applications that support the growing demands of the teaching profession and students' learning needs (Starkey, 2020; Voogt et al., 2013). According to Caena and Redecker (2019), "people today are more connected than ever, using the Internet for gaming, chatting and social networking, with a significant increase in its usage among young children (up to 8 years of age)" (p. 357). In the same vein, Fullan and Langworthy (2014) argue

that research findings on the relation between technology and learning calls upon the need to rethink how technology supports pedagogy, and in turn contributes to both teachers and learners' competencies and creativity in problem solving:

> Digitally-competent teachers should facilitate their students' digital competence, enabling them to manage risks and use digital technologies safely and responsibly. Teachers should be able to promote information and media literacy and integrate activities to enable digital problem solving, digital content creation and digital technology use for communication and cooperation. (Caena & Redecker, 2019, p. 363)

Consequently, future teachers need to be well prepared and feel confident about their abilities to engage in technology-infused teaching practices (Kaufman, 2015).

Teachers' Digital Professional Development: Challenges and Opportunities

Professional development remains a contributing factor in education change, particularly if it is aimed to support the application of digital teaching and learning (Tondeur et al., 2016). According to the European Commission (2013), the professional development of teachers contributes to their job satisfaction and commitment to the advancement of teaching and learning as well as the educational effectiveness in a changing world. Leask and Younie (2013) inform us that education ministries across the world view ICT as an education key promoter, however, lack of ICT professional development prevents practicing teachers from advancing their career in a progressively emerging digital world.

Tondeur et al. (2016) suggest that offering teacher professional development "through online communities of practice, social networking and online environments can provide both sustainable and scalable outcomes across geographical and cultural contexts" (p. 111). During these turbulent times of the COVID-19 crisis, such offerings would allow teachers to share practical examples of their various practices in distance education, understand and negotiate other teachers' practices, and find the means to translate these learning opportunities into their local educational contexts (Prestridge & Tondeur, 2015). In their recent study about the challenges associated with distance learning, Kebritchi, Lipschuetz, and Santiague (2017) reported three major concerns. These are 1) online learners, 2) online teachers, and 3) curriculum content development. Learners' issues accounted for their own expectations; identity; readiness; and online participation. Teachers' concern was related to their role change due to the transition from face-to-face to distance learning; their capacity for time management; and their teaching style. As for content development, these issues included the role of teachers in content development and the integration of multimedia into their pedagogical practices (Kebritchi et al., 2017). In this regard, Tondeur et al. (2016) said:

> Engaging teachers in learning through inquiry, especially using ICT, is a powerful way to move them from a traditional view of education as transmission of knowledge from the expert teacher to the learner and toward understanding of education as a lifelong process of learning with and from each other. (p. 117)

In contrast, teachers who lack proper training and skills in distance education face a significant challenge in converting curriculum materials and activities from face-to-face to distance learning

platforms (Li & Irby, 2008). Relatedly, teachers who are not comfortable with distance learning may not be willing to adopt a sudden change in learning format and adjust their instructional strategies accordingly (Barrett, 2010).

Teaching Approaches that Support the Needs of Online Learners

Hung et al. (2010) believe that achieving significant distance learning outcomes requires the development of certain skills among online learners. These skills include capacity for self-directed learning, motivation to learn, self-efficacy for technology use, and online communication proficiency. Relatedly, the 2011 Organization for Economic Cooperation and Development report on the teaching profession maintains that teachers are required to help students develop the means for 1) how to think critically and creatively when it comes to decision-making, 2) how to collaborate and communicate with others using technologies, and 3) how to obtain social and life skills needed to succeed in democratic and modern societies. Considering the social aspects of distance learning, it is worth noting here that some online learners may feel less connected and rather isolated from the learning community (McInnery & Roberts, 2004).

A study by Mayer (2014) offered three different teaching approaches that can support distance learners. These are 1) less-is-more, 2) more-is-more, and 3) focused-more-is-more (Mayer, 2014). The first approach requires teachers to eliminate unnecessary materials from their content to maintain students' focus. In the second approach, teachers integrate more features such as video recordings or graphics as motivational tools to enhance learning. The third approach pertains to offering learners more time to learn about more complex tasks. Niess and Gillow-Wiles (2013) added that online teachers need to use collaborative activities, reflections, and clearly communicate assessment criteria with their learners.

Regarding assessment strategies, Gikandi, Morrow, and Davis (2011) remind us that similar to teaching in regular classroom contexts, using formative and summative assessments in distance learning supports learners and helps them to stay engaged. Moreover, the use of simulations, lab tutorials, engaging and attractive presentations, as well as discussion boards to increase student-teacher and student-student interactions are likewise beneficial for distance learners (Juan et al., 2011). A study by Berge (1998) that focused on barriers for online learners found that online teachers play four different roles in this regard. These included social, managerial, technical, and pedagogical roles. The social refers to the way teachers strive to establish positive social relationships with their learners while the managerial role pertains to the organization and the administration of learning tasks. The technical relates to the ongoing support offered to learners whereas the pedagogical accounts for the instructional strategies that teachers employ (Berge, 1998). The essence of teacher-student digital interaction is expressed in the following quote:

> Instructors of online classes must be great listeners and communicators as well as take the time and extra effort to create community and engage students with thought-provoking questions to help move discussions along. Instructors must be able and willing to provide immediate feedback and enforce a safe environment where students feel valued and able to share their ideas. Staying organized and checking in with students on a daily or weekly basis are important strategies to help build community and keep students engaged. (Kebritchi et al., 2017, p. 20-21)

Arguably, online teachers would need to employ multimodal and student-centered pedagogical practices that promote students' engagement and alleviate their social and psychological challenges associated with distance education. These pedagogical practices may include video conference calls, communicating through voice recorded notes, and group forums among other factors.

Integrating ICT Tools into Teaching Practices

Maderick et al. (2016) define digital competence as "having the skill, ability, and knowledge to successfully use computers, their related applications, and software in the practice of teaching and education" (p. 329). Previous studies on distance learning examined future teachers' intentions for using ICT into their future practices (Baydas & Yilmaz, 2018; Valtonen et al., 2015), their beliefs and attitudes towards the use of ICT (Chen, 2010; Tondeur et al., 2017), and their skills in developing blogs, electronic dossiers, and podcasts (Kumar & Vigil, 2011). Consequently, when teachers integrate digital tools into their pedagogical practices, they contribute to the advancement of digital citizenship and communication skills among their learners (Kabakci Yurdakul, & Çoklar, 2014).

Mishra and Koehler (2006) developed a framework that pertains to the integration of ICT into teaching, called the Technological, Pedagogical and Content Knowledge (TPaCK) model, building upon previous studies that explored digital competence among teachers. The TPaCK model highlights the necessity for current and future teachers to be skilled and knowledgeable in technology use and in developing content and pedagogical strategies that are relevant to distance education. Relatedly, Pellegrino (2017) maintains that preparing teachers to create engaging learning environments is a challenge for teacher education programs. Such environments have the potential to enhance the development of interpersonal, cognitive, and intrapersonal competencies among learners (Pellegrino, 2017). Therefore, current teacher education programs' curricula need to critically address the communication, pedagogical, organizational, as well as the environmental aspects of distance learning.

Pre-service Teachers' Digital Competency and the Role of Teacher Educators

Instefjord and Munthe (2017) shed light on the different capacities that pertain to the role of teacher educators in developing digital competency among pre-service teachers. These capacities included the educators' knowledge of technology tools, ability to address ethical issues associated with social media, role modelling, and using digital tools for teacher education assessments. Teacher educators refer to those who prepare future teachers in teacher education programs.

Recent studies (Admiraal et al., 2016; Gill & Dalgarno, 2017) found that teacher educators are encouraged to follow a role modelling approach due to their crucial impact on pre-service teachers' practices and motivation to integrate digital tools into their future teaching. However, Røkenes and Krumsvik (2014) claim that role modelling is not enough, attributing to the necessity for pre-service teachers to practice teaching in technology-integrated classroom contexts as part of their teacher education program, referring to the practicum component of teacher education. Robertson and Al-Zahrani (2012) go further and suggest that these programs need to interrogate and understand "the beliefs, learning styles, preferences and approaches regarding ICTs held by their staff, students and themselves" (p. 1146). Current teacher education programs may need to

revisit the knowledge, skills, and experiences of their teacher educators in relation to distance learning and develop relevant professional development strategies.

Education Policies and Online Learning: Opportunities for Change

The rapidly evolving landscape of education systems to support online learners is creating a challenge for teachers who are now expected to enhance their professional practice and attain the necessary knowledge base for 21st century classrooms (Guerriero, 2017). This challenge may entail rethinking education policies in teacher education and how they can further adopt technology and its associated tools in the development of both teachers and learners in the K-12 system.

Rizvi and Lingard (2010) view policy as a text or even a process during which the authority of institutions is exercised. For them, policy is never straightforward as it is subject to contextual and previously existing practices. Massouti (2018) maintains that policy change requires us to consider the interconnection between the making of the policy and its implementation in different contexts as well as the impact of this on students' learning outcomes. According to Sin (2014), researching policy and practice needs to consider two important factors: the policy making itself as well as its implementation by the policy actors. These policy actors may include, but are not limited to, online teachers and teacher educators who perform different set of actions based on their own beliefs, prior experiences, the meanings they make about policies, and their situated contexts (Massouti, 2018).

Based on Berge's (1998) work stated earlier and in light of the current emphasis on the use of technology, it becomes relevant for policy makers in teacher education programs to interrogate the means that would reduce the challenges of distance learning among future teachers and adopt the necessary and relevant policy change. Perhaps, a critical review of the currently implemented mechanisms of digital learning practices may afford possibilities for action and change in teacher education programming. Further, these programs may explore and develop new initiatives around distance learning that would stimulate future teachers' creativity, communication, motivation, content development, and community building skills in digital learning platforms before they embark on their professional teaching career.

Addressing the disparity between policy and practice, the UNESCO (2004) stated that enacting a policy change is possible, however the challenge lies in ensuring that it is reflected in the practices of those involved in fulfilling that change. For instance, Robertson and Al-Zahrani (2012) examined pre-service teachers' self-efficacy in relation to Information and Communication Technology (ICT) use. They found that policy issues of access and exposure to ICT-related training constituted a major challenge in boosting pre-service teachers' motivation and interests in using ICT. For them, sustaining positive change in relation to ICT use among future teachers requires teacher education programs to have "sympathetic and strategic leadership, effective curriculum design and innovative pedagogies" (p. 1136). To support pre-service teachers for distance learning, Robertson and Al-Zahrani (2012) claim that:

> The standard and traditional educational technology courses that the pre-service teachers undertake formally during their preparation require innovation and improvement, to reflect effectively the global trends and respond to their needs, preferences and learning styles as a digital generation living in a digital world. This is needed to increase their exposure, knowledge and experience to digital technology use, as well as pedagogical applications and implications. (p. 1146)

Preparing pre-service teachers for distance learning is a collaborative practice that calls upon all education stakeholders to play their role in this regard (Kay, 2006). Hence, policy makers in educational institutions are urged to build on the existing technological and professional resources to advance distance learning and its applications among teachers and learners for the post COVID-19 era.

Results

This urgent paper aimed to explore the ICT competencies that in-service and pre-service teachers need to support their distance learners. Further, the paper explored how existing teacher education policies can be negotiated to ensure that both pre-service and currently practicing teachers obtain the skills and knowledge they need for distance education.

The literature review conducted in this study highlighted some key messages that would inform future teacher education professional development for distance learning and the use of technology to support online learners. The findings resonated with the theoretical constructs adopted in this study. This is exemplified in the ways teacher education can inform future teachers' competency for decision-making, utilizing innovative approaches in teaching and eventually supporting students' learning outcomes (Guerriero & Révai, 2017). The review showed that pre-service teachers lack the necessary technology-related training. Therefore, curricular courses in teacher education programs need to reflect the application of technology tools in preparing these future teachers in line with the evolution of teaching and learning in the 21st century classrooms.

Another key finding was the need for teacher educators themselves to engage in more professional development about technology use since they influence pre-service teachers' perspectives towards technology and its relevance to teaching and learning. This finding supports the theoretical perspectives of Guerriero and Révai (2017) towards the interconnectedness between teacher education, exemplified here by the knowledge and skills of teacher educators about distance learning, and the beliefs and practices of pre-service teachers. Hence, teacher education appears to be central to how teachers view and adopt innovative teaching approaches that support their learners. Moreover, the findings revealed that teachers' competencies for distance education go beyond ICT knowledge and skills to include communication, social, motivational, pedagogical, and content development skills. The capacity for collaboration among teachers in distance education and the use of multimodal approaches to teaching and assessments were found to be substantial to support the diverse needs of online learners. Moreover, the findings indicated that policy change is complex and situational, however, a review of such policies that pertain to teacher education and online learning may warrant a positive change that supports the knowledge and skills of both teachers and learners for distance education.

Conclusion

Looking at the study results, it becomes clear that currently practicing teachers can be offered through formal and no-formal professional development, the chance to improve their skills in digital learning and examine more theories and practices around distance education. Furthermore, teachers during the COVID-19 pandemic may be encouraged to participate in online learning communities and e-learning workshops that develop their capacities in adapting, designing, and modifying digital instruction. Distance learning must also consider how to support students' social, cultural, emotional, intellectual and physical development (Specht et al., 2016;

Tondeur et al., 2017). In other words, teachers involved in distance learning need to improve their competencies beyond the concept of instruction to resolve issues that relate to virtual classroom management such as cyber bullying, plagiarism, time management, and communication. Equally significant for distance teaching and learning, this study recommends that teachers need to learn about how to maintain students' privacy, understand the social contexts of online learners, and be able to set reasonable learning expectations.

During such critical times of COVID-19, investing in innovative online teacher education programs could be one of the means to promote future teachers' competencies for distance learning. Having compulsory online courses in current teacher education programs is recommended to ensure that pre-service teachers have firsthand e-learning experiences. These courses may focus on how to design, develop, and deliver creative lesson plans, and how to construct assessment and evaluation strategies for online learners. Further, teacher education programs may need to interrogate how their current curricula, particularly course designs and delivery methods support the preparation of future teachers to engage in distance learning that is progressively becoming the norm. To bring about such change, educational institutions including schools and Ministries of Education are called upon to ensure the availability of funding that supports teachers' access to digital learning tools, research findings, and resources, helping the latter to utilize, develop, and implement innovative multimodal online teaching approaches.

Based on the offered descriptive skills and capacities that in-service and pre-service teachers need for distance learning, this literature review argues that the development of teacher education policies entails a necessity to reflect on the relation between the complex emerging needs of distance learners and the current designs of teacher education programs and professional development approaches. Undoubtedly, teacher education curricula and professional development endeavors are positioned as significant conductors of knowledge mobilization in this rapidly evolving digital age. Enhancing online learning accessibility for all and contributing to the development of inclusive societies are similarly significant. Last but not least, the current challenges and opportunities that COVID-19 continues to offer us should lay the foundation for a more robust future of distance learning.

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