Special Issue Editorial: A 2025 Vision for Technology and Teacher Education

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Introduction

There is little question that the COVID-19 pandemic has had significant and multifaceted impacts on teacher education. More specifically, the pan-demic highlighted the emergence of new contexts for teaching and teacher education and revealed a variety of concerns and gaps in teacher prepara-tion. At the same time, it also showcased strengths in teacher educators' pedagogical responses to a changing world, revealing impactful opportu-nities for the evolution of the field. Consequently, teaching, learning, and teacher education have undergone unparalleled changes, including the shift to emergency remote learning, the increased adoption and integration of

both traditional and emerging educational technologies, and the preparation of teachers in using these technologies. As we transition away from the temporary teaching and learning environments that emerged during the COVID-19 pandemic, two key questions are important to consider: What lessons have we learned from these emerging changes in teacher preparation? How can we leverage emerging contexts, pedagogies, and technological tools to better support our learners, teachers, and other stakeholders? The goal of this special issue (SI) is to address these questions through a collection of peer-reviewed visionary thought pieces addressing the future of teacher education. In these works, authors highlight key goals for teacher education to achieve by 2025, factors that may enable or inhibit achievement of these goals, and the role of technology in supporting attainment of these goals.

THE PROCESS

In the height of the COVID-19 pandemic, the *Journal of Technology and Teacher Education* (JTATE) published a SI and the Association for the Advancement of Computing in Education (AACE) published an accompanying open access book with the hope of helping preservice teacher educators and inservice professional developers to develop and implement support for new modes of learning (Ferdig et al., 2020; Hartshorne et al., 2020). These two works were developed with the expectation that retrospectives would be published in the future examining what teacher educators learned from the practices and associated research that emerged due to the COVID-19 pandemic and how the field should evolve based on these lessons learned. In some capacity, this SI serves as one such retrospective, focusing on what teacher educators have learned and how these issues should shape the future of teacher education.

As with the 2020 JTATE SI (Hartshorne et al., 2020), during the Society for Information Technology and Teacher Education's 2022 Annual Conference, both invitations and a call for papers were distributed for a SI of JTATE titled "A 2025 Vision for Technology and Teacher Education." Although peer-reviewed, the 2022 SI was atypical from a regular JTATE issue in several ways. First, as with our 2020 SI (Hartshorne et al., 2020), the submission period was abbreviated to three weeks. Second, the manuscript length and format were considerably shorter than the regular 6000–8000-word JTATE papers. As described by Ferdig et al. (2021), we used a medical journal, short-paper style approach in which the authors had approximately 2,500 words to express their vision for the future of teacher educa-

tion. This approach was driven by three considerations that would: 1) allow for quick review and publication; 2) offer clear research and practice directions to support teachers and teacher educators; and 3) enhance impact by publishing an increased number of articles compared to a typical JTATE issue (see Ferdig et al., 2021).

To facilitate rapid review of manuscripts, authors were required to follow strict guidelines including a limit of approximately 1500-2500 words and a standard structure (i.e., introduction, vision, and implementation). Multiple editorial review board members were given tight deadlines to rigorously review the papers to verify they were: 1) visionary; 2) positioned in relevant literature and theory; 3) accompanied by measurable objectives that could be revisited in 2025 and beyond to determine whether teacher educators effectively responded to the call outlined. The call resulted in a robust response of 65 submissions. Of those, 15 were selected for publication (acceptance rate 23.1%).

VISIONS

While the submissions focused on a broad array of areas, the articles can be categorized into three key themes:

1. Emerging Contexts for Teaching
2. Emerging Pedagogies
3. Emerging Technologies

Theme 1: Emerging Contexts for Teaching

As we progress beyond the COVID world of 2020, emerging contexts for teaching and teacher education will continue to be more reliant on digital technologies, fundamentally transformining the role of teacher educators. Yet the COVID-19 pandemic has revealed a number of gaps in teacher education including the need to support diversity, social-emotional well-being, as well as agency and enterpreneurship among the teaching force as technology infiltrates all aspects of schooling, the workplace, and life in the 21st century. The first five articles in the SI address such gaps and identify opportunities for teacher education. Specifically, the authors articulate a vision for teacher education that builds on lessons learned to chart a forward path that reaps the benefits of emerging digital technologies.

First, Dede (2022) sets the stage by providing a cautionary tale of viewing the pandemic as a temporary interruption to normality, rather than the transformation it has created. Dede asserts that "we are now in Oz rather than Kansas, and—contrary to what some parents, many politicians, and all technophobes are hoping—no magical red slippers can bring us back to where we were" (p. 117). He subsequently highlights the need for robust changes in teacher education so that the necessary demands of a changed world are met and the opportunities that have emerged from these changes are embraced and extended.

Next, Zhao (2022) discusses the changing context of education and the impact of this change on teachers and teacher education. In this article, Zhao extends on his prior work (Zhao, 2018a; 2018b) that outlined a new context for education in which students act as their own learners. He then discusses the influence this new context has on teachers and teacher education and highlights the changing role of a teacher from "no longer an instructional machine, but a talent coach, a resource curator, a project manager, and a community organizer" (Zhao, 2022, p. 127). Consequently, Zhao argues that teacher education should recognize and embrace this new paradigm of teaching and focus on preparing teachers in the emerging domains of teaching and learning.

In the third article, Lux et al. (2022) focus on the use of technology-rich early rural field experiences that emphasize place-attentive technology integration for building preservice teachers' interest in and commitment to teaching in rural spaces. While focused on rural spaces, the vision can also serve as a recommendation for improving teacher recruitment and retention in more diverse spaces, thereby supporting key aspects of diversity in teacher education.

The fourth article, by Henriksen et al. (2022), calls for a focus on well-being and mental/emotional health in teacher education programs. This call is driven by two rapidly evolving societal and educational trends, including the proliferation of digitally-networked technologies, and a rising crisis in mental health and emotional well-being. The authors argue that while Internet technologies have significant learning affordances in their ability to connect people, we need to attend to human-centered well-being to avoid negative consequences associated with emotional well-being. The concern for such consequences was exacerbated during the pandemic given the wide use of networked technologies. The authors propose that teacher education should implement curricula that support both teachers and students through the implementation of mindfulness techniques. They also examine a mindfulness school initiative and provide implications for teacher education (Henriksen et al., 2022).

Lastly, Shelton and Archambault (2022) discuss online teacherpreneurship via popular online educational marketplaces, such as Teacherspayteachers.com (TpT), whereby teachers purchase, sell, and exchange curricular materials designed for classroom use, created by fellow educators. The authors discuss the potential benefits and concerns of teacherpreneurship and advance a vision for teacher education which addresses online teacherpreneurship together with online educational marketplaces by preparing teacher candidates to be critical consumers, careful creators, and discerning professionals (Shelton & Archambault, 2022).

Theme 2: Emerging Pedagogies

As new contexts have emerged in teacher education since the COVID-19 pandemic, several emerging pedagogical issues and approaches have also risen. The next six articles in the SI articulate a vision focusing on emerging pedagogical issues and approaches to technology and teacher education, with implications for practice. Specifically, the first article by Trust et al. (2022) addresses a key issue associated with the use of the Internet and digital resources, namely, critical media literacy. With the increased prevalence of varied media in our everyday lives, teacher education must make critical media literacy an essential pillar moving forward in order to create a society that is more media literate and more aware of misinformation and disinformation threats (Trust et al., 2022).

Next, the article by Sprague et al. (2022) presents pedagogical approaches that support technology-infusion in teacher education as a means to effectively prepare preservice teachers to teach with technology. Particularly, Sprague and colleagues present program-wide and program-deep approaches that move beyond standalone courses to model effective technology infusion and provide opportunities for practice throughout a teacher education program.

Building on the technology-infusion strategies proposed by Sprague et al. (2022), Yadav and Lachney (2022) argue for the need to help preservice teachers acquire skills to both *use* and *create* with technology through pedagogical practices that emphasize creative endeavors. Specifically, the authors highlight the need for teacher education programs to develop and enhance preservice teachers' ability to effectively and efficiently "use technology to support teaching and learning in their classrooms (with), identify how technologies lead to productivity and harm (about), and strategize how technologies can support creativity and personal expression (through)" (Yadav & Lachney, 2022, p. 190).

The article by Hodges et al. (2022) identifies yet another pedagogical practice that needs to be infused in teacher preparation programs that focuses on preparing teachers to teach successfully in online and blended modalities. The authors articulate a vision for teacher education programs that include coursework, field experiences, and opportunities to monitor growth in preservice teachers' ability to teach in online and blended environments. Recommendations for standards and accreditation policies are also discussed along with methods for addressing potential threats to the implementation of online and blended teaching and learning in teacher education programs (Hodges et al., 2022).

To learn skills such as those advocated by authors in this section, teachers need opportunities to practice. In the next article, Reich (2022) argues that teacher educators should revisit the role of practice in the preparation of preservice and inservice teachers and should significantly increase the frequency of low-stakes practice opportunities. Such activities could be supported through technological interventions, such as simulations developed on the Teacher Moments virtual platform (Reich, 2022). Teacher Moments engages preservice and inservice teachers in vignettes of classroom life using text, images, and videos (Reich, 2022). It subsequently calls upon participants to respond to difficult decisions in teaching through recorded audio and text.

While recognizing the importance of using technology to improve education, in the concluding chapter in this section, Krutka et al. (2022) caution teacher educators about the potential harms of emerging technologies as we progress to more technology-infused teaching and learning environments. Specifically, Krutka and colleagues encourage teacher educators to help both preservice and inservice teachers examine potential harms associated with new technologies by promoting a more active, inclusive, and informed citizenry that supports "more humane and just communities" (Krutka et al., 2022, p. 231).

Theme 3: Emerging Technologies

A series of new technologies to support the preparation of teachers has rapidly emerged since the onset of the pandemic. The final four articles in the SI discuss the use of these technologies and how teacher educators can leverage them to enhance the preparation of preservice and inservice teachers. First, Ferdig et al. (2022) discuss extended reality (XR) technologies which emerged as tools to supplement or replace traditional field experienc-

es common in teacher education programs. Specifically, Ferdig et al. (2022) present a vision for how XR technologies can be leveraged to provide future teachers with immersive virtual field experiences, building on the successes of pandemic-era research and practice in using XR-based field experiences.

Next, Wang (2022) articulates a vision for the implementation of biometrics (such as eye tracking) in teacher education settings. These emerging technologies allow for the collection of psychological data that could be particularly useful in personalizing instruction in online and blended settings. According to Wang (2022), teacher education programs should include the integration of eye tracking training where teachers would learn to interpret biometric data for teaching and research purposes.

Subsequently, Jin and Harron (2022) set forth a vision built around the maker movement, which encourages teachers and students to become creators and innovators. Specifically, Jin and Harron argue for the need to integrate maker education tools into teacher education programs as mechanisms to support higher order thinking and more collaborative teaching and learning spaces.

Finally, Dawson et al. (2022) caution teacher educators about the potential threats of digitial technologies such as cyberattacks (i.e., identity theft) which continuously increase. Meanwhile, preservice and inservice teachers lack cybersecurity education. Consequently, Dawson et al. present a vision for more systematic teacher preparation which integrates cybersecurity concepts and best practices into the K-12 curriculum. The authors offer a repository of activities and curricula developed collectively by teacher educators and cybersecurity experts.

CONCLUSION

Due to the worldwide effects of the pandemic on educational research and practice, many scholars have participated in helping the world figure how to continue learning and teaching despite various distruptions and obstacles that have been taking place since 2020. While that help is undeniable, inservice and preservice teachers still remain uncertain about the best ways to tackle blended and online instruction, how to utilize emerging technologies in their classrooms, as well as address the myriad of issues that have arisen in K-12 education in recent years. The goal of this SI was to encourage visionary thoughts to advance research and practical applications in the context of technology and teacher preparation. Authors highlighted main goals for teacher education to be achieved by 2025 and discussed the role of

technology in meeting those goals. We believe the three themes throughout these articles (i.e., emerging contexts for teaching, emerging pedagogies, and emerging technologies) will serve as a future pathway for researchers and teacher educators and we invite you to consider these themes for the future of teacher education.

In closing, we, as the editors would like to extend our gratitude to our editorial review board members for their rapid, thorough, and constructive reviews. Finally, we thank AACE for facilitating the process of rapid publishing of these important visionary thought pieces, which could serve as a guide to teacher educators in the upcoming academic year and beyond.

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