Editorial
What we learned about Technology and Teacher Education in 2016

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In the twenty-fourth volume of the *Journal of Technology and Teacher Education,* we published sixteen peer-reviewed articles in four issues. These papers examined topics such as teacher engagement with social media, online professional development, learning to teach writing with digital technologies, use of simulation, virtual, online, and mobile technologies in teacher education, technology integration in teacher education around the world, preservice teacher self-efficacy and beliefs about technology integration, and inservice/preservice teachers' perceptions of mobile phone integration. This editorial summarizes the key findings of the articles published in *JTATE* in 2016, their implications for teacher education, and suggests potential areas of inquiry for 2017.

Looking back at the 2016 Journal of Technology and Teacher Education

There is an obvious danger in attempting to summarize each of volume twenty-four's sixteen articles into a few keywords or sentences. One could easily miss key statements, ideas, and implications. As such, we recommend readers spend quality time with each article.

Having said that, a brief meta overview of the articles does provide a thirty-thousand foot perspective on the kinds of topics that received attention in 2016. There were four key topics that emerged in the 16 articles. Those included: 1) <u>digital tools</u> (e.g. wearables, practical/conceptual tools, video, animations, simulations, and mobile learning); 2) <u>social media</u> (e.g. *Twitter* and other social networks); 3) <u>new instrument development</u> (e.g. new surveys for risk, technology integration, beliefs, self-efficacy, and TPACK); and 4) <u>the study of online environments</u> (e.g. generative discourse, online and face-to-face programs, and international understanding). Each of these topics is presented below with a brief summary of the key contributions of the authors.

<u>Topic 1: Digital tools for teacher education.</u>

- *Wearables can be used to support teacher development (Estapa & Amador, 2016).* Estapa and Amador (2016) explored the use of wearable cameras to capture preservice teachers' in-the-moment noticing of introspective positions. The findings of their study show that preservice teachers can mark moments of noticing, but at a lesser rate than practicing teachers, suggesting that preservice teachers need more opportunities for noticing. The authors argue that technological tools such as wearable cameras support the development of in-the-moment noticing.

- *Digital tools may best be implemented by further exploring the relationship between practical and conceptual factors (Johnson, 2016).* Drawing upon cultural historical activity theory, Johnson (2016) explored how three high school English teachers appropriated digital tools from their professional learning from a workshop to their classrooms. Teachers incorporated practical tools with little difficulty, but struggled to appropriate conceptual tools. Johnson recommends that teacher educators make clear distinctions between 'practical' and 'conceptual' tools and help teachers set goals and have meaningful reasons for using digital tools in the classroom.

- *Video can support professional development in both cognitive and affective outcomes in areas like classroom management (Marquez, Vincent, Marquez, Pennefather, Smolkowski, & Sprague, 2016).* Marquez et al. (2016) examined the opportunities and challenges of a module-based professional development classroom management program called *Classroom Management in Action* (CMA). Their

study revealed that teachers found this program to be relevant and im-
proved their knowledge of evidence-based classroom management
practices. Their results show that the CMA program, and specifi-
cally the use of videos within the modules, promoted a level of cog-
nitive engagement and a positive response, which motivated teach-
ers' learning. They suggest evidence-based professional development
programs such as CMA are useful tools for aligning policy, research
and practice because they can be completed online at any time and do
not require teachers to attend a series of scheduled training sessions.

- *Classroom simulations can positively impact communication self-effica-
  cy as well as self-realization of a need for personal growth (Regalla,
  Hutchinson, Nutta, & Ashtari, 2016).* Regalla et al. (2016) suggest that
  American preservice teachers are generally not being prepared to meet
  the needs of culturally and linguistically diverse students. Using a sim-
  ulation classroom to present a lesson to English learner avatars, Regalla
  and colleagues report that preservice teachers who used this technology
  reported a high sense of self-efficacy on a survey but this sense of effi-
  cacy was not reflected in their written reflections about using the simu-
  lation classroom. In other words, the simulation experience brought to
  light some of the teacher candidates' unrealized areas for improvement.
  This finding suggests that simulation classrooms provide one avenue
  for practicing teaching before placing teacher candidates in a real class-
  room.

- *Animations can promote the use of noticing as well as assessment of
  pedagogical content knowledge (Amador, Weston, Estapa, Kosko,
  & de Araujo, 2016).* Amador et al. (2016) examined the use of ani-
  mations as approximations of practice by elementary mathemat-
  ics preservice teachers at six universities. Findings showed that pre-
  service teachers were more specific in the reporting of their notic-
  ing when they used animations instead traditional writing. The
  authors argue that animations afforded teachers a greater access to
  noticing than could have been elicited in writing. They suggest that
  these animations can be used across disciplines in teacher educa-
  tion to assess preservice teachers' pedagogical content knowledge.

- *Mobile technologies enable preservice teachers to make connections
  between academic learning and everyday settings (Kalir, 2016).* This
  article examines preservice teachers' learning via a curriculum module,

Mapping My Math (MMM). Using data from three semesters in an elementary mathematics methods course, Kalir shows how MMM enabled preservice teachers to make connections between academic and everyday mathematics. MMM is one mobile template that may be helpful for exploring mathematics education outside the classroom.

Topic 2: Teacher Education and Social Media

- *Twitter can be used as a platform for professional development (Noble, McQuillan, & Littenberg-Tobias, 2016)*. Noble and colleagues (2016) explored teachers' use of Twitter as an alternative source of professional learning and engagement. This online network helped teachers build confidence in their teaching practice and provided a space for them to reflect on their practices. Furthermore, teachers were motivated to orient their teaching toward more student-centered practices because of their involvement in a supportive online professional network. The authors advocate for the use of Twitter as a platform for educational change and professional learning.

- *Preservice teachers may need explicit instruction on what is/is not appropriate to post online (Crompton, Rippard, & Sommerfeldt, 2016).* In this mixed-methods study, the authors aimed to develop professional guidelines for social media use. Employing a survey which asked teacher candidates to make decisions about what is/is not appropriate to post on social networks, they found their participants did not know what images or text would be appropriate to post on their own social networks. More importantly, they find that teacher candidates do not fully understand the kinds of social media behaviors that would be grounds for dismissal as teachers. Their guidelines propose the kinds of explicit instruction teacher candidates may need with regards to social media, including but not limited to explaining why they should not post about alcohol, drugs, or sexual acts online, checking the appropriateness of a post before liking or sharing, and reminding teacher candidates that "private" networks are not really private if they are online.

Topic 3: New Instrument Development: New tools have been created or modified to…

- *…study risk and intentions to use educational technologies (Kilinc, Ertmer, Bahcivan, Demirbag, Sonmez, & Ozel, 2016).* Kilinc and col-

leagues (2016) examined Turkish preservice middle school teachers' intentions to use educational technologies in their future classrooms through the lens of the Decomposed Theory of Planned Behavior. Through their survey of 1,667 students, they found that Turkish preservice teachers perceived educational technologies to be useful for future practice and held positive attitudes about the pedagogical benefits of using these technologies. Students did not perceive using educational technologies as 'risky' behavior, suggesting that young teachers may be more inclined to use technology than their older colleagues. Kilinc et al (2016) recommend continued and additional learning opportunities supported by educational technologies in programs of teacher education.

- *…explore intentions for technology integration; these measurements may yield different results across locations, cultures, and environments (Perkmen, Antonenko, Caracuel, 2016).* Perkmen and colleagues (2016) examined the validity of the Teacher Intentions to Integrate Technology in Education scale with preservice teachers in three countries--Turkey, Spain, and the United States. The survey assessed preservice teachers' perceptions of the role of self-efficacy, outcome expectations, and school climate with regard to their intentions to use technology in the classroom. The authors found a number of differences across the three samples: American preservice teachers reported higher motivation to use technology and higher social outcomes expectations than their Turkish and Spanish counterparts; Turkish preservice teachers reported the lowest school climate scores but the highest scores in performance outcome expectations; Spanish preservice teachers reported the lowest scores on self-evaluative outcome expectations. The confirmatory factor analysis showed this instrument to be highly valid across countries, proving it can be useful for researchers around the world.

- *…measure beliefs and values toward technology adoption (Kimmons & Hall, 2016).* In this study, Kimmons and Hall (2016) asked preservice and inservice teachers about the importance of institutional considerations for their adoptions of technologies. They find that teachers beliefs and values are not typically directed by differences in teaching experience and that teachers want technologies that can support their existing instruction and be integrated easily. The authors contend that teacher educators seeking to integrate technology into teacher preparation should do so with concrete applications to student learning in mind.

- *…examine preservice teachers' self-efficacy (Kiili, Kauppinen, Coiro, Utriainen, 2016).*   In this article, the authors present two studies designed to investigate preservice teachers' self-efficacy and beliefs with regards to three areas of self-efficacy: teaching, computer use, and technology integration. Study I employed a self-efficacy questionnaire with 200 preservice teachers; from the results, the authors hypothesize three self-efficacy measurement scales. Study II examines the effects of digital video composition experiences on these three measures of self-efficacy. Results show increases in self-efficacy on all three areas. The authors argue that digital composition experiences potentially increase preservice teachers' confidence in using technology.

- *…rethink the measurement of TPACK (Yilmaz Ozden, Mouza, Harlow Shinaz, 2016).* Yilmaz Ozden, Mouza, and Harlow Shinaz (2016) developed and tested a survey instrument for measuring preservice teachers' Technological Pedagogical Content Knowledge (TPACK). In surveying 124 preservice teachers, they found two domains of TPACK: Knowledge of technology and knowledge of teaching with curriculumbased technology. The authors suggest that although TPACK is a wellestablished construct, accessible validated instruments for measuring domains of TPACK are still needed.

Topic 4: The Study of Online Environments

- *There are affordance and constraints of using an online forum for promoting discussions about field experiences (Lafferty & Kopcha, 2016).* Using descriptions of generative discourse, Lafferty and Kopcha (2016) explored how a community of preservice teachers, their supervisors, and other experts interacted in an online discussion forum during field experiences. Their results point to the affordances and limitations of using an online forum for generative discussions. They find that supervisors play a key participatory role in guiding online conversations of preservice teachers.

- *Teacher learning can be comparable across mediums (Haefner & Petty, 2016).* Using edTPA data, Haefner and Petter (2016) demonstrate the equivalency of traditional face-to-face teacher education program as compared to an online program. They found teacher learning to be generally comparable across mediums. The authors argue against the perception that online courses are somehow inferior to the traditional

classroom. They suggest that online teacher education programs are just as effective as traditional face-to-face programs in developing teachers' knowledge of curriculum and pedagogy.

- *Online cross-national discussions can develop students' global perspectives of education and teaching (Commander, 2016).* Commander (2016) examines the use of online cross-national online discussions in developing students' cultural awareness and global perspectives of education. This technology provided an avenue for undergraduate students in the U.S. and Hong Kong to discuss teaching. Using qualitative and quantitative measures, Commander shows how this platform aided in promoting rich cross-national discussions about education.

Looking Forward to 2017

The four broad topics (digital tools, social media, instruments, and online environments) were interwoven with other subcategories that become immediately apparent upon a closer read. For instance, articles addressed both content (e.g. mathematics and literacy) and context (e.g. countries, delivery formats, and grade levels). And, it is worth noting that these published pieces do not necessarily reflect all of the manuscript content that was either rejected, accepted with revisions, or accepted for publication at a later date. Said differently, this list is not comprehensive of all the topics addressed by JTATE and its editorial review board in 2016.

However, this snapshot provides evidence of the impressive work happening in our field. And, it can help point to some of the questions and topics that are happening in our field that may have not been addressed or given the full attention they deserve. These could be things that are happening politically, technologically, and pragmatically. For instance:

- JTATE published an invited commentary in 24(3) on competencies for teacher educators (see Foulger, Graziano, Slykhuis, Schmidt-Crawford, & Trust; 2016). This is a growing, important area that deserves more attention.

- JTATE published on wearables in 2016 (see Estapa & Amador, 2016). Given the tremendous growth of interest in fashion technologies, what impact could that make on wearables for teacher education?

- JTATE published a few articles on social media in 2016, but how does this research translate into practice? How does that research translate into policy that might lead to recommended and/or established guidelines as social media evolves and emerges?

- People do not always like the word 'best practice', but teachers need meaningful, evidence-based strategies for integrating technology. How do we take the continually growing field of technology and teacher education and continue to learn to build on the work of each other. And, in doing so, how do we find a way to continue to translate that into practice and policy?

- Given the large body of work on technology and teacher education, how do we find ways to help guide and support replication studies to strengthen our empirical findings (see Bull, Thompson, Schmidt-Crawford, Garofalo, Hodges, Spector, Ferdig, Edyburn, & Kinshuk, 2016).

- Accessibility is often an afterthought in the development and implementation of new tools. This is true for both development and professional development in areas like mobile learning (see Ferdig, Pytash, Kosko, Gandolfi, & Mathews, 2016). How do we better prepare teachers and teacher educators for digital innovations and accessibility for all learners?

These are just a few of the important areas we hope to see addressed in 2017. We continue to believe that the *Journal of Technology and Teacher Education* has the awesome responsibility of disseminating critical research as well as promoting important work in the field. On behalf of the Editorial Review Board, we thank JTATE readers and authors and look forward to seeing your published work in the years ahead.

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