

Invited Commentary
**The Time is Now! Creating Technology Competencies
for Teacher Educators**

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The way preservice teachers learn to use technology within their practice varies widely depending on the learning opportunities available (e.g., technology-infused teacher preparation program vs. standalone education technology course), and the knowledge, skills, and attitudes of the teacher educators within their teacher preparation programs. Curriculum, as well as teacher educators' use of technology for teaching and learning, impacts preservice teachers' use of technology in their practice. Yet, there is no cohesive set of technology competencies to guide teacher educators in teacher prepara-

tion programs. This commentary advocates for the need to develop a common set of technology competencies for teacher educators to help guide their work in helping preservice students develop their ability to teach with technology.

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Schools should be able to rely on teacher preparation programs to ensure that new teachers come to them prepared to use technology in meaningful ways. No new teacher exiting a preparation program should require remediation by his or her hiring school or district. Instead, every new teacher should be prepared to model how to select and use the most appropriate apps and tools to support learning and evaluate these tools against basic privacy and security standards...This expertise does not come through the completion of one educational technology course separate from other methods courses but through the inclusion of experiences with educational technology in all courses modeled by the faculty in teacher preparation programs.

(U.S. Department of Education, OET, 2016, p. 32)

This excerpt from the 2016 National Education Technology Plan (NETP) challenges *everyone* involved in preparing new teachers to be accountable for including experiences with educational technology that model innovative and appropriate use. This means *all* instructors in *all* courses within *all* preparation programs (U.S. Department of Education, OET, 2016). Specifically, it calls for teacher preparation programs to assure their graduates, from day one, know that “effective use of technology is not an optional add-on or a skill that [they] can simply...pick up once they get into the classroom” (p. 32). If all teacher preparation programs in the United States and around the world are charged with the need to prepare preservice teachers to use technology in powerful ways, then teacher educators responsible for this charge must establish curriculum within their courses for teaching with technology, serve as role models in the use of technology in teaching, and provide support to preservice teachers to develop their own ability to teach with technology. We cannot assume that “tech savvy” preservice teachers who enter teacher preparation programs today have the ability to use technology appropriately in their future classrooms without support and practice (Dexter, 2006; U.S. Department of Education, OET, 2016). Many colleges of education attempt to address this need in their cur-

riculum, yet the NETP claims that, “Across the board, teacher preparation and professional development programs fail to prepare teachers to use technology in effective ways” (U.S. Department of Education, OET, 2016, p. 5).

Consequently, the NETP explicitly calls for those involved with teacher preparation to develop a common set of technology competencies for university educators who support preservice teachers. The NETP plainly states that learners at all levels, PK-20, should be taught by educators who can integrate technology effectively:

There should be no uncertainty of whether a learner entering a PK–12 classroom or college lecture hall will encounter a teacher or instructor fully capable of taking advantage of technology to transform learning. Accrediting institutions, advocacy organizations, state policymakers, administrators, and educators have to collaborate on a set of clear and common expectations and credentialing regarding educators’ abilities to design and implement technology-enabled learning environments effectively. (p. 37)

The goal of this commentary is to inform teacher educators around the world about the steps and collaborative work being completed to respond to this bold call with the purpose of creating a set of technology competencies for teacher educators. These collaborative efforts are positioned to lay the foundation for establishing a clear and useful set of technology competencies that will apply to *all* teacher educators, regardless of their content area. Such a coordinated and collaborative effort will move teacher preparation programs in a positive direction to ensure graduates of their programs leave with the ability to teach with technology in meaningful ways.

With an array of social, economic, and technological forces driving change in society, educational institutions need to provide learners with innovative curriculum and new forms of pedagogy that embrace the use of technology. Researchers have recognized such needs in society and remind us that the process of accrediting institutions and programs today is designed to support engaging innovations; learning communities; and active, experiential, and technology-enhanced approaches to teaching and learning (Association of American Colleges and Universities, 2004). Learning techniques meant to reach the plug-and-play generation of the digital age include an array of asynchronous learning, and interactive and collaborative techniques (Duderstadt, 2000). As new technologies continue to emerge, policymakers would like to see colleges and universities prepare highly skilled graduates to satisfy workforce needs (Association of American Colleges and Universities, 2002). Teacher educators cannot and should not ig-

nore their responsibility and commitment to the ever-changing nature of technology and its role in society and PK-12 schools.

Thus, this ‘call to action’ requires us to critically examine and carefully think about what knowledge, skills and attitudes *all* teacher educators must have about technology to transform learning in our courses and learning spaces. The call challenges us to develop a list of competencies that we believe *all* teacher educators working with preservice teachers should know about with regards to using and integrating technology for teaching and learning. An important first step is to understand what a competency is and how it is different from a standard or a skill.

What are Competencies?

Competencies have been defined as “knowledge, skills, or attitudes that enable one to effectively perform the activities of a given occupation or function to the standards expected in employment” (Richey, Fields, & Foxon, 2001, p. 31). A comprehensive definition of competencies comes from researchers Spencer and Spencer (1993) related to workplace competency: integrated *skills*, *knowledge*, and *attitudes* that are essential to success in the workplace, and may involve personal values and self-motivation, which are both observable and nonobservable.

The term competencies can be traced back to Boyatzis’s (1982) book *The Competent Manager: A Model for Effective Performance*. Since this work was published, the term competency has been used synonymously with terms such as standards, learning objectives, and skills; however, a *competency* is a multidimensional concept (Hoffmann, 1999) and is uniquely different from each of these terms:

- Standards are used to measure or evaluate success.
- Learning objectives are statements that describe the outcomes of a learning activity in terms of skills, knowledge, and attitudes.
- Skills are part of competencies, but competencies are more than just skills.

For example, the competency “Building a Classroom Community in an Online Environment,” involves skills (e.g., building relationships, connecting students, using digital tools to increase communication), knowledge (e.g., what collaboration and communication tools are available), and attitudes (e.g., belief that community building is important). With this definition in mind, it now important to outline the task of developing technology competencies specific to teacher educators.

Developing Technology Competencies for Teacher Educators

With regard to the task of developing competencies for teacher education that will address their work to help preservice students develop their ability to teach with technology, these competencies need to be written in a way that will support professional development and learning goals, with the intention of positively influencing the observable performance of teacher educators. To be most effective, these competencies must be flexibly applied to a variety of learning environments of the target population (preservice teachers) with consideration for any evolving combinations of face-to-face and online formats needed in order to expand (global) possibilities (Klein, Spector, Grabowski, & de la Teja, 2004). As well, competencies for helping preservice students develop their ability to teach with technology should be “less anchored to particular points in time and geographic location” (Darabi, Sikorski, & Harvey, 2006, p. 105) and account for technology advancements, and expanding opportunities for teaching methods that involve learning at a distance.

Researchers have strongly recommended using scholarly literature to inform the development of competencies (e.g., Klein, Spector, Grabowski, & de la Teja, 2004; Sherman, Dobbins, Tibbets, Crocker, & Dlott, 2002). However, a review of literature revealed no agreed-upon set of technology competencies for teacher educators as they support preservice teachers in integrating technology into their practice. Although a few researchers offered suggestions for specific skills, attitudes, and knowledge that teacher educators need (e.g., Fleming, Motamedi, & May, 2007; Rosenfeld, 2008; Tondeur et al., 2012), researchers have not yet synthesized these disparate findings into a cohesive set of technology competencies for use by teacher educators. It seems that is the next logical step in responding to this call.

Addressing the “Call”: Next Steps

The authors of the 2016 NETP (U.S. Department of Education, OET, 2016) have certainly prompted those of us in teacher education to not “sit on the sidelines,” but to take the appropriate steps and address how to guarantee that new teachers graduating from our programs be prepared to use technology appropriately to support teaching and learning. Collaborative efforts are currently underway with the ultimate goal of developing a set of technology competencies for teacher educators. While it may not be possible for the literature alone to provide a comprehensive list of technology competencies for teacher educators, individual competencies can be identi-

fied by culling the literature related to the skills, knowledge, and attitudes that support teacher educators in helping preservice students learn how to teach with technology.

Early in 2016, an open call went out to teacher educators worldwide to assist with the task of online crowdsourcing of literature. Crowdsourcing involves “outsourcing” a task to a group of people and allows for many individuals to participate in knowledge generation, and to participate based on their varied expertise and experience. Many individuals answered this request and the contributed literature depicts some of the knowledge, skills, and attitudes needed for teacher educators who prepare preservice teachers. As a result of this early crowdsourcing effort, 93 articles were submitted. After a thorough review by the research team, 43 articles were selected as a starting point to begin extracting a list of possible competencies for teacher educators. The resulting list of 24 competencies from the crowdsourcing procedures was then used to inform a Delphi study to refine the competencies.

A Delphi methodology is being used to “elicit, distill, and determine the opinions of a panel of experts” from the field of technology and teacher education, with the purpose of seeking consensus on technology competencies for teacher educators (Nworie, 2011, p. 24). This methodology aligns well with this important but difficult task because it allows “a group of individuals, as a whole, to deal with a complex problem” (Linstone & Turoff, 2002, p. 3). The Delphi study is currently underway and includes 17 diverse and highly qualified participants who are actively engaged in an iterative process that will include up to 5 rounds of interactive thought and response. To date, the participants have completed 2 rounds of the Delphi study as we move closer to consensus and an agreed-upon list of technology competencies for teacher educators.

In an effort to communicate and share the steps already taken to address this bold “call to action”, a website (<http://teacheredtechcompetencies.weebly.com>) was designed to track our progress and early results. Establishing a set of clear and useful technology competencies that apply to all teacher educators, regardless of their content focus, will help colleges of education move forward in the effort to develop preservice teachers’ ability to teach with technology. We envision the competencies to be used as the basis for colleges of education to more systematically address technology integration curriculum throughout a program, for faculty goal setting and professional development, and as a basis for credentialing decisions. The resulting competencies will establish a common value on using technology for meaningful learning in teacher preparation, and will drive efforts toward that end.

As the competencies are being created, those who support the project are encouraged to become champions to help increase awareness of the TETCs. Once the Delphi process is complete, public comment will be solicited. Concurrently, the research team will facilitate conversations with affinity groups such as content-related faculty, deans of colleges of education, content area standards committees, professional developers, etc. The feedback from the public comments and focus groups will be examined to integrate any points of concern. After the final list of competencies is published, those interested in the usability of the competencies will have the opportunity to get involved through activities such as exploring professional development models and creating research agendas. We encourage individuals and organizations who want to get involved to monitor the project web site for publicized needs (<http://teacheredtechcompetencies.weebly.com/>), or to contact anyone on the research team.

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