Editorial: Beliefs, Models, and Practices on Fostering Teacher Learning in Technology Integration

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Most teachers believe that students' use of digital devices has a "mostly helpful" effect on students' education (Busteed & Dugan, 2018). Yet, many teachers are not provided with the professional development and digital tools they need to integrate novel digital technologies effectively in their classroom. A survey administered to 1,208 K-12 teachers by Common Sense Media (2019) revealed that about one third of teachers do not routinely use technology products provided to them by their school or district, because they are not relevant to their student needs or their efforts to develop students' knowledge and skills. One way to address this challenge is by allowing teachers space and time to identify both the technologies they like to use and the ways in which they can be used to support their students' learning.

The articles in this issue of *CITE journal* present innovative approaches to helping teachers identify both the types of digital technologies they think have promise for their individual contexts (e.g., hospital schools and 1:1 environments) and the ways in which they think can be utilized to support student learning. The articles present approaches to professional development that have shown promise, particularly around the role of continuous support and coaching (see Constantine & Jung; McCarthy, Maor, & McConney). However, this set of articles is not limited to teacher learning and practice but also focuses on the cognitive aspects of teaching, including teacher thinking and decision-making (see Quinlan; Regan, Evmenova, MacVittie, Legggett, Ives, Schwartzer, Mastropieri, & Rybicki-New; Thomas & Edson). Both of these areas of work have important implications for teachers as well as teacher educators.

In addition, the English Language Arts Education section has an interesting set of articles in this issue representing a culmination of longstanding work to produce a set of beliefs around the integration of technology in English language arts classrooms. The first article, "Beliefs for Integrating Technology into the English Language Arts Classroom"by the Lynch et al. presents this set of beliefs. The article "23 Months x 22 Scholars: Collaboration, Negotiation, and the Revision of a Position Statement on Technology in English Language Arts" by Lauren Zucker and Troy Hicks provides insights into the process by which 22 scholars over 23 months examined theory, collaborated, and used technology to produce the beliefs statement. Finally, the last article, "Beliefs for Integrating Technology into the English Language Arts Classroom: Reflections from Scholars in the Field" by Donna Alvermann, Ewa McGrail, Carl A. Young, Nicole Damico, and Lauren Zucker, presents reflections from scholars in the field around the two articles.

This set of papers is of interest to the entire *CITE Journal* community, not only because of the beliefs articulated specifically around technology and English language arts classrooms, but also because of the implications drawn for three different audiences: K-12 English teachers along with their students, English teacher educators with preservice and in-service teachers, and English and literacy researchers. I stand on one recommendation for researchers, in particular, that encourages us to "focus on inquiry that balances the novelty of digital tools with the overarching importance of teaching and learning for deep meaning-making, substantive conversation, and critical thinking." This recommendation applies to the integration of technology across all content areas – not only English language arts. The articles in this issue are good examples of research that attempts to identify how teachers balance the novelty of technology with the importance of teaching that leads to student understanding.

The Current Practice section article, "Supporting Public-Facing Education for Youth: Spreading (Not Scaling) Ways to Learn Data Science With Mobile and Geospatial Technologies" by Katie Headrick Taylor, Deborah Silvis, Remi Kalir, Anthony Negron, Catherine Cramer, Adam Bell and Erin Riesland, clearly illustrates the themes cut across the articles of this issue, focusing on teacher *adaptation* rather than *adoption* of curriculum supported by digital tools. Specifically, this article examines how educators can use mobile technologies to engage students with data in the world around them as they utilize geospatial technologies to address community issues. This work is important because traditionally teachers struggled to utilize mobile devices outside the classroom despite their affordances, availability and prior professional development (Mouza & Greenly-Barrett, 2015; Reichert & Mouza, 2018). This article provides an example of how teachers can leverage the affordances of mobile tools to support anytime-anyplace learning.

The General section article, "Transforming Mobile Learning and Digital Pedagogies: An Investigation of a Customized Professional Development Program for Teachers in a Hospital School" by Aidan McCarthy, Dorit Maor, and Andrew McConney, examines an issue that has been highly neglected in the literature. Specifically, it examines the professional development of teachers who serve students in unique contexts, in this case a hospital. The study examines teachers' views following their participation in a professional development program focusing on the integration of mobile technologies and digital pedagogies in a school located in a hospital. Situated in the theoretical framework of technology, pedagogy, and content knowledge (TPACK), the study found that customized professional development supported by coaching can foster teacher knowledge and improve the use of mobile technology in a hospital school setting. Results have implications for the design of professional development programs that support teacher learning, particularly in settings that differ from traditional school environments.

Also focusing on the role of coaching, the Science Education section article, "Using Digital Science Notebooks to Support Elementary Student Learning: Lessons and Perspectives from a Fifth-Grade Science Classroom" by Angelina Constantine and Karl G. Jung, focuses on one teacher's learning and implementation of a digital tool that could support science learning in the context of a district's 1:1 initiative. The teacher under study adopted digital science notebooks and worked with an instructional coach to identify and harness the affordances of these notebooks for students' science learning. Findings of this work illustrate teachers' plans and perceptions around the use of digital notebooks and have implications for science teachers' practice.

Recognizing that teacher professional development is essential but also not always widely available, the Social Studies Education section article, "A Case of Early Adopters of Technology in a Social Studies Classroom" by Kelley Regan, Anna Evmenova, Nichole P.

MacVittie, Alisia Legggett, Samantha Ives, Jessica Schwartzer, Margo Mastropieri, and Maria P. Rybicki-New, examines how one pair of coteachers focused on their own learning and implementation of a digital tool for persuasive writing in elementary school classrooms. Specifically, this case study focuses on a key ingredient of teacher learning – teacher decision-making around the integration of digital tools in instruction and factors that influence these decisions, implementation, and student outcomes.

Also focusing on teacher thinking and decision-making the Mathematics Education section article, "A Framework for Teachers' Evaluation of Digital Instructional Materials: Integrating Mathematics Teaching Practices with Technology Use in K-8 Classrooms" by Amanda Thomas and Alden J. Edson, explores how elementary/middle school teachers evaluate digital instructional materials for mathematics, particularly at the intersection of technology and research-based practices for teaching mathematics. The resulting evaluation framework has implications for mathematics teacher educators and the ways in which they support teacher use of technology with research-based pedagogical practices to support student learning.

Moving from practicing to preservice teachers the second Science Education section article, "Use of Schema Theory and Multimedia Technology to Explore Preservice Students' Cognitive Resources During an Earth Science Activity" by Catherine. L Quinlan, examines the use of technology and cognitive resources while a group of participants carry out a crime scene investigation toolkit in Earth science. Utilizing an explanatory framework, the author demonstrates the role of schema theory for understanding participants' cognitive resources during a technology-supported science investigation. Findings of this work provide important insights related to the integration of technology in science – particularly in relation to the three dimensions of the *Next Generation Science Standards*.

We hope readers enjoy this set of articles. We encourage readers to submit formal commentaries or responses.

References

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