

Editorial: The AMTE – SITE Collaborative Partnership

Jennifer M. Bay-Williams, President
Association of Mathematics Teacher Educators

Gerald Knezek, President
Society for Information Technology and Teacher Education

The Association of Mathematics Teacher Educators (AMTE) and the Society for Information Technology and Teacher Education (SITE) are now entering the tenth year of a fruitful collaborative partnership. This anniversary provides an opportunity to revisit the history, objectives, and future opportunities for this partnership.

The initial impetus for the collaborative partnership was a mutual recognition that dialog and collaboration could be productive for both professional associations. The National Council of Teachers of Mathematics (NCTM, 2000) identified technology as one of six principles of high quality mathematics education: "Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning" (p. 24).

The members of AMTE and SITE strongly support this principle, contributing to it from slightly different perspectives. Mathematics teacher educators tend to focus on the need to address worthwhile mathematics with appropriate pedagogy, taking advantage of technology to connect mathematics topics (Garofalo, Drier, Harper, Timmerman, & Shockey, 2000).

AMTE, building on the work of NCTM, developed a technology position statement focused on teacher preparation that states, "Mathematics teacher preparation programs must ensure that all mathematics teachers and teacher candidates have opportunities to acquire the knowledge and experiences needed to incorporate technology in the context of teaching and learning mathematics." (AMTE, 2006, p. 1). Among the recommendations are expectations about what teacher candidates should be able to do:

- Demonstrate flexibility with high-quality and creative instructional technologies...to help students explore and learn mathematics.
- Understand...when and how use of technology can advance learning and critical thinking, and when it can hinder mathematical development.
- Efficiently troubleshoot technology difficulties in both student and teacher use.
- Incorporate a variety of assessment techniques, including the use of technology to evaluate students' understanding of important mathematical concepts.

Faculty members working within the field of educational technology consider these goals to be worthwhile, but often are more conversant with the affordances and constraints of emergent technologies than mathematics content and pedagogy. As in any overlapping field, there are some educators who are soundly grounded in both mathematics content and pedagogy as well as relevant educational technologies. However, more often educators are much stronger in one area than in the other. Certainly, many mathematics teacher educators realize the central role of educational technology in their field, but may not be conversant with the most recent and effective technologies and the most effective strategies for incorporating them in teacher education courses. Similarly, educational technologists may have a strong understanding of how an emerging technology can transform a classroom, but may be less knowledgeable about specific mathematics content or ways in which the learner may benefit from the technology. A relatively small percentage of those working within the field of instructional technology are fluent with graphing calculators or commonly used tools such as the Geometer's Sketchpad, for example (see Figure 1).

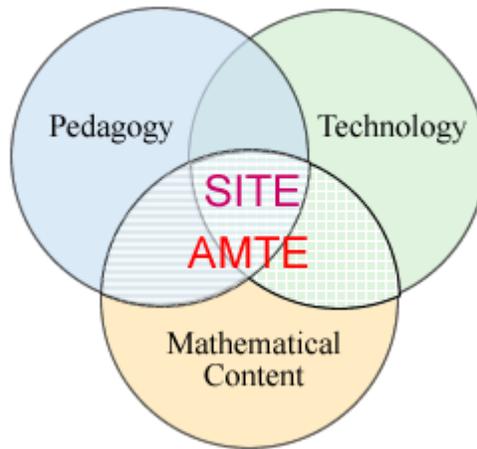


Figure 1. Cross-disciplinary collaboration.

The goal is to employ mathematical pedagogy with appropriate technology to address worthwhile mathematical content. Pedagogical content experts and educational technology specialists often view the same innovation from markedly different perspectives since it is interpreted through the lens of differing expertise and experience. Consequently, teacher educators in both areas benefit when complementary perspectives are shared.

Debra Sprague, editor of the *Journal of Technology and Teacher Education*, captured the importance of communication and collaboration across associations in a seminal editorial, "Are We Talking to Ourselves?" She noted that educational technology faculty members typically have in-depth understanding and expertise in, at best, one pedagogical content area and are often unaware of some of the issues teacher education needs to address. At the same time few mathematics educators have the time or capacity to remain conversant with the full range of emergent technologies. She concludes that few instructional technologists have sufficient depth in pedagogical content knowledge beyond a single discipline, and few teacher educators are fluent in the full range of technology integration strategies.

For nearly a decade, representatives from AMTE and SITE have been meeting each fall with representatives from other teacher educator associations at a leadership retreat. Several initial steps have been taken to facilitate the types of desired interaction and communication among the representatives from the respective associations:

- AMTE established a standing educational technology committee.
- SITE established a complementary mathematics education committee.

By tradition and practice, the chair of the SITE mathematics education committee has also been a member of the AMTE technology committee. Consequently, service in this role requires participation in the annual meetings of both AMTE and SITE, providing an important communications link between the two associations. In other actions,

- AMTE established an ongoing educational technology strand at its annual conference.
- SITE established an ongoing mathematics education strand at its annual conference.

In addition, the two associations jointly established an annual award for an exemplary paper related to technology integration in mathematics education, the National Technology Leadership Award in Mathematics Education. This award was based on a review of exemplary papers in this area presented at the AMTE annual conference. The recipient of the award is invited to deliver an invited presentation at the SITE annual meeting and receives a plaque in recognition of this accomplishment. In recognition of the success of this well-established award, Texas Instruments has served as a sponsor of the award in recent years, providing travel support for recipients.

These actions stemming from collaboration and discussion at the annual leadership retreat were undertaken in concert with other teacher educator associations. In 2004 the collaborative relationship was formalized as the National Technology Leadership Coalition (NTLC; see Table 1).

Table 1
Founding Members of the NTLC

Content Area	Teacher Educator Content Associations	Educational Technology Associations
Science	Association for Science Teacher Education (ASTE)	Society for Information Technology and Teacher Education (SITE)
Mathematics	Association of Mathematics Teacher Educators (AMTE)	
English	NCTE Conference on English Education (CEE)	International Society for Technology in Education (ISTE) Teacher Education Special Interest Group (SIG-TE)
History	NCSS College and University Faculty Assembly (CUFA)	

Working collaboratively with leaders from other teacher educator content associations as well as educational technology associations afforded AMTE participants an opportunity to learn about ways in which technology was employed in other disciplines, leading to further cross-disciplinary synergies.

The collaboratively sponsored journal, *Contemporary Issues in Technology and Teacher Education (CITE Journal)*, was another significant outcome of the coalition. The *CITE Journal* is an online, peer-reviewed journal, established and jointly sponsored by five professional associations. Each participating teacher education association has responsibility for editorial review of articles in its discipline.

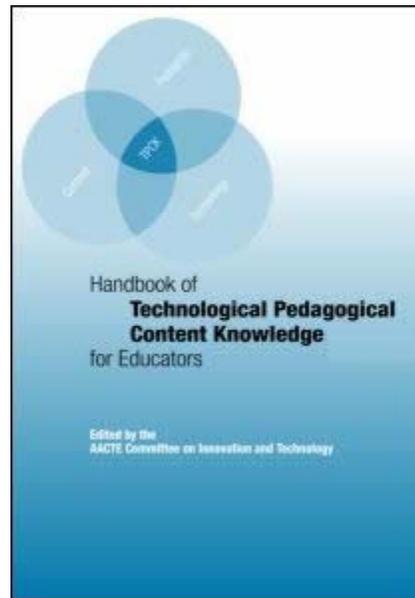
The journal's online medium also allows authors to demonstrate the technologies about which they are writing, including video and audio segments, animation, virtual reality, Web links, and simulations. This capability is particularly important in mathematics education, since the ability to include a Geometer's Sketchpad animation or the data from a spreadsheet enable illustration of educational applications in ways that would not be possible otherwise.

The AMTE contribution to the journal includes selection of editors for the Technology and Mathematics Teacher Education section and support for their participation in an annual meeting with their counterparts from other disciplines. Because the *CITE Journal* is an open journal, it is freely available to all teachers and teacher educators, providing an effective mechanism for dissemination of peer-reviewed information that may not be readily available otherwise.

The opportunity to address national policy collectively in the area of technology and innovation is another benefit of participation in the coalition. Innovation and technology touch on many aspects of educational policy, from workforce readiness to appropriate integration of emergent media. Collaborative action provides an opportunity to incorporate multiple perspectives and amplify the voice of the coalition beyond the impact of any single association acting alone.

The *Handbook of Technological Pedagogical Content Knowledge for Educators* published in 2008 provides an instance of this kind of collaborative activity. The handbook was initiated by the American Association of Colleges of Teacher Educators (AACTE) Committee on Innovation and Technology. It features chapters on the interplay among content, pedagogy, and technology in mathematics, science, social studies, and language arts, among other areas.

The ninth National Technology Leadership Summit was organized around the theme of "Technology, Pedagogy, and Content Knowledge." Presentations and panels at annual meetings of each of ten participating NTLC associations were organized. This kind of collaborative activity provides an opportunity for dialog across disciplines and associations, as well as with policy makers in Washington, D.C.



The benefits of collaboration are evident, but there are also challenges. One ongoing challenge is to continue to provide learning opportunities for each association's members that are less knowledgeable about both areas. What professional development, publications, and resources can enable more educational technologists and mathematics teacher educators to understand and be able to use the other field's research and knowledge to enhance their own work? As is always the case, new technologies and new demands in teacher education mean that the needs in the field can move in unanticipated directions. Strong leadership and collaboration is important for support of technology in a world challenged by funding constraints, new standards for accountability, and a shortage of technology-using teachers.

Finally, and significantly, there is an organizational history and tradition of sustaining collaborations through multiple changes of leadership. Establishment of a stable coalition requires time. There is always a danger of loss of institutional memory during a transition in leadership. This article provides a written record of the rationale and benefits of a shared vision common to both organizations, and provides a foundation upon which we anticipate future leaders will build.

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