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# **Commentary: Response of the American Association of Colleges for Teacher Education to “An Interview With Joseph South” Regarding the Preparation of Educators to Evaluate the Efficacy of Educational Technology**

[Charles B. Hodges](#)

Georgia Southern University

[Jeffrey P. Carpenter](#)

Elon University

Arlene C. Borthwick

National Louis University

## **Editors' Note**

The American Association of Colleges of Teacher Education (AACTE) has contributed to significant advances in the field of technology and teacher preparation. AACTE hosts a [National Technology Leadership Summit](#) (NTLS) each year that brings together the presidents and leaders of more than a dozen teacher educator associations. The AACTE *Committee on Innovation and Technology* provided leadership for publication of the AACTE (2008) TPACK Handbook, a seminal work in the field. This year the AACTE's CEO, Sharon Robinson, will receive the National Technology Leadership Coalition Lifetime Achievement Award on behalf of AACTE in recognition these contributions.

The commentary that follows is a response by members of the AACTE Committee on Innovation and Technology to the [remarks by Dr. Joseph South](#), former Director of the U.S. Department of Education's Office of Educational Technology, regarding the preparation of educators to use technology. It is preceded by a foreword from Sharon Robinson.

## **Foreword by Sharon Robinson, AACTE President and CEO**

It has been very gratifying to support the rich engagement and productivity of the AACTE standing committee on Innovation and Technology. Members of this committee are diligent and disciplined in their devotion to advancing student learning and advancing knowledge about teaching and learning. Technology becomes a tool for meeting both objectives, as well as the perspective for new questions and challenges. With the release of the 2016 [National Educational Technology Plan](#), titled *Future Ready Learning: Reimagining the Role of Technology in Education* and the Future Ready Schools Initiative, AACTE members have the opportunity to address a well-articulated agenda for change and its implications for the evolution of educator preparation. Dr. South is correct: New teachers, and indeed all educators, must become well-informed consumers of technology.

Central decisions regarding the acquisition of technology should include input from all stakeholders, including the teachers who will be using these tools. This input will inform policies that ultimately influence student learning. Input should include both policies related to the tools themselves and the interpretation of metrics related to results. Including all stakeholders in the decision-making process will result in better learning outcomes.

Teacher education programs should put the new practitioner on the solid foundation of contemporary theory and practice. New developments in how students learn (neuroscience, cognitive science, pedagogy, and learning theory), rapid advances in technology, and new tools for documenting outcomes can all contribute to enhanced learning outcomes. Future teachers should be given the skills necessary to address new student learning opportunities and understand how to bring new technology developments to learning experiences for the benefit of their students.

And one more thing. Educator preparation programs must help all candidates understand their essential role as advocates for what is best for students – the role of the citizen scholar. The following commentary, by members of the AACTE Committee on Innovation and Technology, in response to the remarks of Joseph South, provides a roadmap for advancing these goals.

### **Commentary by the AACTE Committee on Innovation and Technology**

Disruptive changes are occurring in education through the invention and use of new technologies. Joseph South asserts that teacher preparation programs must respond to these changes in order to remain relevant. We concur.

#### **The Goal**

Teacher preparation programs should adopt the goal of making teachers good consumers of research. This should go beyond research related to evaluation of educational technologies. This instruction should be presented in the context of research or evaluation of any type of intervention and any type of instructional methods. Otherwise teachers and school leaders may be influenced by efficacy information about technology that has not undergone peer review. Marketing campaigns can influence decisions in ways that may not meet the needs of schools and their many stakeholders. The goal should not be to make teachers experts in research methods, but to prepare them to investigate claims about

technology. This is especially important for those who are making decisions about the acquisition of technology.

### **Defining the Problem**

Rapid technology change affects both teacher preparation and educational leadership programs. In order to respond to change effectively, the preparation of teachers and educational leaders must be considered together.

**Teacher Education.** Many teacher education programs do little to prepare teachers to make appropriate selections of technology. Teacher preparation programs typically try to ensure that students graduate knowing some basic technology skills that may, or may not, transfer into the environment and learning context they find in schools. They often will be aware of some web tools and some hardware, like interactive whiteboards. But, seldom in the typical pre-service teacher curriculum do we systematically teach them to make informed choices about technology applications in relation to content and pedagogy. This is a significant shortcoming of many teacher preparation programs.

The teacher preparation curriculum is already densely packed, which makes it challenging to include research and evaluation literacy. Many faculty members also feel that way about incorporating technology in their individual courses. They view technology as yet another topic to be squeezed into a syllabus that is already full, rather than as a natural part of the curriculum. The reaction of some teaching methods professors is, "I can't fit technology into my methods course because I already don't have enough time to do everything I'm trying to do in that course." Beyond individual courses, the leaders of teacher preparation programs often have concerns about the number of topics that must be addressed in the curriculum as a whole. They feel there is not room in the curriculum to address technology in any substantive way. We understand their perspective, but also view this as a serious deficit in teacher preparation. Facilitating the meaningful integration of technology and its evaluation into teacher education programs is a worthwhile issue for the AACTE Committee on Innovation and Technology to pursue.

**Educational Leadership.** There also is a serious gap in what principals and superintendents know about technology and its effective use in schools. Their preparation curriculum, based on state and national standards, includes very little about technology at the district or classroom levels. It has a limited focus on instructional uses of technology. This is remarkable given the amount of money that schools and districts spend on educational technologies. The research that educational leadership candidates study appears to be primarily from leadership and human resources literature bases. Familiarity with research on meaningful uses of educational technology frequently is missing.

Information technology professionals rather than educational technology specialists often fill the role of technology coordinator. In that role they are concerned with software licensing, hardware contracts, and e-Rate government funding, important activities--but they often preempt and leave little time for coordinators to ensure the professional development of their teachers. Additionally, technology coordinators do not always come from education backgrounds that make them aware of research and evaluation of technology, other than, perhaps, some type of cost comparison. They cannot be counted upon for leadership grounded in education and instructional learning theories relevant to why something may or may not work well in teaching and learning. Ideally the role of information technology and management should be separated from the role of educational technology instructional coach.

**The Challenge of Disruptive Change.** It will not be sufficient if we only focus on pre-service teachers and what they learn during the two or three years of their teacher preparation programs. If future teachers take a course at the beginning of their program, by the end of the program some of the specific technologies that they would have learned about may no longer be relevant. And certainly by the time they are in the field and have been teaching for two or three years, the technologies available will have changed significantly. The rate of change in technology is so rapid that we have to prepare teachers to continue learning after graduation.

Peer-reviewed research will continue to play an important role in allowing us to understand and use educational technologies effectively, but there is a significant lag between the time that a research study is conducted and published after peer review. New technologies are appearing at a much faster pace than related peer-reviewed research. Teachers need the support of networks that allow them to learn about the successes and problems that other educators are experiencing with technology, and ways in which these problems are being addressed in the field.

### **Potential Solutions**

The work discussed at the U.S. Office of Educational Technology Innovators' Summit in December 2016 was a good first step in defining guidelines for teacher preparation and competencies for teacher educators. These principles are well constructed and should be helpful in moving the field forward. An isolated, single technology course is not sufficient; use of technology needs to be program-wide and program-deep as the principles developed by the U.S. Office of Educational Technology suggest. Now we face the hard work of figuring out how to implement the DOE's four guiding principles. It is easy to say, "Yes, we agree with the idea of making technology program-wide, program-deep," but making that actually happen is much more complicated.

**College Level Leadership.** To support the effort to ensure that the next generation of teachers is prepared, AACTE has developed a *TPACK Leadership Diagnostic Tool* (2016). This tool is designed to assist deans and their leadership teams to thoughtfully assess current practice and develop action plans to assure teacher candidates are prepared. Critical elements to be considered in the development of programs preparing TPACK-ready pre-service candidates include the vision and policy environment of the teacher preparation program; human and fiscal resources; faculty capacity, time and attention; support of school and other external partners; and the scalability of efforts. The AACTE Committee on Innovation and Technology is conducting research on the use and impact of the tool in a number teacher preparation programs.

**Assessment Literacy.** With respect to interpretation of evidence on the efficacy of technology use, it may be more important to focus on assessment literacy rather than research methodology literacy in an initial teacher education program. Given infinite hours, it would be great if all teachers knew a fair amount about research methodologies. But, we do not have infinite hours. To help a teacher succeed from day one, assessment literacy may be more fundamental. This can also be the foundation for eventually developing research literacy. Assessment literacy is difficult for teachers to develop. Many practicing teachers lack strong assessment literacy. The topic of assessment literacy leads to issues of reliability, validity, et cetera. That is also relevant to research methodology.

Teachers need to assess their own students' learning outcomes and experiences in relation to the use of the technology. Joseph South comments about teachers not necessarily knowing what an R score means or what a p-value means. In an ideal world, teachers would obtain an initial license and later return for an advanced license. Perhaps in a master's

degree level, there would be time to address research topics more in depth, especially in programs for technology coordinators, teacher leaders, and principals. This, in turn, would support in-service teachers in their decision making. However, in terms of preservice preparation and new teachers thriving on day one, assessment literacy should have the priority.

**Rapid Cycle Evaluation.** The U.S. Office of Educational Technology has developed some tools for rapid cycle evaluation of educational technology. The process and tools could enable school leaders to begin making more informed decisions about the acquisition and use of technology. A second approach may be the development of a checklist or rubric, which would allow a teacher or school to move through a decision tree as they consider educational technologies. It could guide them to think carefully about “What are the instructional goals?” rather than beginning with the features of a specific product as seen in marketing materials. These tools need to be disseminated more broadly, which could possibly be done through selected partnerships, for example between the AACTE Committee on Innovation and Technology and the Office of Educational Technology.

Badging and micro-credentialing may be one solution to the concerns about densely packed teacher preparation curricula. In addition to their use in initial teacher preparation, badges could be used to encourage technology coordinators and in-service teachers to obtain credentials related to the evaluation of educational technology and the meaningful integration of those technologies once they are acquired. Professional learning networks could be important elements of this type of professional development.

### **Professional Learning Networks**

Going forward, professional learning networks (PLNs) offer one opportunity for preparing teachers to make selections of technology after they graduate. Connecting future teachers to professional learning networks is a key to ensuring that they will be able to continue adapting to technological change after graduation. These networks can support them and help them understand the implications of emerging technologies.

**PLNs and Classroom Teachers.** Flipped learning was a great example of the way in which learning networks can support adoption of new classroom methods prior to availability of published research. Due to the time lag mentioned before, peer-reviewed research often is not available until several years after the technology appears. Teachers used crowdsourcing to learn about paradigms for flipped classrooms long before published information on these methods was available. Teachers were adopting these methods and implementing them in their classrooms for several years before the first book on flipped classrooms was published. It was even longer before the first peer-reviewed research on these methods was available. Once peer-reviewed research is available, we want teachers to make use of it. However, if they wait until published research is available, they are going to miss significant opportunities.

If we accustom preservice teachers to accessing learning communities during their formative years, they will have the appropriate disposition to make effective use of them after graduation. There are number of different technologies that help teachers access and develop online communities, such as Twitter, Voxer, Facebook, and Edmodo. These online spaces allow teachers to ask questions and receive feedback about emerging technologies.

A professional learning network can provide a sounding board composed of other teachers who can share their use of new tools. Preparing teachers to ask appropriate questions with

respect to selection of technologies is important. But there is also a crucial stage that occurs after the technology is selected. Teachers often encounter problems as they attempt to use new technologies. If you encounter a problem and do not have a way to solve it, use of the technology may not succeed. A teacher can make appropriate selections of technology but fail in instructional implementation if professional support and scaffolding are not adequate.

Learning networks can allow teachers to obtain the support needed to implement new technologies. Teachers who begin using networks to solve technological problems often find opportunities to expand their engagement in collaborative projects with other teachers. They may begin by co-creating a lesson or curriculum unit with another teacher. This often leads to collaboration by their PK-12 students as well.

***PLNs and School Leaders.*** The potential value of professional learning networks is applicable to school leaders as well. A number of principals and superintendents make use of these networks. One of the reasons that professional learning networks are attractive to educators is because they allow collaboration beyond their school or district. Historically teachers have been limited in their opportunities to collaborate; typically this extends only to a few people in their school or district. Opportunities to find your tribe and find people who can help you beyond your school can be energizing. That is why busy teachers spend time developing and participating in learning networks.

Principals and superintendents are often even more isolated than teachers, especially in rural areas. There is only one principal in a school and a few principals in a district. They may even be in competition with the other principals in their districts in some ways. So, leaders also have a strong need to collaborate beyond their school or district. This is particularly applicable with respect to evaluation of technological products. A professional learning network offers opportunities to find other districts and principals who have already tried a new technology and invested money in it. They can ask, "What have your experiences been? I see that you've just adopted X technology. What has been the experience in your district? Have you been able to see positive impact on student learning? Collected any data through a rapid evaluation cycle? Found any other related resources or evaluation studies?"

PLNs like this ensure that a technology vendor is not the sole source of information for a school or district. Educator preparation programs can ensure that both teachers and school leaders are experienced in accessing information through professional peer networks by the time they enter the field. Preparation programs can enable candidates to graduate already having a network connection—whether with alumni or other online collaboratives, or through local, state, or national professional associations--where they can access others to enable better informed choices.

### **Using Technology Effectively After Adoption**

There is a phase after selection of technology that is crucial: problem solving and adaptation. Teachers often adopt technologies and later realize they are applicable in other contexts. There is a parallel in the pharmaceutical world. Researchers develop a drug to address one illness and subsequently discover that it may be applicable for other uses. Similarly, we can adapt technological tools.

There is a wide spectrum of technologies ranging from very specialized tools to broad systems, including open-ended programs such as Scratch (<https://scratch.mit.edu/>) around which a number of educational goals can be structured and addressed. If educators

have very specific need, then they look at very specific tools, whereas, if they have broader goals like *create*, *communicate*, or *collaborate*, teachers should consider more open-ended tools such as Scratch.

Affirmation of the value of the adopted technology is essential to comfort level in use and exploration of alternative uses. Affirmation may come through informal reflection on outcomes of P12 student learning, participation in a multi-classroom rapid-cycle evaluation, reinforcement through PLN sharing of experiences and data, and/or review of and comparison with published research.

## **Summary**

Teacher preparation programs across the country have signed on to addressing the challenge of the DOE's four guiding principles to assure that there is "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" (U.S. Department of Education, Office of Educational Technology, 2017, p. 37). Meeting the challenge will require teacher educators, both faculty and administrators, to systematize integration of technology applications for effective content area learning across teacher preparation and leadership programs. Higher education faculty need to hold themselves accountable for careful design of coursework to assure adequate focus on use of current technologies, rather than simply squeezing in a few references to possible uses of technology. In addition, candidates in teacher preparation programs need to gain assessment literacy in support of wise instructional choices, including technology within a TPACK framework. Enhancing candidate knowledge of and initial participation in personal learning networks will further enable their effective use of technology as they transition into full-time teaching roles in schools.

More broadly, stakeholders including AACTE's Committee on Innovation and Technology and the PLN's established at the December 2017 DOE Innovation Summit, must work together to address the critical need for enhancing initial teacher preparation programs.

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