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# Reflections on Preparing Educators to Evaluate the Efficacy of Educational Technology: An Interview With Joseph South

[Glen Bull](#)

University of Virginia

[J. Michael Spector](#)

University of North Texas

[Kay Persichitte](#)

University of Wyoming

[Ellen Meiers](#)

Teachers College, Columbia University

## Abstract

Joseph South, an educational researcher, technology consultant, and former director of the U.S. Office of Educational Technology participated in a research initiative on Educational Technology Efficacy Research organized by the Jefferson Education Accelerator, Digital Promise, and the Curry School of Education at the University of Virginia. The working group in which he participated, one of 10, focused on preparing future teachers and educational leaders to make effective decisions related to evaluation of educational technology products and selection of appropriate technology tools. South responded to interview questions developed by members of Working Group E of the Jefferson Education Accelerator initiative on the Efficacy of Educational Technology Research.

The U.S. Office of Educational Technology convened a Teacher Preparation Innovation Summit in June 2016 with the goal of “Developing a common set of technology competency expectations for university professors and candidates exiting teacher preparation programs for teaching in technologically enabled schools and post-secondary education institutions” (U.S. Department of Education, 2016c). This summit was followed by a related strand at the 2016 National Technology Leadership Summit in September 2016 and culminated in a meeting at the American Association of Colleges of Teacher Education in December, followed by a White House summit on Advancing Educational Technology in Teacher Preparation. The results of this work are summarized in an [Education Technology and Teacher Preparation Brief](#) published by the U.S. Department of Education (2016b).

This work was directed by Joseph South, an educational researcher, technology consultant, and former director of the U.S. Office of Educational Technology. In a parallel effort, Joseph South also participated in a research initiative on [Educational Technology Efficacy Research](#) organized by the Jefferson Education Accelerator, Digital Promise, and the Curry School of Education at the University of Virginia. The working group in which he participated, one of 10, focused on preparing future teachers and educational leaders to make effective decisions related to evaluation of educational technology products and selection of appropriate technology tools.

The explosion in technological innovation is bringing about disruptive change. An overwhelming number of products are reaching the market. These products outpace the ability of educational researchers to evaluate them. An inadequate amount of trusted information is available about which products are effective. In some ways, the current system has outpaced the ability of teacher education institutions to prepare teachers for a different future.

The working group is soliciting perspectives from deans of education regarding thoughts about how their institutions might best adapt to build capacity for preparing teachers and school leaders for this future. These perspectives will inform recommendations that will be presented at a National Symposium on the Efficacy of Technology in the coming year.

This work is a first step in identifying the ways to enable and facilitate effective use of technologies to improve learning and instruction in American schools. The goal is to establish what is being done in the preparation of teachers and educational leaders and what deans, department chairs and other leaders in the area of preservice training of teachers and school administrators believe might be done differently to improve those programs.

### **Interview**

*Joseph South is an educational researcher, technology consultant, and former director of the U.S. Office of Educational Technology. He provided oversight for development of the 2016 [National Educational Technology Plan](#) (U.S. Department of Education, 2017) and the related [Educational Technology in Teacher Preparation Policy Brief](#) (2017a)*

The following interview questions were developed by members of Working Group E of the Jefferson Education Accelerator initiative on the Efficacy of Educational Technology Research, including J. Michael Spector, Kay Persichitte, Ellen Meier, Glen Bull, and Joseph South. The remarks, in the form of an interview with Joseph South conducted in December 2016, have been edited to translate the oral language into a form that best conveys the author's intent.

- 1. In what ways do teacher education programs currently prepare future teachers to make appropriate selections of technologies currently available? In what ways do teacher education programs currently prepare teachers to make selections of technologies not yet created and evaluate the impact on learning in their classroom?**

My sense is that the majority of teacher education programs are more focused on helping teachers to learn how to use technology tools than on helping them make a good selection about which tools to use. It is not that they think that this is not important. It is just not the focus of their courses.

The orientation of these courses typically is to develop expertise with a set of technology tools. Along the way, there probably are some conversations about why one tool may be better than another or what pedagogy a particular tool might support. However, I would be surprised if there were many schools of education that have a specific objective of trying to increase the expertise of teachers in selecting the right tool for a particular pedagogical goal.

As far as what was they might need to do to accomplish this, I think that schools of education need to have an explicit goal of developing teachers who are savvy consumers of technology. Another educational program, such as a construction management program, might teach students how to select appropriate building materials of high quality. In the same way, we need to prepare future teachers to make appropriate selections of technological tools to address specific pedagogical goals. Future educational leaders – principals and superintendents – need to be able to make these decisions at the district or school level. At the same time, we need to recognize that many teachers make point-of-sale purchases for their classroom. Therefore, teachers also need to be prepared to make effective choices.

We also need to make sure that when we help teachers learn about technology we are very explicit about what pedagogy a particular technology affords. It is equally important to be specific about what pedagogy it does not afford. The first question that teachers should ask when they see a new technology is, “What pedagogy does this technology support?” This should become second nature to them. They should realize that this is their first line of evaluation.

We need to teach teachers to conduct action research in their own classrooms. They should approach the use of any new tool in this way. This recognizes the reality that, as the question above indicates, we do not know what technologies are going to be invented in the future. The chances of teachers having consistently reliable information upon which to make a decision is low. Therefore, we must prepare teachers to make reasoned responses so that they base their choices on evidence. They should know how to collect evidence and how to use that evidence in a defensible way, analyzing it to make informed decisions.

- **Follow-up question: How do we get at pedagogical uses of technology in the school of education?**

That is such a crucial question! Providing teachers with some research-based rubrics may be helpful. My background is in instructional design. Providing teachers with examples of effective practice may also be helpful. This will allow them to see how an expert approaches this problem. This would allow them to see what questions an expert would ask. It may be helpful to equip teachers with a set of meaningful questions to investigate.

I know that we are going to discuss this later in this interview, but teachers often need to know how to evaluate materials that are associated with products that come to them. They need to know that marketing information on a product’s website is often meaningless from a research outcomes point of view. They need to be able to read and evaluate information provided in a white paper. They should know that a white paper that has not undergone peer review may be less rigorous. If a study has been conducted, they need to determine whether the researcher was independent of the company that produced the product. Those are some basic issues that might be addressed.

Another approach – which may be less rigorous but more practical – might be to generate a set of questions to ask a peer or colleague who recommends a technology. We should

prepare teachers to be systematic and reflective before adopting a technology. Preservice teacher should have a basic understanding of learning theory. They should be able to differentiate between behavioral and cognitive approaches. It could be useful to provide teachers with questions about a technology or its uses to help place it theoretically. For example, teachers could learn to situate technologies in terms of student agency. They could also learn how to look for terms that are consistent with the learning sciences as opposed to trending buzzwords of the day.

**2. How do teacher education programs prepare future school leaders (i.e., principals and superintendents) to evaluate technological products or services for district-wide adoption?**

I have not spent a great deal of time reviewing educational leadership programs. Therefore, I do not know what they are currently doing to prepare educational leaders to make effective decisions about adoption of technologies. That said, I have never met the principal or superintendent who told me how well their program prepared them to select technologies.

Therefore, I am going to focus on what I believe is needed in the future. Building on previous comments, educational leaders should be able to create classes of evidence that will allow them to quickly evaluate the materials associated with products. For example, if a *p*-value is provided with the evidence or if a randomized controlled trial has been conducted, that is an indication that there has been a rigorous evaluation. It also indicates that there may be causal data associated with the study.

However, if the study consists of a survey or self-reported data, educational leaders should immediately recognize the study is likely to be less rigorous. This also applies to reports indicating that teachers like a product or adoption data that reports only that teachers continue to use the product. Orienting decision makers in this manner could allow them to quickly triage products under review. Both teachers and educational leaders need a list of questions to ask about technologies that are being evaluated. Some of these questions might be provided to them. Additional questions might be collaboratively developed in teacher preparation and educational leadership programs. These questions should address issues that they should ask vendors about products. There should also be a discussion about how to implement pilot programs for introducing products into school systems. Best practices for doing that should become part of their culture and their expectations.

**3. How do teacher education programs currently prepare future teachers and school leaders to appropriately interpret evidence on the efficacy of technology use?**

Building on previous remarks, one method that comes to mind is the case study methodology. I think that this could be quite effective. A curated set of artifacts could cover an entire spectrum from (a) cases that make unsupported claims to (b) rigorous randomized controlled trials conducted by top researchers. These case studies could be provided along with other course materials. Then on a regular basis – perhaps once a week – they could work through some of the cases.

They could collectively work together to determine whether the claims are valid. They could also identify questions that are not addressed that would need to be asked by the educator were they to consider adoption of a particular technology. The goal would be to get them familiar with this approach to critical thinking.

When I was an undergraduate I took an honors course. They taught students a particular way to read a text – any text. We would ask ourselves, “What are the underlying assumptions of the text? What evidence is brought forth to support the underlying assumptions? Who is the apparent audience of the text? Can you tell if the writer has an agenda?” These are tools of critical thinking and analysis. I can imagine a set of tools being refined and used in education programs to familiarize future leaders with a parallel approach to evaluation.

- **Follow-up question: The utility of case studies is evident but they can be challenging to develop.**

I agree with that. There are at least two types of teaching cases. One kind is the Harvard type of case study. Another type is more similar to what we would call *realia* in language learning. This resembles a sampling of what you might see when you are helping educators think critically about educational materials. This is definitely a significant step down from a Harvard case study, but easier to construct.

Many teacher preparation programs do not ground educators in research methodologies. They often do not learn about research vocabulary. They do not graduate knowing what an effect size is. They do not necessarily know what a t-value means. A *p*-value may or may not mean something to them.

All educational programs have a full curriculum, but I wonder if there might be room to include basic information of this kind in the curriculum. Is this level of rigor that is appropriate for their future roles? To what degree should we expect a teacher to also to be a critical assessor of research? If we believe that in today’s rapidly shifting technological climate educators may need this expertise, we should consider how it might be incorporated into the curriculum.

#### **4. What is your vision for the future as schools of education adapt to a rapidly changing technological environment? In what ways do you feel schools of education will need to change to adapt to a rapidly changing technological environment?**

I believe that schools of education cannot remain on the technological sidelines. In order to make effective use of the enormous national investment in educational technologies, future educators must be prepared by their schools of education to make effective technological decisions. If schools of education are to remain relevant in an increasingly technological future, they must determine how best to do this.

Schools of education must bring technology meaningfully into the practice of preparing teachers to become full-time educators. There should be exemplars of best practice that are not limited to a three-credit technology course. These exemplars should be embedded in their other methodology courses.

In an art course you have the opportunity to try a variety of methods and materials – pastels, and oils, and pen-and-ink. You are given the opportunity to experiment with ceramics and printmaking. We should have a similar mentality in teacher education. Teachers should have the chance to survey and use technologies. They should see a wide variety of technologies used. It would be useful to have an artificial concentration of those technologies in a teacher education program ... with the anticipation that using those technologies in an environment in which they can be reflective is going to prepare teachers in a much more impactful way than when they are in an environment with less opportunity

to reflect. Future teachers need to be in programs in which technologies are regularly used by their instructors. This should be an explicit part of teacher education programs.

**5. What are we missing? What else should we be considering as we develop recommendations for building capacity in schools of education for effective preparation of teachers and school leaders?**

One thing that needs to be explored in discussions with deans of education is related to identification of barriers to solutions going forward. We should ask deans and educational leaders, “Can you identify three barriers?” and “Do you have a solution for those barriers?” Including that in future conversations might be helpful.

The pilot interview questions (listed above) are not specific about the points in a degree program that solutions should appear. We should ask whether this should be part of the practical teaching experience. We should also explore what we should expect of the partnership relationships in schools where preservice teachers do their student teaching. We should explore whether there could be a research agenda inside the school. We might also consider how this might relate to promotion criteria for teacher education faculty. I do not work in schools every day, but I hope we will gain useful insights from those who do.

We need to start a national conversation about this. We should convene those working in this area and identify examples of effective practices. We need to start disseminating these examples. I think that the professional organizations affiliated with the National Technology Leadership Coalition can do this. I would like to contribute to the degree that I can be helpful. This is something that is important to me. We are learning who cares about this work. With support from organizations that care about this issue, I believe that we can collectively move this work forward. I would like to give this some consideration, but I believe that this is within reach.

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