



Research into Practice

By John W. Collins

Subject: Research-based recommendations for Ed Tech

Standards: *NETS•T II*; *NETS•A II*
(<http://www.iste.org/standards/>)

Knowing about and understanding research can help each of us in our daily routines, although those same routines often keep us away from reading the research. There are, however, some landmark studies and books that compel us to investigate. If we fail to learn what works and what doesn't,

we are destined to repeat and pass on poor practices to the students we teach. In educational technology, our efforts are especially imperative. We are preparing students for their futures, which will involve using technology tools in their lifelong learning, most vocational fields, and leisure-time activities.

The main reason most educational researchers do what they do is to inform practice—to produce action and improvement. Some call this establishing our knowledge base. Pragmatically, many of us refer to these concepts as *best practices*. You know from a daily perspective that barriers to using educational technology exist. Many people have documented those barriers and practices that work in overcoming them.

To that end, all educators should be aware of three major research-based contributions in the field of educational technology for K–12 settings and one recent observation-based book. The condensing of all of the research in the field does not imply these are the only resources. Myriad research studies allowed the authors to develop these documents.

1. *Educational Technology: A Review of the Research*, 2nd ed., by Ann Thompson, Michael Simonson, and Constance Hargrave, 1996. This work is a comprehensive compendium of research in the field.
2. *The Impact of Education Technology on Student Achievement: What the Most Current Research Has to Say*, by John Schacter, 1999. This analysis of seven major studies augments the work done by Thompson et al. It was published by the Milken Family Foundation. (*Editor's note:* Find this report and other Resources on p. 64.)
3. *The Sustainability Challenge: Taking EdTech to the Next Level*, edited by Norris Dickard, 2003. This 10-year inquiry into educational technology in our schools highlights a lack of support in the current use of educational technology in many of our K–12 school districts. This

report was published by the Benton Foundation.

4. *The Technology Fix: The Promise and Reality of Computers in Our Schools*, by William Pflaum, 2004. This book is a qualitative augmentation to Dickard's work.

It is important to note that Schacter's and Dickard's reports fill a void left because there is not yet a revised edition of the Thompson work.

Some may be critical of the research-based components in Schachter and Dickard, as certain conditions and situations in the cited research were less than ideal. Criticisms include small sample sizes, uneven adoption of educational technology, and untested variables. The list could go on for pages. The bottom line is that educational technology has yet to prove its effectiveness in improving student achievement.

We can learn lessons from all of these works, however. In particular, Dickard identified 10 critical issues needed in the United States to sustain school technology infrastructure and to advance to the next level:

1. Accelerate teacher professional development.
2. "Professionalize" technical support.
3. Implement authentic Ed Tech assignments.
4. Create a national digital trust for content development.
5. Ensure that all Americans have 21st-century skills.
6. Make it a national priority to bridge the home and community digital divides.
7. Focus on the emerging broadband divide.
8. Increase funding for the federal Ed Tech block grant.

9. Share what works.
10. Continue funding for Ed Tech research.

The list clearly illustrates that change is needed and difficult to implement. In particular, the recommendation to continue funding research is important.

Additional research is needed to have a valid and reliable knowledge base/best practices for our field. A few educators are convinced they have a near-perfect environment. Those conditions, variables, and settings need to be captured and shared with those who are less fortunate (research enables us in this endeavor). The observations captured by Pflaum can be considered a step in this direction.

Pflaum uses school and classroom observations from a one-year period of school visits to give readers insight into use of technology in a wide array of U.S. school environments (e.g., public, private, rural, urban). Like Dickard, Pflaum offers recommendations to help educators extend the value of technology in our schools, including:

- Focus computer use on students who will benefit most. Don't dilute the value of computers by insisting that all students have equal access.
- Use computers to support the alignment of standards, instruction, and assessment.
- Use computers for assessment. Their ability to correct tests automatically and provide results quickly can be very beneficial.
- Teach students to use productivity tools and the Internet, but wait until students are ready. Coordinate such teaching within and across grade levels.

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The final recommendation includes the adoption of ISTE's National Educational Technology Standards (NETS) for Teachers and implies a need to adopt the NETS for Students and Administrators as well.

You may find that you agree or disagree to some extent with the lessons Pflaum points out. And this is to be expected; we each have our own experiences, opinions, and potential solutions. What is critical from a research perspective is that actionable information can be gleaned from observations that are informed by research on what is known to work, such as time on task (the more a student spends time on focused and teacher-directed tasks, the more they learn), student engagement (students who are active in their own learning do better than those who are passive), and class size (students in larger classes tend to receive less individualized attention from their teacher).

Incorporating technology into instruction can allow for increased time on task. Through direct instruction using computers or through individual and small-group work, students tend to be more attentive for longer periods of time when technology is involved. And, as you might expect, they also tend to be more engaged in their work, especially with programs that are heavily based in multimedia and are interactive. And finally, where class size is an issue, the use of computers to provide more individualized attention to each student can only have positive outcomes. Naturally, we don't want computers to become "babysitters" for our students; but as resources are limited and student-to-teacher ratios are high in almost every school in the country, technology can play a role in helping to give each student the attention he or she deserves.

For those of you who are interested in more detailed research covering our field, numerous professional journals

are available for review, including ISTE's *Journal of Research on Technology in Education (JRTE)*.

The three compendiums of Ed Tech research discussed in this article should give you a fairly broad overview of where the field stands today. But, just as with technology, research is constantly moving forward. We are continually discovering new and exciting ways to use technology and valuable data to support different kinds of technology use. Therefore, don't feel as if this, the end of this column, is the end of the story—rather, I hope it will launch you to a new understanding of the role research plays in educational technology and in your own work. Happy learning!

Resources

The Impact of Education Technology on Student Achievement: What the Most Current Research Has to Say, by John Schacter: <http://www.mff.org/pubterms.taf?file=http://www.mff.org/pubs/ME161.pdf>

Journal of Research on Technology in Education: <http://www.iste.org/jrte/>

The Sustainability Challenge: Taking EdTech to the Next Level, edited by Norris Dickard: http://www.benton.org/publibrary/sustainability/sus_challenge.pdf



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