Defining Educational Technology
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"What is educational technology?"

I was reminded of that question recently while guest lecturing for a friend's class. Like many universities, his offers alternative certification programs. He teaches an introductory course on ed tech for new teachers entering the profession from other fields.

It's a good question, and one that can either be over-simplified or over-explained, depending on who is answering. The one sentence answer is: "Anything that helps students succeed."

But in thinking about the many ways to explain educational technology, especially for those new to the field, I decided to pose one possible way of thinking about it. I submit educational technology involves three primary components: communication, calculation, and creativity.

Communication
In academic journals, where scholars debate such things as the true meanings of learning and teaching, some would go so far as to define all teaching as communication. It is easy to understand where this thinking comes from, since it is awfully hard to teach without communicating something.

Educational technology, from the lowly pencil to the Internet, often lends itself to communication. Students and teachers use these tools to communicate with one another as well as with the outside world. Devices designed for or adopted for use by teachers to communicate thus fall into the broad realm of educational technology.

Calculation
An older friend in the office next to mine relates how her husband almost cried when he finally gave up his trusty slide rule. A professor in special education I know makes her diagnostician students painstakingly calculate test results by hand before plugging them into grading software that cranks out results in seconds.

Educational technology sometimes takes the form of a gadget or software that speeds up mathematical calculations. Teachers may debate the wisdom of removing the skill set of complex mental calculations from students, but ever since the introduction of the first portable calculator the notion of letting machines or software handle the hard stuff has become an unstoppable force in education.

Creativity
Perhaps the greatest power of educational technology is seen when tools are given to students that unlock their creative potential. Whether they create papers with word processors, pamphlets or flyers with publishing software, advanced presentations, videos, or complex electronic

artwork, we get to see students “learning by doing” with these tools. The students like it too, as they get opportunities to leave the tedium of standards-based recitation.
We can see how various gadgets and software may fall into one of the three categories. Anytime new communication opportunities are offered to educators, they’ll jump at it. E-mail and the Web offer possibilities of communication unknown in previous times. The popularity of chalkboards and digital projectors can be understood when we realize these devices help teachers communicate with students. Calculators, spreadsheets and other math software allow faster processing of numerical data. Teachers will incorporate calculation technology into the classroom (even if they feel mental math processing is still important), because the world has sped up, and machines handle most of our number crunching these days. Finally, teachers get really excited when they find tools that help students be creative. Student engagement soars when they are allowed to interact in the learning process and create “learning products” of their own.

When a hot new gadget enters the marketplace, you probably will hear of teachers using it in the classroom. Usually, gadgets will be co-opted for use by teachers into one of the three categories. Sometimes, use of one gadget may span all three categories. Digital cameras are an example of potential cross-category use. Teachers like to see students create items with digital cameras that otherwise would be difficult or time consuming. Students can easily add digital photos to papers, flyers, and Web pages. Math teachers have been known to encourage student use of digital cameras to create their own manipulatives. Finally, a teacher might take pictures of common objects and place them on electronic speech boards for students with verbal disabilities, facilitating communication with the technical assistance of the digital camera.

As we think about educational technology, it’s important to note that old technologies die hard. They may morph over time, but they fades away slowly, if ever. Think of AM radio. Eight or nine decades after national implementation of AM radio stations, we still have them, and people still listen to them. It’s also important, for teachers especially, to understand the difference between media types and advancing technology. VHS, Betamax, Laser Disc, and now DVD are forms of media delivering video. Each technology is superior to the previous, but they all do the same basic thing: deliver video. So, when something new comes down the pike, teachers should be able to differentiate and ask, Is it a new technology? Or, is it simply a new way to deliver media? New ways to deliver media have relatively short shelf lives, and care should be taken not to over-invest. Remember 8 track tapes?

Speaking of over-investing, critics of educational technology will often denounce the amount of funds spent on it, and deride wasted efforts. It is true that mistakes have been made through the years. Academics such as Larry Cuban, and journalists such as Todd Oppenheimer have done a good job documenting examples of waste and poor implementations. But educational technology is here to stay in schools. The reason is, technology is such a large part of our lives. It’s a part of our students’ lives as well. Students will continue using some form of technology throughout their careers. As teachers find ways to communicate, calculate, and create with gadgets and software, they will continue using educational technology throughout their careers, too.