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The 5 Keys to Educational Technology

What is educational technology? What are its purposes and goals, and how can it best be implemented? Hap Aziz, director of the School of Technology and Design at Rasmussen College, explores what he terms the "five key components" to approaching educational technology.

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Educational technology is the ***considered implementation*** *of* ***appropriate tools, techniques, or processes*** *that* ***facilitate the application of senses, memory, and cognition*** *to* ***enhance teaching practices*** *and* ***improve learning outcomes****.*

Educational technology has a multi-faceted nature comprising a cyclical process, an arsenal of tools (both physical and conceptual), and a multiple-node relationship between learners and facilitators of instruction, as well as between learners themselves. This nature makes it somewhat difficult to provide a specific definition based on particular technologies (despite that "technology" is embedded in the term) at any given point in time. The attempt to apply meaning to the term in this way was a primary flaw of earlier definitions of the field. Therefore, I have chosen to develop a broader definition that is not dependent upon any particular interpretation of technology--past, present, or future. The breadth of my definition allows the idea of "technology" to encompass processes, as well as objects and artifacts, and this is essential to ensure longevity (and, ultimately, meaning) to the definition.

There are five key components of my own definition of educational technology that are meant to tie the multiple facets of the concept together. Key parts of the definition are implicit in the terms chosen, and I purposefully chose this somewhat "between-the-lines" approach in order to allow for future developments within the field (as well as in service of my own preference for economy of statement when defining anything of significant value). The components of my definition are listed below along with a brief discussion of each component.

> **1. Considered implementation**. Any technology, whether physical or conceptual, has value--beyond the purely philosophical--when it is implemented and subsequently utilized by a population. Implementation is essential, especially when one understands that educational technology is about affecting particular outcomes. The idea that the implementation should be "considered" means additionally that there is an assessment loop built into the process; as outcomes are measured, effective use of technology is repeated, while ineffective use is either improved or abandoned. Indiscriminate implementation is a frivolous use of intellectual, capital, and temporal resources, and it is all too often found to be the methodology in education environments. Finally, the

considered implementation speaks to the need for effective leadership. What methodologies will be adopted? What tools will be acquired? The strong leader in education will provide the guidance necessary to ensure the best use of resources.

2. Appropriate tools, techniques, or processes. When thinking of educational technology, this segment of my definition is likely the piece that first comes to mind. Almost reflexively, the general public, as well as the seasoned educator, looks for the silver bullet in addressing shortcomings in our system of education, and the physical trappings of technology are especially seductive. Certainly, these objects have demonstrable value; however, techniques and processes in teaching and learning are at least equally important. As educators--and, more generally, as members of a society--we have developed methodologies for accomplishing tasks and obtaining desired outcomes. These methodologies have been and continue to be refined over time, just as the latest advancements in computing technology continue to roll out unceasingly and with regularity. It is quite important to include the modifier of "appropriate" to this component, otherwise we see an ever-increasing use of technology that adds no value to education yet exacts a heavy price, again in multiple resource categories. The use of appropriate tools, techniques, or processes is much more likely to result in the outcomes that educators desire.

3. Facilitate the application of senses, memory, and cognition. It is in this component of my definition where I stepped the farthest away from the majority of existing definitions of the field. My intent here was to generalize the concept of learning both as a process of internalization as well as demonstration of ability. This formulation might serve as summary of Bloom's Taxonomy overlaid on learner, where learning outcomes in the form of know, do, and value are summarized by the combination of the human mind and body. But human capabilities are not wholly adequate to the demands of the modern teaching and learning enterprise, and this is where technology as facilitator has a role. The use of video to bring the depths of the universe to the learner's eyes; the use of the Internet to give the learner instant access to thoughts and observations of humanity's greatest thinkers--these are examples of technology facilitating the application of our own senses, memories, and cognitive abilities.

4. Enhance teaching practices. Learning in our formalized education context does not exist in a vacuum; that is, we do not simply provide learners with access to information and resources with the expectation that they will learn through discovery. In fact, our educational infrastructure is based largely on the idea that the learner will progress far more quickly under the mentorship of a skilled instructor--both knowledgeable in the subject matter and competent in instructional methodologies. In the previous component discussion I made my case for technology as a facilitator on the learner's side of education; likewise, technology should also provide assistance and support to instructors during the teaching and learning process. Demonstrations, illustrations, instruction across learning styles--all of these are areas in which technology may provide those teaching with more leverage over learner gaps in knowledge and understanding.

5. Improve learning outcomes. Finally, all else might turn out to be simply exercises

> with no point if we are unable to improve learning outcomes. If no improvements are made with the adoption of new technology, then there is no point to utilizing any technology except for the most basic required to obtain that unchanging level of learning. Therefore, to justify the continued experimentation with and exploration of new technologies: smart classrooms, use of podcasts, access to the Internet, laptops for every child, and on and on, we need to assess our outcomes, make incremental changes in our methodologies to address shortcomings, then assess again, closing the loop in order to evaluate the efficacy of our work. We succeed when we are able to show improved learning outcomes, and as long as our metrics accurately represent the entire cross-section of the learner's experience, we have a legitimate case for the continued use of technology in the teaching and learning endeavor.

There is a broad basis for discussion and debate within the field regarding multiple possible definitions of educational technology. The following sources are recommended reading on the topic.

> Januszewski, A. (2001). Educational technology: the development of a concept. Englewood, CO: Libraries Unlimited Inc.
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> Reiser, R. A. & Ely, D. P. (1997). The field of educational technology as reflected through its definitions. Educational technology research and development. Vol. 45, No. 3, 63-72.

About the Author

Hap Aziz is director of the School of Technology and Design at Rasmussen College. He has worked in the higher education industry for nearly 20 years at companies including Full Sail Real World Education, Collegis, and SunGard Higher Education. He also has an M.S. in instruction technology and distance education from Nova Southeastern University and a B.A. degree in computer science from Rollins College. Currently he is working on his Ed.D. in educational technology at the University of Florida.