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# Aligning the Purposes and Evaluations of New Technology in Schools

## EXECUTIVE SUMMARY

AECT advocates that educators, learning designers, and education policy makers across the spectrum of schooling, from early childhood through university, reconceptualize how schools use new technology—namely, existing and emerging forms of the computer and the Internet. The goal should be to align the purposes of such technology for teaching and learning with judgments regarding its use. The misconception that using new technology in schools will automatically result in increased student achievement adds to the expected resistance whenever a new form of technology is introduced. However, schools must provide educational experiences in a learning environment infused with technology if they are to prepare students adequately to live and function in the technology-infused Digital Age world of the present and the foreseeable future.

## INTRODUCTION

"New technology"—meaning computers in existing and emerging forms and the Internet—is transforming the world in every way, from how individuals communicate with one another across town or around the globe and how commerce is managed both locally and globally to how democracy is enacted at home and abroad and how governance is conducted within and among levels of domestic government as well as internationally. New technology must be effectively harnessed to reconceptualize and reshape education in order to prepare students to live in the world as it exists now and for the foreseeable future. Judging the value of new technology must align with the purposes of such technology.

Unfamiliar technology has historically been met with resistance, both in schools and across the larger society. Some technologies have been short lived and rejected, usually because a better technology emerged and quickly made them obsolete. But no technology has had the dramatic and rapid effect on

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everyday life that computers, whether desktops, laptops, tablets, or smartphones, and the Internet have had over the past few decades. While hesitancy to adopt new technology in schools is understandable, it is fundamentally at odds with the direction that the world is moving. The Digital Age has supplanted the prior Industrial Age and the sensibilities that went with it. Schools must embrace new technology in teaching and learning or face institutional obsolescence.

## DISCUSSION

The Digital Revolution that began in the decades of the 1950s through the 1970s has brought about a new era, the Digital Age. Like the prior Industrial Revolution of the 1760s to the 1820s that ushered in the Industrial Age, this new era has fundamentally changed the world in almost every aspect. New technology—the computer, regardless of form, and the Internet—is the twin-engine of change. Where the Industrial Revolution inaugurated a shift from an agrarian to an industrial society, the Digital Revolution has both spurred and facilitated a shift from an industrial to a global society that is powered by information and communication.

Some resistance to change is inevitable. When the Industrial Revolution introduced labor-saving technologies, protests arose. For example, in the English textile industry between 1811 and 1813 the move to spinning frames and power looms was met with violent reactions from self-declared Luddites, independent weavers who feared the demise of their livelihood. The term *Luddite* has survived to characterize someone who resists change, particularly technological advances.

At numerous points across the history of education, technologies have been introduced to a mixture of optimistic hyperbole and equally exaggerated resistance. For example, in 1922 Thomas Edison announced, "I believe the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks."[1] When television came along twenty years later, Daryl Zanuck, then head of 20th Century Fox Film Corporation, supposedly said in 1946, "Television won't be able to hold on to any market it captures after the first six months. People will soon get tired of staring at a plywood box every night." Neither the positive nor the negative prediction came to pass. Television is here to stay. And movies, now as videos, have not supplanted textbooks and only recently, during the Digital Age, have gained widespread educational use because of blended and flipped teaching and learning strategies that require both face-to-face and technology-mediated interactions.

Current resistance to new technology in schools arises from similar erroneous predictions. A widely held misconception is that the incidental use of new technology will automatically improve student achievement. If only schools would embrace new technology, the criticism goes, then student test scores would be bound to rise. This result has not been gained; therefore, in some critics' views new technology for schools is useless. The problem with this thinking is that it presumes that the purpose of using new technology is to raise student achievement, usually judged by measures tied directly to an Industrial Age factory model of schooling, rather than to a reconceptualized Digital Age model that emphasizes accessible information and expanded communication.

Geoff Mulgan, head of the British charity Nesta, which supports innovation in schools, recently

commented, "A tablet replacing an exercise book is not innovation—it's just a different way to make notes. There's incredible potential for digital technology in and beyond the classroom, but as in other fields, from healthcare to retail, it is vital to rethink how learning is organized if we're to reap the rewards." He went on to say, "The danger is that the technology of the 21st century is being applied using teaching methods of the 20th. The emphasis is too often on shiny hardware—rather than how it's to be used."[2]

The analogy of the tool often is applied to technology to excuse disappointment stemming from a lack of over-promised results. If new technology has not appreciably improved student achievement—well, technology is just a tool. And a tool has to be used properly. After all, it would be counterproductive to use a hammer to pound in a screw, rather than use a screwdriver. This argument has merit but is too often simplistic. Researchers Amiel and Reeves echo Mulgan to offer a more nuanced perspective: "This limited view of technology must be challenged at the definitional level. Technology is not a product and instead is a process: tools are merely a product of a technological system." They go on to explain, "The technological system is concerned with uncovering knowledge and information in so much as it leads to doing."[3]

The basic purposes of new technology are to open new doors to information and to facilitate communication between individuals and groups, in many cases access and connections that could not be reasonably made prior to the advent of new technology. For example, access to information, which has been vastly increased by new technology, does not automatically generate improved student achievement. That is not its purpose. Student achievement, which now is customarily judged according to standardized tests, mainly in reading and mathematics, cannot be improved simply by making more information available to students.

How, then, should we judge the value of new technology? The answer is to examine the purposes of new technology and to ask: What is the true value of expanded access to information and enhanced communication? How can educators determine whether these purposes have been achieved? Only after these questions are answered can students, teachers, learning designers, and education policy makers begin to address the larger issue: How do we capitalize on these purposes to use new technology to teach and learn in new ways that match how our future adults will function in Digital Age society?

It must be borne in mind that these questions are merely starting points. New technology also facilitates, or can facilitate, new teaching and learning strategies that intersect with societal issues and affect behavior, the acquisition of knowledge and understandings, and much more that researchers are just beginning to investigate.

## CONCLUSION

The infusion of new technology in schools recognizes that students will graduate into a world infused with such technology, and to deprive students of educational experiences with technology would render educational institutions obsolete. Ultimately, improving student achievement is not the central purpose of embedding new technology in education—at least, not as student achievement is defined

by scores in reading and math on standardized tests. Today the vast majority of students use new technology on their own. In a study published in 2014 Pew researchers found that 84% of U.S. households own a computer and 73% have a broadband connection to the Internet.[4] Schools disconnected from this reality must be seen as irrelevant.

Judging the value of new technology must align with the purposes of such technology. A vast amount of information is available online, far more than can be found in a typical school, university, or public library. Rather than focus on "achievement," evaluation of such technology might more appropriately respond to questions about students' use of information. The learning challenge is moving from information to knowledge and understandings, which simple accessibility does not guarantee. Likewise, communication is another purpose of new technology. How is learning enhanced through communication, such as cross-cultural collaboration or idea-sharing among students? By examining the purposes of new technology, it is possible to conceive of new ways to judge its value for teaching and learning.

## IMPLICATIONS AND RECOMMENDATIONS

Educational practitioners should work to convince policymakers and other stakeholders to reconceptualize teaching and learning mediated by new technology based on the purposes of such technology, rather than simplistic, outdated notions of student achievement as judged by scores on standardized tests of reading and math. The matter of relevance should not be underestimated. If schools are to provide educational environments and experiences that prepare their students for life in the technology-infused Digital Age world, then they must incorporate new technology and rethink the very nature of teaching and learning.

## NOTES

[1]Lowell Monke, "The Human Touch," *Education Next* 4 (4, Fall 2004). Accessed April 16, 2016, at http://techczech.net/2012/05/19/an-innovators-dilemmas-on-the-resistance-to-technological-innovation-in-education/.
[2]Geoff Mulgan, quoted in Graeme Paton, "Schools 'Wasting £450m a Year' on Useless Gadgets," *The Telegraph,* April 16, 2016. Accessed April 16, 2016, at http://www.telegraph.co.uk/education/educationnews/9681317/Schools-wasting-450m-a-year-on-useless-gadgets.html.
[3]Tel Amiel and Thomas C. Reeves, "Design-Based Research and Educational Technology: Rethinking Technology and the Research Agenda," *Educational Technology & Society* 11 (4, 2008): 29-40; p. 32. http://www.ifets.info/journals/11_4/3.pdf.
[4]Lee Rainie and D'Vera Cohn, "Census: Computer Ownership, Internet Connection Varies Widely Across U.S.," Pew Research Center, September 19, 2014. Accessed April 17, 2016, at http://www.pewresearch.org/fact-tank/2014/09/19/census-computer-ownership-internet-connection-varies-widely-across-u-s/.