CHAPTER 5

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COMPUTER SAVVY BUT TECHNOLOGICALLY ILLITERATE

Rethinking Technology Literacy

INTRODUCTION

We humans are toolmakers. Since the time of our ancient ancestors, human ingenuity has created tools that alter the natural world in ways that deeply affect our lives. Imagining a sector of modern life that is not influenced by machines and devices of human design is difficult. Agriculture, medicine, transportation, communication, and entertainment continue to undergo profound changes in light of technological advancements. Each advancement spawns new solutions as well as new problems in a spiral of ever-increasing complexity. To make a meaningful difference in tomorrow’s technological world, our future citizenry will need more than the skills of reading and writing; children will also need the ability to understand the nature of technology, and to apply this understanding to wisely use and manage technology—so that technology does not use us.

Like all sectors of modern life, education is undergoing profound changes because of technology. Technological developments in education have changed how students undertake many academic tasks, such as exchanging information and producing visual representations of data. Some technological changes encourage student to interact in ways that were not previously possible, such as real-time video links between distant classrooms and participation in virtual environments. Students are immersed in a world drenched in information, a state of affairs for which computer technology can be both blamed and celebrated. Gargantuan portions of educational resources are being funneled towards computer technology in schools and we are scarcely aware of what is being left behind (Oppenheimer, 2003; Cuban, 2001). For better and worse, computer technology is changing education in profound ways.

Alongside scientific literacy, ecological literacy, media literacy, visual literacy, religious literacy, and a whole host of other forms of literacy aimed at designating proficiency of knowledge and skills in particular fields, technology literacy has become a principal concern of educators across the world. This chapter will trace...
the recent history of the dominant perspective on technology literacy and will argue that a technologically literate citizenry will not result. Further, this chapter will explore some key aspects of robust technology literacy including a foundation in a broader definition of technology, explicit rejection of technological determinism, technological instrumentalism, and technological fundamentalism, as well as congruence with democracy and ecological sustainability.

**DOMINANT CONCEPTION OF TECHNOLOGY LITERACY**

During the past decade, substantial energy has been channeled towards the creation of standards and technology plans at the national, state, and local levels. An array of national and international technology literacy documents have been created with the aim of shaping state and local technology literacy standards, guiding the integration of technology into school curriculum, as well as impacting teacher preparation. Some of these undertakings include *United Nations Educational, Scientific and Cultural Organization's Information and Communication Technology Competency Standards for Teachers* (UNESCO, 2008), *Standards for Technological Literacy* (International Technology Education Association, 2007), *Technology for All Americans: A Rationale and Structure for the Study of Technology* (International Technology Education Association, 1996), as well as standards for students, teachers, and administrators produced by the National Educational Technology Standards Project (International Society for Technology in Education, 2011). Every state in the U.S. has developed technology standards (Education World, 2008), and local school agencies seeking technology funds from federal programs such as the *E-Rate Program* (Universal Service Administrative Company, 2008) and the *Enhancing Education Through Technology (Ed-Tech) State Program* (U.S. Department of Education, 2007) are required to create and implement technology plans. The ultimate aim of these efforts is to help schools produce technologically literate citizens.

Perhaps the most influential and widely used set of documents impacting technology literacy in the United States today is the International Society for Technology Education (ISTE)'s *National Educational Technology Standards (NETS)* (Alliance for Childhood, 2004; ISTE, 2011). ISTE released its current standards for students, *NETS for Students: The Next Generation* in 2007, after producing the first set of national technology standards for students in 1998. Each version includes sets of performance indicators for preK-2, grades 3–5, grades 6–8, and grades 9–12. Additionally, ISTE released revised *NETS for Teachers* in 2008 after producing original standards for teachers in 2000, as well as revised *NETS for Administrators* in 2009 based on the original 2001 standards for administrators. By 2003, 48 of 50 U.S. states had adopted, adapted, aligned with or referenced the NETS standards in their own department of education documents pertaining to technology; these included technology plans, curriculum plans, assessment plans, certification, licensure or other such documents (ISTE, 2003). Today, NETS standards have not only been broadly adopted in the United States but are actively being adapted by