Chapter 1

New Technology for the Classroom:
Mobile Devices, Artificial Intelligence, Tutoring Systems, and Robotics

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ABSTRACT

New developments in educational technologies are making it possible for teachers to bring technology into the classroom more than ever before. This chapter provides an overview of educational technologies related to mobile devices, artificial intelligence, intelligent tutoring systems, and robotics. As developments in computer technologies advance over time educators will need to cultivate better understanding and skills for using technology with a well conceptualized instructional design. Concepts are offered here to further discussions on how new technologies will support persistent and personalized learning in the not too distant future. Educational leaders must begin to think about on how to incorporate different technologies as well as potential resource constraints that school systems need to consider in order to achieve broader educational technology integration goals.

INTRODUCTION

A wide variety of new innovative technologies hold the promise of personalized and persistent learning options available to meet the needs of today's teachers and students. This chapter discusses general assumptions regarding several forms of educational technology that are emergent in nature. These technological areas are related mobile devices, artificial intelligence, intelligent tutoring systems and robotics. However, enthusiasm for technology integration in the classroom is often tempered by concerns about costs, system requirements and privacy issues. These are general areas of constraint that administrators will need to first tackle in order to realize the promise that new forms of technology can potentially improve and optimize the learning environment. What remains clear is that people, both children and adults, see value in learning with the assistance of technology. Is this based on technological determinism across society as a whole? Or is there evidence to suggest that technology incorporated into learning environments will enable more efficient and effective learning experiences?

The new technologies themselves have an effect on the design of instruction because they provide new ways to present information. They also make it possible for learners to gain access to learning opportunities inside and outside of the classroom. In effect, persistent learning is today achievable through the use of new digital applications, software and innovative programming protocols. New Web 2.0 technologies (for e.g., Twitter, Facebook, Google, blogs, wikis and video sharing sites like YouTube) computer programming applications and cloud-based IT advances now make it possible for any school or learning institution to create a persistent learning environment. Web technologies and applications offer greater flexibility with regard to modalities of learning. For example, blended learning courses, flipped classrooms and online courses are dominant design approaches to distributed learning.

This causes one to think about issues regarding access and equity among different populations of learners across communities. If learning in schools becomes technology dependent, what happens within poorer communities, where technology and access to the internet are not guaranteed among poor families? Political leaders, corporations and educational experts should champion opportunities to provide broadband access everywhere in the country. Free open access courses and MOOCs are a training and education option for millions of people today. These learning options also support re-skilling opportunities for the current and next generation of workers. Where poor children attending public schools require internet access to complete their schoolwork state and local governments should subsidize these kids through tax credits or vouchers. Otherwise, educational technology goals will not be achieved within school systems that fail to make investments in bandwidth access, device

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