Chapter 91
E-Learning Behaviors in Middle School

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ABSTRACT

E-learning occurs throughout the middle school curriculum. Children use computers and the Internet to learn skills, complete assignments, and deepen their understanding of concepts. Supplementary computer software helps students build literacy skills, while digital texts provide affordances and challenges for comprehension and learning. During Web-based research, students leverage literacy and technical skills to accumulate knowledge. Students can use word processing or multimedia to demonstrate their learning. Simulations help create authentic learning experiences in the content areas and promote the transfer of learned skills. Even with the introduction of new technologies, teacher quality and classroom structure are important for student learning. Home video game and computer use also impacts students' academic performance. Future research should continue to investigate the impact of e-learning on middle school students' learning and development.

INTRODUCTION

Children in grades 5 through 8 use computers, the Internet, and related technologies to learn academic skills, complete school assignments, and deepen their understanding of curricular concepts. In 2009, 95% of secondary classrooms had computers, 94% of which had Internet access (Gray, Thomas, & Lewis, 2010). This widespread access to technology has changed the way students complete their schoolwork. Ninety-five percent of sixth through eighth grade students reported using computers in 2003, indicating that completing school assignments was a common function (DeBell & Chapman, 2006).

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This entry highlights common e-learning that occurs throughout the middle school curriculum and some factors that influence the effectiveness of e-learning programs. Students make frequent use of computers for literacy activities, such as reading, researching, and writing. In addition, students use electronic simulations and other computer programs to enhance their understanding of concepts in science, math, and social studies. Even with the introduction of new technologies in the middle school classroom, teacher quality and classroom structure are important factors for student learning. In addition, middle school students' use of video games and home computers affects their academic performance.

OVERVIEW

Five decades of research about computer use in the classroom has demonstrated that e-learning can be not only engaging for students, but also an effective learning tool (Goldberg, Russell, & Cook, 2003; Ringstaff & Kelley, 2002; Roschelle, Pea, Hoadley, Gordin, & Means, 2000; Vogel et al., 2006). While this research extends beyond educational uses of the Internet, it provides valuable insight to the e-learning experiences of today's middle school students. First, many educational online environments are derived from earlier computer software. For example, features of online text editors, such as spell check, were inherited from word processing software. In addition, some educational Web sites function as stand-alone units, located on the Internet, but operating like computer software or other non-networked technology (e.g., laser discs). Therefore, reviewing research findings about computer software and educational technology can inform an understanding of similar cyber behaviors. Finally, providing access to the Internet in an educational setting often involves supplying learners with a computer. Given such a resource, educators leverage all aspects of the computer, not just the Internet, as they help their students learn academic and information literacy skills. As a result, examining middle school students' experiences with both computers and the Internet provides a more complete view of their e-learning behaviors.

Most early attempts at e-learning involved computer assisted instruction, such as drill and practice programs to supplement skill instruction and tutorial programs intended to individualize instruction. For instance, Richard Atkinson and Patrick Suppes are known for their efforts in the mid-1960s to develop tutorial programs for teaching reading and mathematics (Atkinson, 1968).

Around this same time, Seymour Papert and colleagues invented the LOGO programming language (Papert, 1971). Applying Jean Piaget's constructivist learning theory, Papert believed that teaching children to program computers using a simple language would help them develop mathematical thinking and problem solving skills.

During the 1980s, new technologies enabled the creation of multimedia problem-based e-learning programs. For example, Jan Hawkins helped design the *Voyage of the Mimi* program to teach students a variety of academic content, such as map skills and knowledge about whales and their habitat (Char & Hawkins, 1987) and John Bransford helped design the *Jasper Woodbury Series* to teach mathematical problem solving (Cognition and Technology Group at Vanderbilt, 1992).

Today, drill and practice software still has a place in the middle school classroom for helping students learn isolated skills, such as spelling or vocabulary (Okolo, Cavalier, Ferretti, & MacArthur, 2000). In addition, modern multimedia simulations help create authentic learning experiences in science, social studies, and math (Dede, 2009). The presence of the Internet in today's classrooms is particularly important for middle school students' literacy development, serving as a dynamic reading environment, rich information source, and authentic outlet for sharing ideas (Leu, Kinzer, Coiro, & Cammack, 2004).