Chapter 16
Cyberlearning in Green Schools: Instruction to the Maximum

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ABSTRACT
In this chapter, the authors speculate on changes to communication and social media. The authors explore the current environment, where students use digital media for communication and share information at an increasing rate including the focus on learning with digital media or cyberlearning, which has escalated dramatically. The authors contend that cyberlearning is a trend creating a flexibility that is dependent on learning needs, motivations, and contexts where students can use mobile devices for personalized learning anytime and anywhere: one of the major advantages of green schools.

INTRODUCTION
With the rapid development of technology, the student learning process does not have to depend on printed books and lecture notes. The step-by-step learning could be entirely paperless. This works hand-in-hand with school district policies to foster the green environment in school. Early in 2008, student learning through online devices have been promoted by Borgman, Abelson, Dirks, Johnson, Koedinger, Linn, Lynch, Oblinger, Pea, Salen, Smith and Szalay:

Despite the revolutions wrought by technology in medicine, engineering, communications, and many other fields, the classrooms, textbooks, and lectures of today are little different than those of our parents. Yet today’s students use computers, mobile telephones, and other portable technical devices regularly for almost every form of communication except learning. (p. 13)

Students report that cyberlearning is exciting, information is presented in a dynamic, interactive manner, and there is no need to have a textbook,
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paper, or pen. Allen and Seamon (2010) contend that students using cyberlearning resources outperform students in traditional face-to-face teaching setting. The National Science Foundation defines cyberlearning as “learning mediated by networked computing and communications technologies” (Borgman et al, 2008, p. 10). With access to cyber technologies teachers can capitalize on differentiated approaches to curriculum. Instead of using traditional whole class formal instruction, instruction becomes a participatory or student centered and collaborative learning experience.

Digital learning is also not bounded by textbook access. Online textbooks, ebooks, online databases, or access to chapters in books are accessible methodologies for teacher and student use (Palfrey & Gasser, 2008; Patterson, Stokes-Bennett, Siemends, & Nahachewsky, 2010). Teachers explore topics in greater depth by allowing students to digitally access information, collect information, and analyze information. Cooperatively grouped students studying Lincoln’s Gettysburg Address can access a facsimile of the Gettysburg Address in Lincoln’s handwriting, a video of Lincoln’s speech, a Civil War timeline, and visit an online exhibit of the Battle of Gettysburg in the Library of Congress. Access to databases and video can facilitate retention of information and critical thinking (Weiler, 2005). Schools can provide applications (apps) such as graphing calculators, note taking ability, and word processing (EDUCAUSE Center for Applied Research, 2005).

Technology provides the potential to improve standardized test scores, problem-solving abilities, and to prepare American children to compete globally (Bain & Ross, 1999; CEO Forum on Education and Technology, 2001). With the requirement that 21st Century student skills include the ability to access and use information effectively, cyberlearning provides educators access to different methods for teaching and learning (Dede, 2011; Downes, 2004; Hew & Brush, 2007). The challenge for educators is to move beyond traditional teaching methods and provide students with access to technology and strategies to take charge of their own learning (Davis, 2007; Richardson, 2006).

Today learning content is available at all learning levels through “Open Educational Resources (OER)” (Atkins, Brown, & Hammond, 2007). OER are educational materials and resources offered without cost for anyone to use anytime and under a license to remix, improve, and redistribute. It includes learning content at different levels of granularity for students and teachers at all levels of learning, including videos, books, lesson plans, games, simulations, and full courses and open-access content; open-source software tools that support the creation, delivery, use, and improvement of open learning content, including searching and organization of content; content and learning management systems (e.g., Moodle, Sakai); online learning communities; and intellectual property licenses (e.g., Creative Commons) to promote open materials publishing, design principles, and content localization. (Borgman, et al., 2008, p. 15)

Technology is referenced loosely in terms of digital devices and software (International Society for Technology in Education [ISTE], 2010); however, technology includes the tools, the machinery, the software, and the processes used (Atkins, Brown, & Hammond, 2007). Educational technology is also referenced in terms of student achievement and references what technology is available to students and how the technology is used to increase student achievement (ISTE, 2010).

Wenglinsky (2005) challenged educators to transform learning for students from the use of computers as workbooks to interactive technology use (LaRose, Kim, & Peng, 2010). Cyber technologies permit students and teachers to have instant access to news, information, and interactive experiences through digitally connected devices such as computers, tablets, and smartphones (Davis, 2007; Warschauer, Knobel, & Stone, 2010). The use of technological educational tools presents possibilities for using digital mediums with students to facilitate access to information for research, creativity and collaboration (Dynarski et al., 2007; Robinson, 2011).
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