Chapter XX
The Implementation of Wi-Fi Technology in Higher Education in the United States

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ABSTRACT

This chapter discusses the implementation of Wireless Fidelity (Wi-Fi) technology in higher education in the United States. It includes Wi-Fi standards; security; the adoption of the technology; Wi-Fi to support teaching and learning; and challenges of Wi-Fi implementation. The last section is a case study of Wi-Fi at Ohio University. Although Wi-Fi technology has a great promise in higher education, institutions are still at the beginning stage of adoption. Institutions need to make a long-term sustainable plan to develop instructional strategies, successful practices, and technology supports to improve teaching and learning using Wi-Fi technology

INTRODUCTION

Wi-Fi technology uses a radio frequency that allows laptop or handheld computer users in the vicinity of a "hotspot" to access the Internet or corporate networks. It includes a set of product compatibility standards for wireless local area networks (WLAN) based on the IEEE 802.11 specifications

Wi-Fi technology can keep everyone connected all the time and is changing the way people work, play, travel, shop, and bank. Wi-Fi technology is also quickly gaining a foothold in many institutions as a means to achieve mobil-

ity and anywhere, anytime access. The Campus Computing Project 2003 (Green, 2003a, 2003b) conducted a national survey of IT in U.S. higher education (Figure 1). The survey data revealed that Wi-Fi technology became an increasingly important issue across all sectors of higher education and showed "dramatic gains over the past year regarding campus planning for the deployment of wireless networks" (Green, 2003a, p. 1). More than four-fifths (81%) of the campuses participating in the 2004 Campus Computing Survey reported having Wi-Fi technology, up from 77% in 2003, 68% in 2002 and 30% in 2000 (Table 1) (Green, 2002, 2003a, 2003b, 2004). "Higher education institutions feel the impact of computing freedom throughout their (Wi-Fi) operation" (Arabasz & Pirani, 2002).

Wi-Fi technology opens a new dimension of computer networking in higher education. Wi-Fi technology is affecting not just the classroom environment and technology access, but also the actual activities of learning and teaching. Students, faculty, and staff can open their laptops in classrooms, libraries, or outdoors to become connected. Wi-Fi technology "represents a user-centered shift, providing students and faculty with greater access than ever before" (EDUCAUSE Center for Applied Research [ECAR] Respondent Summary, 2002, p. 4).

In this chapter—the application of Wi-Fi technology in higher education in the United States—the authors first provide the general picture of Wi-Fi technology implementation in a global setting and in higher education in the

Figure 1. Percentage of wireless networks by sector, 2000-2003. From "Campus Computing, 2003," by K. C. Green, 2003b, p. 12. Retrieved September 6, 2004, from http://www.educause.edu/ir/library/pdf/EDU0324a.pdf

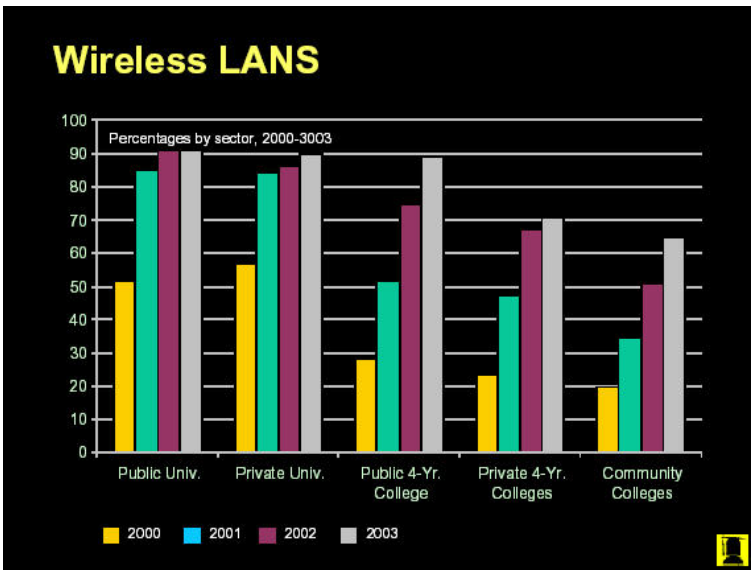

Table 1. Percentage of wireless networks on campus (Green, 2002, 2003a, 2003b, 2004)

Year	2004	2003	2002	2001	2000
Wireless LANs	81.1%	77.2%	67.9%	50.6%	29.6%
Full-campus wireless networks	19.8%	14.2%	10%	6.2%	3.8%