Chapter 59
Diffusion of Technology in Higher Education Classrooms:
The Case of the Laptop

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ABSTRACT

Technology use is contextual and tends to follow, often invisible, ground rules. Within the situational context of a higher education classroom the rules and sanctions regarding technology use become increasingly complex. Many universities in the United States now require that all incoming students have laptops, with the rationale being that technology is an important tool used to help students organize and catalogue knowledge. Laptops allow students to connect to library and campus resources. Further, requiring laptops on a networked campus creates a sense of digital unity rather than digital divides among students and faculty. The message to students is that personal laptops are important and even required. However, within the context of the higher education classroom, laptop use is often being limited or banned by classroom instructors, a contradiction of the larger university message. As Marcuse (1982) noted, technology is a social process. The diffusion of laptop technology into higher education has altered the modes of producing knowledge and the social relationships organized around that production process. The purpose of this chapter is to highlight how the use of this technology is negotiated between faculty and students and how issues of engagement, the self-production of knowledge, and security influence this negotiation. The authors argue that issues of laptop use in the classroom are rooted in concerns of power, legitimacy, and identity associated with the production of knowledge.

INTRODUCTION

Technological innovation is a dynamic force affecting both the creation and dissemination of knowledge in society (Bauchspies, Croissant, & Restivo, 2006; Hazleton, Harrison-Rexrode, & Kennan, 2007; Marcuse, 1982; Merton, 1970). When technologies change, organizations and even entire industries are born, transformed or die. At the same time, old jobs are transformed or whither away, and new ones created. In recent years there has been considerable discussion of the impact of technological change on higher education (Trow, 2002). New technologies are changing the role of the faculty member both as teacher and as researcher (Berkowitz, 2004). Much attention has been focused upon virtual classrooms and the integration of new technologies, such as laptops and iPods, into the learning process.

In this chapter, we focus on the laptop computer as the technology seemingly most compatible with classroom instruction. However, rather than examining new modes of instruction, we devote our attention to situations in which the technologies are in the hands of students and *decidedly not integrated* into the teaching process. That is, we focus only on the traditional lecture format. To achieve these research aims, we begin by looking at factors driving the introduction of the laptop into the traditional classroom. Next, we explore the comparative utility of the laptop from the perspective of students and instructors. Finally, we examine the implications of laptop and internet technology for power relations in the classroom. The chapter concludes by discussing practical implications of our research.

This research focuses on laptop computers because of all new digital technologies (cell/mobile phones, iPods, PDAs, etc.), laptops are most directly related to the work role of the student. In 2003, Brown and Petitto estimated that there were over one hundred laptop campuses in Canada and the United States (US). Since 2003, laptops have significantly declined in price while their communication capabilities have increased. More and more American universities are requiring laptops and providing wireless infrastructure for their use, albeit with a technology fee for students. While we do not know that American universities are strategically doing this, the computer requirements functionally result in this outcome. For example, our university, one of the national leaders in setting up computer labs in the 1980s, has phased out all but specialized public labs. Likewise, the University of Virginia announced in March 2009 that it was closing most of its public computer labs because 99 percent of first year students were bringing a laptop to campus (Lee, 2009).

Our research suggests close relationships between universities and with some computer manufacturers who have much to gain from the laptop requirement. For example, our university requires all incoming first year students to purchase a laptop or tablet computer. Students do not have to buy directly from the university. However, following a complicated list of basic requirements (which can vary by college and major), students are given information that two computer manufacturers are the official vendors and if students buy through the university they will receive a "special discount" (http://www.compreq.vt.edu/gettingready-one.html, Retrieved March 8, 2009). With approximately 5000 new students each year (not including transfer students) these manufacturers have special access to a sizable market. At the same time, these are the same companies that the university contracts with for faculty computers. Our research indicates that two companies, Dell and Apple, have special pricing relationships with most major universities and colleges within the U.S. Dell has a special program entitled Dell University which offers administrators the opportunity to "guide you through the creation and successful day-to-day management of your school's student computing initiative" (http://www.dell.com/content/topics/segtopic.aspx/campus_jump?c=us&l=en&s=hied, Retrieved March 24, 2009). Among the services offered are special

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