Chapter 22
Adoption of Technologies in Higher Education: Trends and Issues

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ABSTRACT

The impact of digital technology and the resulting change has impacted society and every aspect of life, including higher education. Technology has affected every area of operation in higher education, dramatically changed the way work is performed, and enhanced productivity and efficiency levels. While the efforts of higher education institutions to adopt new technological innovation are laudable, it is worth noting that such adoption has not been even across campuses. Technology use has not been consistent due to a number of factors, including adoption and integration approaches, resistance, budget allocations, institutional priorities, shifting student demographics, organizational cultures, leadership issues, and failure to apply systemic approaches to adoption, among others. This chapter examines how higher education has responded to the adoption of digital technologies, reviews some of the existing issues and challenges, and identifies areas that need to be addressed to further the use of technology to improve instructional and administrative practices in higher education.

INTRODUCTION

The past few decades have witnessed the impact of the rapid growth of digital technology on the society and every aspect of life. Every sphere of society has been touched by technology including higher education (Kozeracki, 1998; Milet, 1996). Technology has affected every area of operation in higher education and has dramatically changed the way work is performed, enhancing productivity

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and efficiency levels in many cases. For a long time higher education was known for its delayed response to change and adoption of innovations, but the current computer technology revolution has significantly diminished that stereotype.

The long held view in higher education of technological and scientific innovation as the exclusive province of academic research has changed; it is now being used to support the business and administrative processes and operations of colleges and universities, for research, and to improve teaching and learning. In their efforts to equip college graduates with the skills needed to compete in the emerging knowledge economy, academic institutions are using existing and emerging technologies, as employers look for technologically savvy graduates (Chisholm, Carey, & Hernandez, 2002). There are now many administrative, research, communication, interactive, teaching and learning, and assessment technologies. Faculty members are employing existing and emerging technologies technology to conduct research and collaboration with colleagues globally. The field of distance education has exploded, largely due to information technology.

While the adoption and integration of technologies is evident on campuses, such adoption has not been even across campuses and results have not been consistent due to a number of factors, including adoption and integration approaches, resistance, budget allocations, institutional priorities, shifting student demographics, organizational cultures, institutional and technology leadership issues, change management abilities, and failure to apply systemic approaches to adoption, among others. The digital divide resulting from socioeconomic inequities, adoption processes, resistance, costs, organizational culture, as well as Internet security-related issues have contributed to limiting the wider spread and even diffusion of information technology on campuses.

This chapter examines how higher education has responded to the adoption of digital technologies, reviews some of the existing issues and challenges, and identifies areas that need to be addressed for maximum benefit in the use of technology to improve the academy.

ADOPTION, INTEGRATION, AND DIFFUSION OF TECHNOLOGY IN HIGHER EDUCATION

The adoption, integration, and diffusion of technological innovation by higher education has been influenced by different models and theories of adoption, integration, and diffusion of innovation and has been explored by many authors (Burkman, 1987; Celsi & Wolfinbarger, 2002; Ellsworth, 2000; Hall & Hord, 1987; Hooper & Rieber, 1995; Hord, Rutherford, Huling-Austin, & Hall, 1987; Massy & Wilger, 1998; Rieber & Welliver, 1989; Rogers, 1995, 2003; Sherry, 1998; Stockdill & Morehouse, 1992; Surry 1997; Surry & Brennan, 1998; Zaltman, Duncan, & Holbeck, 1973). Some models examine the source of the innovation (Sauer and Anderson, 1992), while others focus on the development, application, and the nature of innovation (Axtell, Holman, Unsworth, Wall, Waterson, & Harrington, 2000). The investigations of diffusion of innovation involve efforts in determining the nature and rate at which innovations and technology diffuse within organizations or cultures.

Rogers (1995, 2003) diffusion of innovation theory has been widely used to provide framework for the discussion, adoption, and diffusion of innovation on many campuses. Rogers provides a generally used definition of adoption of innovation and describes the processes involved and also explains why certain innovations are successfully adopted and others are not. Rogers (1995) defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5), adding that communication with regard to innovation is essential because the messages being transmitted concern a new idea. Zaltman