

Chapter 10

Today's Technologies: Faculty Adoption Factors and Effects on Higher Education

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ABSTRACT

This chapter provides commentary on the broad-based effects that current instructional technologies have had on higher education instruction. Adoption and utilization of instructional technologies have done more than simply supplement teaching and learning; they have altered the environment in multiple ways. The unintended consequences of these technologies have changed and may continue to change the interaction among faculty, students, and learning materials. Some of the factors that have contributed to certain technologies becoming popular in today's higher education teaching environment will also be discussed. Awareness of these factors and unintended consequences will help practitioners plan for the emergence of newer technologies and better understand their potential impacts on higher education.

INTRODUCTION

Properly forecasting and preparing for future innovations in educational technology requires an examination of the successes and failures of past innovations. These successes and failures can provide a glimpse into what is necessary for an instructional or media technology to effect positive educational change, as well as attune us to some of the unintended consequences that can occur. As professional educators, one of our callings is to learn from past mistakes and successes.

Over the past couple of decades, several different forms of technology have been incorporated into higher education instructional settings with the intent to improve teaching and/or learning (Bates & Poole, 2003). Although studies show non-significant differences with traditional forms of instruction in terms of learning gains (Russell, 1999), each of these technologies has provided some form of change on how education is delivered and experienced. An analysis of those technologies' adoption into the classroom may provide insight into the next wave of eLearning technologies.

This chapter will provide critical commentary on the impact and status of instructional and me-

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dia technologies within higher education today. Particular focus will be placed on how certain technologies have contributed (and/or failed to contribute) to the advancement of education. Furthermore, the unintended consequences of these technologies will be discussed which provides further insight into the overall impact. The focus will be on technologies that are available to most faculty and not those that are unique to a small niche. Some examples of the technologies to be discussed are PowerPoint™, learning management systems, and audience response systems. In order to understand the promise and peril of tomorrow's technologies, this chapter will address the various issues concerning the technologies such as costs, instructional strategies, and logistical issues to both instructors and learners. The final part of the chapter will briefly discuss current technologies that could soon find their way into mainstream higher education.

BACKGROUND

Any broad-based discussion on instructional technology within higher education should state in advance the assumptions made during the discussion. This section contains a clarification of perspective and terms to ensure that assumptions behind the commentary are implicit.

The terms instructional technology and educational technology have been defined and interpreted in a variety of ways. Pedagogical researchers, media specialists, instructional designers, teachers, computer science experts and others contribute to the field and each tends to define the terms differently. The definitions have encompassed such concepts as the methodologies, techniques, and processes used in instruction, as well as the different forms of media and other technologies used in instruction (Gentry, 1995). Although instructional (or educational) technology definitions usually include more than media (Seels & Richey, 1994), most practitioners associ-

ate it only with computer and digitally-based tools and applications (Reiser, 2001). While recognizing that many in the instructional design and technology research field uses a broader definition, the term instructional technology in this chapter will refer only to the computer-based tools used for instructional purposes.

Variances among higher education institutions also make broad-based discussions of instructional technology difficult. Universities and colleges differ in terms of size, scope, and mission, as well as technology utilization, infrastructure, support, and spending. Because of these differences, the circumstances and implications for change are unique among institutions. With the understanding that generalizations do not apply in all cases, this chapter attempts to provide general commentary that is more or less true across institutions. Recognize that there will be exceptions at the institution, department, and/or individual faculty member level for each commentary provided.

ANALYSIS OF THREE CURRENT INSTRUCTIONAL TECHNOLOGIES

The following sections discuss 3 different applications/systems as a framework for illustrating the overall effects that instructional technology can have on higher education. By examining faculty members' reasons for their adoption, we can more adequately prepare for the introduction of new technologies. Furthermore, examining the unintended consequences of these adoptions allows us to critically review and comment on technology's overall impact on the higher education teaching and learning environment.

Visual Presentation Software (PowerPoint™)

Microsoft Corporation's PowerPoint™ is one of, if not the most, utilized pieces of technology in higher education classrooms. For many the term

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