Chapter III
A Survey of Effective Technologies to Assess Student Learning

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ABSTRACT

The purpose of this chapter is to review literature over the past ten years regarding technology tools that are being used in higher education to assess student learning. Three commonly used technology tools are examined: electronic portfolios, course management systems, and audience response systems. More specifically, each tool was studied in order to determine how it improved student learning and development, what issues might impede student learning and development, and what future directions we could explore in order to maximize the potential of the learning tool. Broad themes were then identified from the review, and three suggestions were made to teachers and researchers: (1) expand current research in this area, (2) get to know student background and characteristics before incorporating assessment technology tools, and (3) reconsider pedagogy and practice when integrating technology used for assessment.

INTRODUCTION

"The future is here. It is just not evenly distributed."—William Gibson

Science fiction writer William Gibson's thoughts about the place of technology in our future have been repeated often and in a variety of contexts in the past few years. However, Gibson's words were never truer than in the field of higher education. Teachers and students are indeed experiencing the future in terms of technology being used inside and outside of the classroom to improve student learning. Yet not all teachers and students are using technology or using it effectively, and not all teachers and students are experiencing the benefits of educational technology.

Why is the future unevenly distributed in education? The answer to this question is complex. In this chapter, we will explore some of the problems with using technology in education. Just as importantly, we will describe many benefits and future possibilities for educational technology. Focusing specifically on technology tools used to assess student learning and development, we will review research that has been published over the past ten years. This literature review is much needed. Kimball (2005) emphasized this need in his recent review of e-portfolio systems:

...nobody knows how well these systems work; nobody knows whether learning will improve or not; nobody knows whether students will end up with a more positive or fulfilling learning experience than with more traditional technologies. (p. 456)

Kimball's call for more research into the effectiveness of e-portfolio systems could easily apply to all of the technology tools being used for assessment that are proliferating as we write. These tools include electronic versions of traditional assessment tools, like e-portfolios or multiple choice quizzes and tests embedded in course management systems. They also include newer technology tools, such as audience response systems.

For this review, we will examine the following technology tools that are commonly being used in courses and programs to assess student learning: electronic portfolios, course management systems, and audience response systems. The guiding questions for our literature review follow:

1. What is each technology tool, and how is it being used for assessment?
2. How does each technology tool that is being used for assessment improve student learning and development?
3. What are issues/concerns/limitations of each technology tool used for assessment that impede student learning and development?
4. What are some future directions we might explore in order to maximize the potential of each technology tool used for assessment?

The authors of this chapter reviewed books, articles, websites, and other resources for this literature review, focusing primarily on articles that reported on empirical research studies. More specifically, we sought studies that described the impact of each of these technology assessment tools on student learning and development. Student learning and development was defined broadly to include the knowledge, skills, and attitudes a student might acquire or develop during a course or program. These studies were read and regularly discussed by the authors, using the guiding questions above to frame our discussion. Eventually, these discussions led to the identification of broad themes in the literature and suggestions for future researchers and educators. In the following paragraphs, we briefly describe each technology tool as well as present our findings in terms of promises, pitfalls, and possible future directions