

# Chapter 14

## Learner–Centered Teaching and the Use of Technology

**Annette Greer**

*East Carolina University, USA*

**Vivian W. Mott**

*East Carolina University, USA*

### ABSTRACT

*This article explores the use of various learning technologies as tools for facilitating learner-centered teaching. The article offers another perspective on the scholarship of teaching with technology—through discussion of various theoretical models of learner-centered teaching, the role of technology on the student/instructor relationships, the impact on technology in different educational settings and contexts, and learners' cultural differences. The article concludes with a brief discussion of future trends, cautions, and speculations related to technology use in learner-centered teaching.*

### INTRODUCTION

A mere mention the word “technology” often renders anxiety in instructors and students alike. However, the term “technology” can represent the simplest of tools to aid the learning process. For instance, a pencil with an eraser on the end, a chalk board and chalk, or even a Chinese abacus are instrumental technologies that we have used across time to facilitate the learning process. Relative to technology in the 21<sup>st</sup> century, the difference is the speed at which we are experiencing growth in both hardware (the pencil vs. computer) and

software (writing vs. applications) in technological tools (Saba, 2001).

Where do we find these technological tools in use in higher education? Kennedy, Judd, Churchward, Gray, and Krause (2008) found that individuals who embrace emerging technologies in everyday life were more apt to be early adopters, using those same technologies in educational settings. In higher education, we find technological tools inside the traditional classroom and among various created virtual learning environments generated by the technology itself—in a place we often call *cyberspace*. Technology permeates our global environment, offering tools that assist us in economic, social, and political dimensions.

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Technological tools are one of many elements that can aid communications and application, in education. A closer look at the elements of education will help us in understanding the positive and negative value of technology as an educational resource and sometimes as the environment of learning. The purposes of this article are threefold: first, to explore critical educational elements and the role educational technologies play in these elements; second, to consider how key theoretical models of learning are impacted by technology; and, third, to examine how instructors and learners variously respond to educational technologies and the impact of technological use on both instructor/learner relationships and learning. Ultimately, the article seeks to add to the scholarship of teaching through an evidence-based review of the contextual influence of technology in education.

## **BACKGROUND: EDUCATIONAL ELEMENTS**

There are many elements to be considered in any educational environment: instructors, learners, content, delivery, application, context, environment, and resources. Not only are the elements essential to understand; further, the interaction of these elements, within the context of time and the roles that each of these elements play, have varied across historical time as higher education has evolved as well. The relationship between the elements of education changes rapidly as the elements themselves have transformed with time and as knowledge has both become obsolete and expanded exponentially (Billings & Halstead, 2005; Mott, 2009). It is the changing relationship among the educational elements of instructors, students, content, environment, all influenced by the application of technology resources, that have stimulated this article.

Demonstration of technological competencies is central to the ability of instructors to meet the diverse learning needs of students. Technological

competencies are based on the same continuum as the technology itself from simple to complex according to the International Society for Technology in Education (ISTE, 2008). ISTE has set national technology competency standards for instructors and students. As early as 1995, ISTE commissioned a white paper regarding the technological literacy skills needed for the 21<sup>st</sup> century (Thomas & Knezek, 1995). Technological literacy includes: (a) understanding math and science concepts underlying technological systems, (b) operability relative to various systems, (c) utilization and evaluation of diverse applications, (d) ability to innovate technology to solve emerging science problems, (e) awareness of the role of technology to any given career, (f) responsiveness to critical factors that lend success to any given career, and (g) appreciation of the role technology has on the various cultures of our global society.

As with any competency, technological competency can be considered as three distinct skill areas: basic, professional, and application of technology in instruction. Basic technological skills include the introductory level of function that is the operation of applications for personal communications. These applications can include e-mail, basic blogs, word processing, spreadsheets for home use, and simple presentations, for example. Professional technological skills include higher, intermediate levels for professional communications. E-mails, for example, used professionally require knowledge of embedded applications such as certified signature use, timed release, tracking delivery and opened status, and automation of e-mail rules for organization and management. Another example would be use of the word processing at the professional level to track changes, merge documents, insert citations and references, automate a table of contents, and import from other applications into the word processor. At the advanced competency level, professionals using technology to teach would have evolved from basic to professional intermediate, and are poised to expand and transfer existing skills into

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