Chapter 5

Teacher Preparation Programs and Learner-Centered, Technology-Integrated Instruction

Judi Simmons Estes
Park University, USA

ABSTRACT

Integrating technology with instruction using a learner-centered pedagogy, enhances student engagement with learning. Effective technology-integrated instruction involves providing high-quality lesson design, with opportunities for inquiry-based learning, while building a community of learners within a technology-rich classroom (e-MINTS, 2016). For first-year teachers to enter a PK-12 classroom with the knowledge, skills, experiences, and resulting self-efficacy to implement technology-integrated instruction, they must have experienced modeling from teacher preparation faculty and a course of study with relevant experiences (Zhao, 2007). This chapter examines four components of effective technology-integrated, learner-centered instruction as well as the influential role of teacher preparation programs in providing a model and experiences for teacher candidates.

INTRODUCTION

In 2010, the U.S. Department of Education presented an educational technology plan titled, “Transforming American Education: Learning Powered by Technology,” which recommended that schools in the U.S. “design, implement, and evaluate technology-powered programs and interventions to ensure that students’ progress through our K-16 education system and emerge prepared for the workplace and citizenship” (p. 12). This plan suggests technology be integrated with instruction throughout a student’s educational experience. “Integration is when classroom teachers use technology to introduce, reinforce, extend, enrich, assess, and remediate student mastery of curricular targets” (Hamilton, 2007, p. 20). Using technology to enhance the educational process involves more than just learning to use hardware and software.

DOI: 10.4018/978-1-5225-0892-2.ch005
The premise of this chapter is that faculty in teacher preparation programs who model and instruct teacher candidates technology integration, should incorporate not only technological skills, but also the ability to use pedagogical knowledge as a basis for integrating technology into learner-centered teaching.

BACKGROUND

There is a significant difference between technology use in education and technology-integrated instruction. The definition of technology in education is narrow because it isolates technology from pedagogical processes. According to Lever-Duffy, McDonald, and Mizell (2005) “educational technology might include media, models, projected and non-projected visuals, as well as audio, video and digital media” (p. 4); furthermore these authors suggest that some “educators may take a narrower view” and are likely to “confine educational technology primarily to computers, computer peripherals and related software used for teaching and learning” (p. 5). Technology-integration incorporates technology hardware and software with technological skills and the ability to use pedagogical knowledge as a base for integrating technology into teaching and learning. Technology-integrated instruction connects instructional technology with standards, learning objectives, instructional strategies, learning activities, assessment strategies, and instructional follow-up procedures. Technology-integrated instruction is inherently learner-centered.

Enhancing Missouri’s Instructional Networked Teaching Strategies (e-MINTS) is a model of learner-centered and technology-integrated instruction for PK-12 programs as well as higher education. The four components of the instructional model include:

1. High-quality lessons and assessment designed to meet the needs of diverse learners and valuing self-directed learning
2. Authentic learning based on standards where questioning promotes critical thinking and inquiry, as well as complex thinking and knowledge construction
3. Community of learners, including the teacher, who work in teams, take risks, respect and push each other while taking turns being leaders and becoming life-long learners
4. Seamless technology integration into the classroom as a fundamental tool for learning, with students becoming media literate digital citizens (see https://sites.google.com/a/emints.org/eim/page2).

Martin, Strother, Weatherholt, and Dechaume (2008) compared eMINTS and non-eMINTS students using standardized test scores and found that students in a classroom using e-MINTS approach scored higher on state testing than those who did not have e-MINTS instruction; in addition, the e-MINTS program was implemented with a high level of fidelity by eMINTS staff, participants, and graduates, participants mastered most of the core program concepts. In another study, it was found that teachers trained in e-MINTS self-report improvement in their inquiry-based teaching activities, their computer use, and their perception of their own computer skills and consistently elementary students in classroom where e-MINTS has been implemented, significantly outperformed students who had not been exposed to e-MINTS in math, science, social studies, and communication arts (OSEDA, 2001). e-MINTS programs of professional learning have affiliations with the Partnership for 21st Century Learning and the International Society for Technology in Education (ISTE); the e-MINTS Comprehensive Professional Development program has been awarded a Mastery Level of Alignment with ISTE’s standards for teaching and leading in the digital age (Beglau & Terry, 2015).