

# Chapter 21

## Fostering Meaningful Student Learning Through Constructivist Pedagogy and Technology Integration

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### ABSTRACT

*While national statistics cite a remarkable improvement in technology tools and access to the Internet in most schools across the nation, many teachers are not integrating these tools into their instruction in ways that support and maximize student learning. Additionally, many teachers entering the workforce are far more likely to use computers for personal purposes rather than in the classroom (Keengwe, 2007; Keengwe & Onchwari, 2009). Consequently, there is need to motivate, train, and equip teachers with the skills, knowledge, and pedagogical framework to effectively teach with technology tools. This article reviews the constructivist pedagogical framework and the critical issues related to technology integration in schools. This article advocates the need for teachers to embrace constructivist teaching strategies to enhance meaningful teaching and learning in modern technology-rich classrooms.*

### INTRODUCTION

Technology has been introduced into many classrooms because educators believe it has a great potential to improve education and provide opportunities for improved student learning. Evidently, technology is changing the way teachers conduct their lessons. For instance, in a study about the

effectiveness of technology in schools, Sivinkachala and Bialo (2000) reported positive and consistent patterns when students were engaged in technology-rich environments. However, just having technology tools in the classroom does not necessarily translate to positive educational outcomes that can enhance student learning. Additionally, even placing technology tools in the classroom does not ensure that they will be used at all.

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Educators have been under pressure to reform school through technology (Becker, 2001). Many teachers are aware that technology use and integration are effective means for widening educational opportunities yet most teachers neither use technology as instructional delivery system nor integrate technology into their curriculum (Bauer & Kenton, 2005). Additionally, more teachers than ever before have experienced technology in their homes, schools, and mass media. Even so, the National Center for Education Statistics (NCES) reported that only half of the public school teachers who had computers or the Internet available in the schools used them for classroom instruction (Judson, 2006). Many teachers entering the workforce are far more likely to use computers for personal purposes rather than in the classroom (Keengwe, 2007; Keengwe, & Onchwari, 2009).

There is need for teachers to prepare active learners for a digital global economy that is characteristic of the 21st century. Active learning is primarily concerned with what students do with information as opposed to how much information the teacher and the learning environments can provide (Grabe & Grabe, 2008). Additionally, the ubiquitous presence of technology in schools implies the need for competent teachers who can teach effectively with these tools. As a result, there is more focus now on how teachers can use technology tools to effectively support active student learning. Hubbell (2007) argued that:

*“Technology is and will continue to be an integral part of classrooms, workplaces, and our everyday life. Using technology helps early learners to communicate, practice life skills, and better understand concepts. If used pragmatically in the early childhood classrooms, students will be better equipped to begin using 21st century tools independently as they enter elementary schools”* (p. 35).

The overarching goal for schools is to have teachers comfortably work with appropriate

technology tools and to pass on that knowledge and skills to their students. Technology changes the roles of teacher and students: The traditional role of teacher as dispenser of information is challenged, and the teacher’s new role is that of a guide: to challenge students’ thinking and encourage reflection in the learning process (Brooks & Brooks, 2001). As a guide, the instructor is no longer an authority who transmits knowledge by telling students what they must learn but a guide who shares knowledge with the learner (Novak, 1998). As guides, teachers empower students to become responsible for their own learning (Jonassen, 2000) and adopt a student-centered model, and not a teacher-centered model (Lever-Duffy, McDonald, & Mizell, 2003).

Teachers should strive to create intellectually powerful and technology rich learning environments for their students while maintaining sound pedagogical practices (Anderson & Becker, 2001). Learner-centered pedagogies assist teachers to relinquish some of their authority while providing students with opportunities to construct meaning from their experiences with the content (Huba & Freed, 2000). Additionally, the teachers help students to focus more on the content as opposed to the technology (Wachira, Keengwe, & Onchwari, 2008).

## **Constructivist Pedagogy**

Constructivism is an educational theory that emphasizes hands-on, activity-based teaching and learning during which learners develop their own frames of thought. Piaget’s notion of constructivism theory assumes that learners have to construct their own knowledge, individually, and collectively. Each learner has a toolkit of conceptions and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community, other learners and instructors, is to provide the setting, pose the challenges, and offer the support

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