Chapter 9

Technology Integration in Early Childhood and Primary Classrooms
Access, Use & Pedagogy Remain Critical Components to Success

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ABSTRACT

Calls for increased use of technology in early childhood and primary classrooms have not gone unanswered. However, recent research findings report little technology integration with computers continuing to be unavailable. This descriptive study looked to explore to what extent and in what ways technology is integrated into early childhood and primary classrooms. Findings corroborate previous dated research that trivial technology is being used. Technology use, computer access and styles of pedagogy remain critical in the debate to whether teachers will integrate computers for teaching and learning.

INTRODUCTION

In a recent special edition of the *Early Education and Development* journal dedicated to technology integration, guest editors Wang and Hoot (2006) argued that

Early childhood educators are now moving away from asking the simple question of whether technology is developmentally appropriate for young children. Rather, they are more concerned with how [information and communication technology] can be effectively used to facilitate children's learning and development. (p. 317)

It would seem the value of using technology to support teaching and learning for young children has been reconciled.

Over a decade ago, the National Association for the Education of Young Children (NAEYC)

adopted a position statement regarding the use of technology in the education of young children. This statement has since not been modified or replaced (NAEYC, 1996). Their prescience highlighted the increasing ubiquity of computers and information and communication technologies. NAEYC's (1996) statement also cautioned that "computers supplement and ... not replace highly valued early childhood activities and materials" (p.1). The obvious concern and assumption were that computers would become pervasive enough so that it would supplant other meaningful instructional methods. The authors, in fact, warn educators to "weigh the costs of technology with the costs of other learning materials and program resources to arrive at an appropriate balance for their classrooms" (NAEYC, 1996, p.1). Again, the assumption was that computer technologies may overshadow tactile learning. However, is the reverse also true? Has a balance been struck between traditional forms of learning and technology integrated instruction? Have computer technologies become integral to learning? The conclusions appear to be less clear.

Smeets (2005) called for technology-supported learning environments in early childhood and primary education that align with the tenets of NAEYC. He argued that for technology to be best used to support student learning, then the environments must (a) embed authenticity, (b) emphasize knowledge construction, (c) use open-ended learning, (d) include student cooperation and collaboration and (e) integrate mixed ability levels and differentiated instruction where appropriate and possible. Smeets criticized schools for emphasizing "traditional, skill-based [information and communication technology] use" (p. 345), reporting that teachers made little use of technology to advance learning. Few teachers, but particularly males, were most likely to implement constructivist environments, where technology could be used in the most meaningful ways.

Possibly the strongest advocate for technology integration in *all* classrooms has been the

International Society for Technology in Education (ISTE). In 1998, ISTE launched the National Educational Technology Standards for Students (NETS-S). In 2007, a significant revision to these standards reflected changes in technologies, security and ethics, individuals' skills and contemporary teaching and learning. In parallel, the 2000 National Educational Technology Standards for Teachers (NETS-T) were approved. In 2008, a similar revision to the NETS-T resulted in a greater emphasis on learning and creativity, assessment, authentic work, and ethics. These calls for meaningful technology integration have not gone unanswered.

Examples of Technology Integration and Use

There are numerous contemporary examples of innovative uses of computers and other technologies in early childhood and primary classrooms, such as with language and writing development, problem solving and drawing. For example, Couse and Chen (2008) considered the appropriateness of tablet computers for three- to six-year old children with drawing and technological independence. Ching, Wang, Shih and Kedem (2006) explored how kindergarten and first-grade students created and reflected upon digital photograph journals. Integrated learning systems, like those investigated by Paterson, Henry, O'Quin, Ceprano and Blue (2003) and Bauserman, Cassady, Smith and Stroud (2005), continued to produce inconsistent and mixed results with regard to their utility, implementations and teacher facilitation. Voogt and McKenney (2007) researched a more constructivist system to support language and literacy development. Finally, comprehensive programs, such as the Key Instructional Design Strategies (KIDS) project (Knezek & Christensen, 2007), have incorporated extensive teacher professional development in addition to hardware, software and instructional modules.

Outside of schools and formal learning institu-

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