Chapter 7
Applications of Technology for Instruction and Assessment with Young Children

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ABSTRACT

This chapter discusses the roles of technology in instruction and assessment of young children. The influx of technology in schools and homes has been rapid and wide spread. Most children today have seen or used a computer or other technological tool before they enter school. As the student-to-computer ratio has improved from 60-to-1 in 1983 (OTA, 1988) to an average 4-to-1 nationwide in 2007 (Nagel, 2007) the question is no longer whether computers can assist in early childhood learning in general, but rather how computers can and should be used and to what end (Johnson, 1998; Cuban, 2001).

INTRODUCTION

This chapter has been a collaborative effort between two authors whose expertise are Instructional Technology (IT) and Early Childhood (EC). This team provides perspectives from both fields. The IT author is faculty in an IT program and has many years of experience in schools. The Early Childhood contributor was a kindergarten teacher for seventeen years before returning to earn a terminal degree in Curriculum and Instruction with a focus on early childhood mathematics and science. She was a self-confessed "techno phobe" or someone who was resistive to technology (computer) use in general and more specifically in an Early Childhood Educational Environment. In this chapter we will explore current use of different forms of technology in early childhood classrooms and discuss some of the problems we have encountered in technology use with a focus on computers. We will discuss three main issues associated with instruction and assessment with young children: developmentally appropriate use of computers, instructional use of computers and equity issues.

The first section of this chapter will be an overview of technology instruction and assessment through the lenses of two distinct purposes: Use of technology in assessments and assessing children's

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use of technology. The questions that arise from this focus are the following:

- What are the roles of technology in instruction and assessment of young children?
- How can teachers of young children use technology for instruction and assessment of individuals and programs?

The next section of this chapter will explore some issues and problems with technology use for instruction and assessment in Early Childhood programs. These issues are impacting the use of technology in the United States classrooms and have a direct relationship to the acceptance of educational technology. In this section we have also included possible solutions or information to help educators better understand how to address these problems.

The culture of learning is dramatically different for children today. There was a time when teachers and textbooks were the gatekeepers of knowledge, but now much of the world's knowledge is accessible to any student who can turn on a computer and log on to the internet. (Renzulli, 2007).

The digital age…is changing the nature of knowledge and even the meaning itself. We are entering the age where to understand something is to see how it isn't what it is…Information Communication Technologies (ICT) are best seen in terms of how one might, in a given educational community, engage in problem solving for more effective teaching and learning in ways that are enhanced by ever-evolving tools of the digital age. (Brogden & Couros, 2007, p.34)

Technological artifacts are products of an economy, a force for economic growth, and a large part of everyday life. Technological innovations affect, and are affected by, a society's cultural traditions. Newer technologies such as laptop computers, cell phones, digital cameras, and PDAs, along with new communication vehicles such as blogging, wikis, and interactive role-playing virtual environments are changing the classroom environment both physically and conceptually. Schools are approaching near-universal access to the Internet via wireless routing and increasing the use of teaching tools as conduits for Web-based research and encouraging the development of higher order thinking skills. The transformation of intellectual inquiry brought about by the presence of computers and other information technologies in preschool settings is changing the thinking in regard to the role and importance of technology in early childhood education.

With the increased emphasis on assessment accountability in U.S. education today, it is not surprising to find that there is increasing interest in determining how technologies can be used to improve and assess teaching and learning. Educational assessments serve a variety of purposes and yield different kinds of results. Sometimes computer technology is used as a diagnostic function, as in the identification of children with special needs. At other times, technology is used to research young children's thinking as in brain research and cognitive reactions studies. Computer based content assessments are beginning to be utilized in many Early Childhood programs such as Head Start. For example, a now common method of assessing kindergarten students' reading skills and comprehension levels is the use of programs that require students to interact with a computer interface as the software records the students' responses. Instructional use often includes use of software programs that require children to match and identify different objects. While these programs are becoming common in school environments we have to ask is this quasi-robotic approach to instruction and assessment really an example of the effective use of the technological tools available to educators today?