

INTRODUCTION

Young children have always used a wide assortment of tools to explore the world and make sense of it. In the spirit of play they seize on whatever's handy, whether it's crayons for doodling, a trunk of old clothes for games of make-believe, or pots and pans for pounding out rhythms. Because educators understand that these early experiences help to shape children's language and literacy development, they create classroom environments filled with the tools appropriate for young children.

Technology offers new tools—including digital cameras, tape recorders, portable keyboards,

computers, and software that allow for exploration and creation—with the potential to shape children's early learning experiences. These tools offer new experiences and additional ways of learning and understanding as they are incorporated into children's work and play.

Young children are surrounded by technology, both at home and at school. Yet, many educators are not entirely comfortable with these new resources, or wonder how best to integrate the tools of the Information Age into classroom practice in developmentally appropriate ways to reach a range of learners.



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To help children make wise use of these tools in the classroom, teachers need to understand the potential benefits and limitations of technology. This does not mean they must become technology experts. Many of the best examples of integrating these new tools into learning projects come from creative teachers who understand children, not from “computer teachers.” Knowledgeable teachers need only recognize the power of technology to enhance learning, and take advantage of it in ways that support children.

In an active primary classroom, the teacher and children use a mix of traditional materials and new technology tools. The children in this class are at work in groups scattered throughout the room:

Some students draw crayon pictures that are then scanned into a word processor or authoring program such as KidPix, while others create pictures directly on the computer. Later, they will dictate stories to accompany their pictures. Across the room, another group uses a digital camera to take pictures of each other. The pictures will illustrate their biographies. Other children build designs with pattern blocks. Using yarn, they mark lines of symmetry, and take photos of the completed designs. Meanwhile, in a quiet corner, a parent volunteer tape records a student reading aloud a story. This activity will happen several times during the year with each child, so that students can hear their own progress as they listen to the recordings. Yet another group is “reading” a talking book on the computer, listening to the spoken words as the speech synthesizer turns letters into sounds.

Education has changed greatly from the early part of the 20th century, when the focus was on acquiring simple literacy skills, to education at the beginning of the 21st century. Today’s students are expected to go beyond rudimentary skills and learn to think and read critically, to express them-

selves clearly and persuasively. Educators are asked to reach an increasingly diverse population of students and help them master complex skills at a high level (Bransford, Brown, Cocking, Donovan, & Pellegrino, 2000; Roschelle, Pea, Hoadley, Gordin, & Means, 2000).

A National Research Study suggests that “different kinds of learning goals require different approaches to instruction; new goals for education require changes in opportunities to learn” (Bransford et al., 2000, p. xvi). The same study then links the design of learning environments to the process of learning, and offers four important aspects to consider:

- **Learner-centered.** Learners use their current knowledge to construct new knowledge. Learner-centered environments help students make connections between their current knowledge and the new tasks.
- **Knowledge-centered.** Young children can understand more complex concepts than previously believed, but concepts must be presented in developmentally appropriate ways, linking learning to their current understanding. A knowledge-centered perspective highlights learning with understanding, rather than the acquisition of disconnected facts and skills.
- **Assessment to support learning.** Feedback is fundamental to learning. Assessments need to reflect the learning goals. If understanding is valued, then formative assessments—which give feedback during the learning process—provide opportunities for students to revise and improve the quality of their thinking.
- **Community-centered.** Learning environments that promote a sense of connectedness among students, teachers, homes, and the larger community increase opportunities and motivation to interact, receive feedback, and learn.

Thus far we have changed the expectations for student achievement, but have not always taken full advantage of new knowledge about how learning takes place, and of new tools available to meet the challenge. Technology can be a useful and productive part of an environment focused on learners and their understanding. Examples in this guide will also show how technology can be used for assessment that supports increased learning and can contribute to building community within and beyond the school walls.

This guidebook draws on both research and classroom practice to steer educators toward effective uses of technology to advance literacy. It explores some of the many possibilities these new resources offer for education, and describes how this broad assortment of tools can be used in meaningful ways with students through the early elementary years. Those who work with older students and students with special learning needs will also find much of the information relevant and applicable.

In an effort to make this a practical resource that will assist teachers and others in the education field, the material is organized into these sections:

- **Understanding Early Literacy:** How children develop literacy skills through social learning, play, exposure to print-rich environments, and other contexts for making meaning
- **Understanding Technology's Role in Literacy:** The role technology can play in the development of language and literacy skills
- **Meeting the Needs of Diverse Learners:** Using technology to support the needs of English language learners, struggling readers, and students who would benefit from alternative assessments
- **Considering Technology:** Guidelines for effective use of technology and the selection of software and other tools for young learners

- **Putting It All Together:** Stories from real classrooms that beautifully tie together the tools of technology with the larger learning community of the young child
- **Conclusion**
- **Appendices:** Sections on professional development teams, and annotated bibliographies of print and online resources for further information on technology and literacy

This guide focuses on children and learning, while offering a picture of how technology can help to further educational goals. It provides practical information on using the many tools of technology to support literacy and language development. Throughout the guide, readers will find anecdotes from the real world of the classroom. These examples show how teachers are using technology to support and enhance students' literacy skills, creating opportunities for positive learning experiences, and helping students acquire confidence to use new tools to advance their own learning.