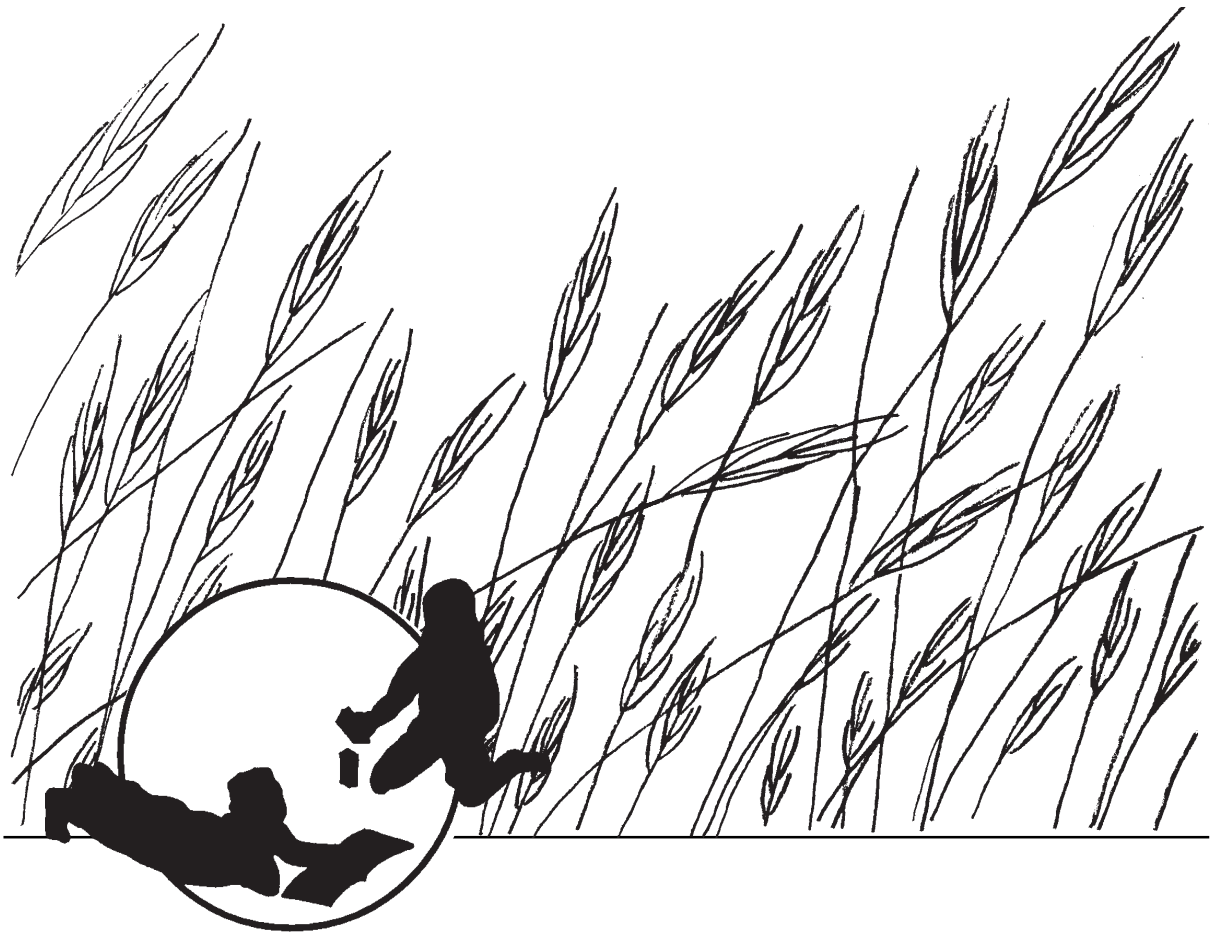


Iowa DE/AEA Early Childhood Network

Fact Sheet

on

Technology and Young Children



This fact sheet was a collaborative effort of the Iowa Department of Education/Iowa Area Education Agencies Early Childhood Network. It is not intended to be an all-inclusive document on this topic, but rather a concise, helpful reference tool. This fact sheet is in the public domain and may be freely reproduced and disseminated.

July 1998



Technology and Young Children

Technology in Society:

Proficiency in technology skills is a requirement for today's young children who will become the leaders of our nation's future. Just as we have learned ways technology tools facilitate our activities of working, banking, communicating, shopping, research and learning, so it becomes a necessity for all 21st century citizens. The tools for recording information in learning began with the quill pen. It moved to the pencil followed by the ball point pen. Soon came the typewriter and the keyboard. Currently we are at the beginning of voice input of information. The potential in technology is almost beyond our imagination. What is certain though is that the tremendous effect of current and anticipated changes will permeate every aspect of students intellectual, emotional, social and economic lives into the 21st century. Our nations leaders of tomorrow must be prepared for this dynamically changing society. Society must bear the burden of providing equity of access to this knowledge for all citizens.

Teacher's Role:

Teachers need to consider the basic cognitive, physical, social and emotional needs of young children in the use of technology. Other issues thoughtful teachers raise about environments, curriculum, assessment, standards, materials and appropriate experiences, must also be considered.

The successful integration of technology requires that teachers see it as an important and legitimate tool for learning. The teachers guide learning as students are introduced to new equipment and materials. Children work toward established essential leanings in their age appropriate settings. A reflection question might be, what can the child gain from this experience that meets the needs of this individual student? Professional training need not require expert level accomplishment, as much as a working knowledge, accompanied by an openness to being a co-structor of new knowledge with the child. The essential questions asked by the teacher promote inquiry, reflection, analysis and communication skills for life.

Student's Role:

Technology has a great potential to increase achievement when students are aware of their individual learning style and the standard toward which the teaching is directed. Social and emotional development, are enhanced during cooperative projects with the integration of technology. As children work side by side in a peer coach capacity their social skills improve. Communication skill develops during these activities as well as when the new knowledge is shared with the class or adult audiences. The multisensory delivery of information using auditory, visual, and interactive aspects of computer programs, allows for meeting the needs of all learners. Students can process information using the modality they prefer and feel more confident as participants in their own learning. Meeting the needs of diverse learners can be accomplished through careful selection of hardware and software.

Parent's Role:

Parents need to understand the goals for young children in relation to the use of technology in the classroom. Multiple ways for students to exhibit their learning, through the use of technology tools, can be provided for during evenings, conferences, or other times when the families are at the school or center. Equity of access to the use of technologies by families, unable to afford the same, needs to be addressed by schools and community in multiple ways.

Supporting Technology:

The district technology plans must address the need for growth over time in relation to availability of hardware, software, and internet access at all levels. Young children are uninhibited in their use of technology. As adults we must provide for the nurturing of their skills early in their lives, in multiple settings.

Administrative and community support for technology is seen when there is equitability of access in all classroom at all levels. Staff development planning is essential for the integration of technology into the curriculum. Opportunities for classes, coaching, or mentoring are possibilities for meeting these needs. Opportunities for students being involved with the use of technology in authentic work settings facilitate its integration into their lives.

Considerations for Use of Technology in the Early Childhood Classroom

The NAEYC Position Statement: “Technology and Young Children-Ages Three through Eight (1996)”, places the responsibility of influencing events in the lives of young children with technology, in the hands of early childhood educators. The issues of concern include the following:

- The role of the teacher in evaluating appropriate uses of technology
- The potential benefits of use with very young children
- The integration into the learning environment
- The equitable access to include all children
- The selection of software absent of violence or stereotyping
- The role of teachers and parents as advocates for appropriate use and material selection
- The need for increased professional development

Research indicates that technology used in early childhood activities can have a positive effect on children's development. Technology is used as a supplement versus a replacement for quality activities such as, art, blocks, sand, water, writing and dramatic play. Opportunities for cooperative activities and learning exist in appropriately selected software. Considerations suggested by NAEYC include the following:

- The use of professional judgment in specific use of technology is needed. Look at use in light of what is age appropriate, individually appropriate and culturally appropriate.
- Technology can enhance children's cognition and social abilities, by expanding play opportunities, enhancing use of materials, providing a window into the child's thinking, increasing children's spoken communications, cooperative work, and allowing for collaboration with others in different cities, states, and countries.
- Technology needs to be integrated into the learning environment across all subject matter areas, as one of the tools for learning.
- The use of technology should enrich the curriculum, activities, and expand the concepts taught. It could be a tool for learning in a center to facilitate the writing of stories, in dramatic play to enhance roles of characters or used to extend children's activities with physical manipulative, along with creative ways developed by child or teacher.
- Educators need to be especially sensitive to the issues of equity across gender, race, cultural environments, socioeconomic levels, and disabilities. This will empower children with independence through inclusion.
- The power of eliminating stereotypes of any group and removing exposure to violence will add to the positive social values when software is selectively chosen.
- Teachers and parents need to advocate for appropriate applications for all children to facilitate better consumer choices.
- Early childhood educators should use technology for a tool in communications, collaboration among professionals and as a tool for teaching children.



Research is showing us that the tools of technology, used according to the guidelines of the NAEYC position statement, do increase gains in intelligence, nonverbal skills, structural knowledge, long-term memory, complex manual dexterity, and self-esteem.

Benefits are not automatic, of course. Thoughtful use including carefully selected activities, is the key (Clements & Nastasi, 1992). There must be a reason to use the technology. Piaget demonstrated that young children learn about geometric shapes, not from taking mental pictures of objects, but from actions they perform on objects.. (Clements, Nastasi, and Swaminathan, January 1993).

Draw programs used to recreate geometric pattern students have experienced through manipulation can help them link their intuitive knowledge about moving and drawing to more explicit mathematical ideas. Researchers have observed high levels of communication and cooperation as young children interact at the computer compared to more traditional activities. The computer elicits more social interaction and different types of interactions, more turn taking and less tutoring. (Clements, Nastasi, and Swaminathan, 1993). Primary grade students interactions range from working in parallel or taking turns to more sophisticated forms of collaborative work, such as helping or instructing, and discussing and building upon each others' ideas. Technology activities should often be a choice for the child, just as other regular classroom activities.

In summary, as a convergence of technologies takes place in a digitized informational society, the challenge for teachers and students is to develop a literacy with the tools of learning to prepare them for a continuously evolving information-based society. This new literacy will facilitate their functioning in an analytical, interpersonal, and highly technical world of the 21st century. "To meet career challenges, students must be self-reliant as well as good communicators and problem solvers." (British Columbia, Ministry of Education, Integrated Resource Packages; web site: (<http://www.est.gov.bc.ca/curriculum/irps/>)) They also need to develop an ethical approach to the use of technology in our rapidly changing society. With the continuous improvement model of change in education, involving the establishment of essential learnings referenced to high standards and benchmarks, educators must remember the developmental levels of very young children.



Technology and Young Children

Resources and References

Buckleitner, Warren. *Children's Software Review Newsletter*

Web Site: <http://www2.childrenssoftware.com/childrenssoftware/default.html>.

Buckleitner, Warren. (1993). *High/Scope Buyers Guide to Children's Software 1993*. Ypsilanti, MI: High/Scope Press.

Clements, Douglas H. (November 1987). Computers and Young Children: A Review of Research, *Young Children*.

Clements, Douglas H.; Nastasi, Bonnie K.; & Swaminathan, Sudha. (January 1993). Research in Review, Young Children and Computers: Crossroads and Directions From Research. *Young Children*.

Davis, Bernadette Caruso; Shade, Daniel D. (December, 1994). Integrate, Don't Isolate! — Computers in the Early Childhood Curriculum. *ERIC Digest*, University of Illinois, 805 W. Pennsylvania Ave. Urbana, IL 61801-4897.

Davidson, Jane Irene. (1989). *Children & Computers Together in the Early Childhood Classroom*, Albany, NY: Delmar Publishers Inc..

Eichleay, Kristen; Kilroy, Carol. (December/January 1993-94). Hot Tips for Inclusion With Technology, *The Computing Teacher*.

Eliot, Levinson, Doyle; Denis; Benjamin, Robert I. (October 1993). Technology and Change., *The Executive Educator*.

Elkind, D. (September 1996). Young Children and Technology: A Cautionary Note, *Young Children*.

Fite, Kathy. (Spring/Summer 1993). A Report on Computer Use In Early Childhood Education, *ED-TECH Review*.

Guthrie, Larry F.; Richardson, Susan. (October 1995). Turned On To Language Arts: Computer Literacy in the Primary Grades, *Educational Leadership*.

Haugland, Susan W. & Wright, June L. (1997) *Young Children and Technology: A World of Discovery*, Boston, MA: Allyn and Bacon..

Hohmann, Charles; Carmody, Barbara; McCabe-Branz, Chica. (1995). *High/Scope Buyer's Guide to Children's Software*. (11th edition), Ypsilanti, MI: High/Scope Press.



Johnston, J. Howard & Johnston, Lucinda L. (February/March 1996) TECHNOLOGY: Bringing Our Present & Future Into The Classroom. *Schools In The Middle*. Vol. 5 #3

Learning By Design — 1000+ Web Sites for Browsing, Collections of Links for Educators (<http://207.201.187.139/linkstoc.htm>. (March 1998)

Marshall, B. (October 1996) “My Way”—Children at the Computer Area, *HIGH/SCOPE Extensions*.

NAEYC, The Adventure Begins: Preschool and Technology, #827/ \$20.

NAEYC, Sept. 1996 Position Statement: Technology and Young Children - Ages Three Through Eight, *Young Children*.

NAEYC, (September 1996) Position Statement: Technology and Young Children—Ages Three through Eight, Adopted April 1996, *Young Children / What About Technology in the Classroom?*

NAEYC, 1997 Technology and Young Children: What Parents Should Know”, *Early Years are Learning Years*, (NAEYC Web Site: http://www.naeyc.org/i_parents.htm)

Poirot, James L. and Canales, JoAnn (December/January 1993-94) Technology and the At-risk—an Overview. *The Computing Teacher*.

Rothenberg, Dianne (May 1995) The Internet and Early Childhood Educators: Some Frequently Asked Question., *ERIC DIGEST*. ERIC Clearinghouse on Elementary and Early Childhood Education, University of Illinois, 805 West Pennsylvania Ave., Urbana, IL 61801.

Scholastic. (October 1996), Technology: The Early Childhood Connection. *Early Childhood Today*.

Shade, D. (September 1996) *Software Evaluation*, *Young Children*.

Software Evaluation Instrument, *CSR Newsletter*, 44 Min Street, Flemington, NJ 08822. (1995)

TECHNOLOGY The Early Childhood Connection., *Scholastic Early Childhood Today*, 555 Broadway, New York, NY 10012. (February 1994)

Willing, R. Kathlene R. & Girard, Suzanne. (1990). *Learning Together: Computer-Integrated Classrooms*, Markham, Ontario: Pemroke Publishers, Limited.

Wright, June L. & Shade, Daniel D. (editors), (1994) *Young Children: Active Learners in a Technological Age*. Washington, D.C.: National Association for the Education of Young Children.

