Well-Managed Classroom with Effective use of Technology in Early Childhood Education

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Preliminary

While the number of computers in the classroom continues to increase and tremendous support for technology integration exists in government, business, and academia, a major discrepancy exists between the level of technology use that is expected from the educators and the actual use and integration of technology in the classroom. However, effective technology integration in early childhood education depends on an early childhood program's overall program goals and objectives, and the program's goals and objectives for each student. Also, it depends on how computers are incorporated into the early childhood curriculum (Haugland, 2000).

Background to the study

Most experts believe computers are not developmentally appropriate for children under the age of three (Elkind, 1998; Haugland, 1999; NAEYC, 1996). However, these same experts believe that children three years old and older can begin to effectively explore and use computers. Surely, many of the factors that make computers developmentally inappropriate for children under age three are also present in older children. Research shows that active learners busily manipulate a wide variety of objects and in the process of learning they learn about "themselves and their environment" (Haugland, 1999, p. 26).

To evaluate whether computers are developmentally appropriate for children over age three, we need to determine the developmental needs of these children. Children this age are developmentally within Piaget's preoperational stage. This means they are concrete learners who are very interested in using newly learned symbolic representation - speaking, writing, drawing (including maps and geometric figures) and using numbers. Further, children this age are extremely active and mobile. They often have difficulty sitting still; they need frequent changes in learning modalities; and they want a variety of physical experiences involving dance, physical play, climbing and sports. Preoperational children are also are continuing their mastery of language, and exploring various facets of social behavior.

Howard Gardner has shown that young children exhibit a diversity of learning styles, and that the optimum way for many children to learn is not the traditional teacher-directed, verbal approach (Gardner, 1987). We must be sensitive to these different learning approaches, especially as we serve an ever larger diversity of children.

Clearly many of these developmental needs match up well with appropriate use of technology in the classroom, especially exploration, manipulation of symbolic representation, matching alternative learning styles, and quickly changing learning modalities that individual students can control and pace to meet their individual needs. It is also a very powerful tool for students with specific learning disabilities. The danger, however, is that computers will be used

only to reinforce the national trend toward earlier and more academic skill acquisition, and that other important developmental needs will be ignored. Further, there is a danger that developmental needs not met through technology will be ignored or radically compromised: physical play, outdoor exploration of the community and of nature; art, music and dance; learning specific social skills and moral values, and experiencing diversity in a myriad of ways. Some also believe the easy access of information through computers will prevent our children from developing the persistence, ingenuity, tenacity, social adeptness and hard work needed to survive in the world (D. Wardle, nd). These are all realistic fears, based on the pressure of politicians and most parents, and the ever-present reality of very limited resources in most early childhood programs and elementary schools. And, finally, there is the reality that, all too often, computers are used in ways that are simply developmentally inappropriate - most often used for drill and practice purposes (Haugland, 1999). So, we have to be very cautious while implementing the computer into the curriculum.

According to Wong and Wong (2009), a well- disciplined classroom promotes learning environment for the students. It enhances students' academic skills and helps to close the achievement gap. Appropriate use of technology in the classroom is to expand, enrich, implement, individualize, differentiate, and extend the overall curriculum. And, obviously, curricula goals change with age, and differ from program to program. If a goal of the literacy curricula for a certain age child is to learn to write personal journals, then the computer can naturally support that through writing software, digital cameras, and other methods. A science goal that requires learning the habitat of different zoo animals can be augmented by using specific CD ROMS and accessing zoo web sites. Similarly, studying extinct and endangered animals becomes more real and educational through the use of specific software and websites.

If computers are not fully integrated into the overall curriculum, they can actually negatively impact children's creativity (Haugland, 1982). To integrate computers effectively, these steps must occur:
1. Create a support team that includes people knowledgeable of technology, and people who understand developmentally appropriate practice;
2. Select developmentally appropriate software;
3. Select developmentally appropriate web sites;
4. Select computers that can run the software selected, and that can be easily upgraded
5. Provide adequate and periodic staff training, both on the use of computers, and on ways of integrating the computers into the curriculum:
6. Integrate computer resources in the classroom.

"In developmentally appropriate settings children make many choices regarding when and how long they use learning resources. Computers should be no different (Haugland, 2000, p. 17). Preschool and kindergarten children should first be introduced to computers one at a time, or in small groups. Every child should have an opportunity to experience ample hands-on opportunity to explore 4-5 different software programs. Once each child has had this hands-on experience, the computer center becomes one of many equally important learning centers. It should have several chairs close by, to encourage children to work together, and to encourage the more advanced students to act as peer tutors. This also develops cooperative learning activities. Teachers and other adults should resist interfering or helping the children. The maximum number allowed for the center should be determined, and a waiting list established. Children should place their name - or name tag if they can't write - on the list.

This approach cannot be implemented with only one computer in the classroom. Haugland suggests a ratio of one computer to seven students, the best situation being one to five.

If there are not enough computers to go around, it's better to have two or three in one classroom for a month or two, and then move them into another classroom, than to have one in each classroom all the time (Haugland, 1999).

To fully integrate computers into the curriculum teachers should take the goals of the curriculum and find ways these can be implemented. Further, since it takes time and effort to this, it is advisable to start with one curriculum area, such as language art, or social studies, and adapts that curriculum to include computer integration, before moving on to another.

The use of computers in a fully integrated classroom is endless. Software can be used to create books, with dictated tests and illustrations; photos of children and the community can be taken with digital cameras and then combined with text and pictures to create journals, biographies, wall newspapers, school/home communications, and neighborhood documents. Older children can use scanners, font selection, and various graphics application, to develop power-point presentations to show the rest of the class and parent gatherings. And, of course, Internet sites can be accessed to do research on almost all topics. There are also wonderful opportunities for correspondence activities with children throughout the world.

Improvement of management
    To improve the classroom management while implementing technology in our classes, teachers can follow the following suggestions:
*Teachers should provide a computer center as one of many equally valued learning centers in the classroom. At the same time, teachers should allow use, access, and choices as teachers would do with any other center.

*Teachers should not use time on the computers as a reward for other activities, behaviors, and task completion. Also, teachers should not only allow the 'well behaving' children to access the computers.

*Teachers should allow children lots of time to explore how to use a computer: what can/cannot occur, and simple exploration of the medium.

*Teachers should carefully evaluate all software, both for developmental appropriateness, and for nonsexist, nonracist, non-stereotypical, and nonviolent material. Of the software evaluated by Haugland (2000), only 25% of the titles reviewed were considered acceptable. Use the Haugland Developmental Software Scale to evaluate software. (Haugland, 1997). Do not accept software brought from home without a similar evaluation.

*Teachers should not use computer labs. It is simply impossible to integrate the ongoing classroom curricula if computers are isolated in a lab, where children must attend at a specific time during the day.

*Teachers should not use computers for drill and skill activities. This is one of the biggest misuses of computers with young children (NAEYC, 1996).

*Teachers should provide enough staff training so that teachers feel comfortable both with the computers in the classroom, and the software selected (NAEYC, 1996).

*Teachers should select computer programs that are meaningful to girls and minorities.

*Teacher should not use software that reinforces gender/racial stereotypes, or that promotes violence as an acceptable way to solve problems. This includes computer games.

*Teachers should provide ways for children with special needs to use computers and encourage Individual Education Plans (IEPs) that use technology to address specific learning disabilities.

*Teachers should not allow computer use to distract children's time and attention from critical early childhood activities: art, music, play, social interaction, exploration of books, climbing on the playground, etc. Computers cannot replicate concrete experiences, hands on learning, mentoring by adults and older peers, and exploration of the real physical and natural world.

*Teachers should insist that software manufactures create developmentally appropriate materials that develop and nurture children's knowledge and sensitivity to diversity.

*Teachers should not allow manufactures, researchers and experts to present computers as a magical solution to our educational and parenting challenges. Help parents become critical computer software consumers.

*Teachers have to make sure that needed training and support for computers in the program does not detract from other needed training and support, such as working with children with special need, literacy instruction, conflict resolution, etc.

*Teachers should use a screening devise when using the Internet. Kid Desk, Internet Safe, Net Nanny, and Cyber Patrol are some available ones (Haugland, 2000).

Concluding remarks

In most early childhood programs and schools, technology will be part of the learning landscape of the future of a well-managed classroom. To make sure that technology is used effectively, we must assure that teachers are fully trained and supported, and that the programs and Internet sites used are developmentally appropriate, nonsexist, nonracist, non-biased against people with disabilities, and respect religious differences. Further, the technology must be fully integrated with the program's educational goals and objectives. And, it is critical that computers do not drain critical resources from other essential instruction - both material and staff training - and that they don't become an agent or excuse for the early childhood field to retreat from our commitment to educate the whole child in developmentally appropriate ways. Finally, we must continually strive to use technology in ways where it is particularly powerful: individualizing, addressing learning disabilities and different learning styles, and bringing the world into the classroom.

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