It Is Developmentally Inappropriate to Have Children Work Alone at the Computer?

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In the early childhood field, it is typical for young children to operate computers while receiving little attention from the teacher. The purpose of this article is to examine whether or not the attention of the teacher is needed as children use computers and if the lack or near lack of teacher observation is developmentally appropriate (Bredekamp & Copple, 1997). What is the role of teacher observation as children play at computers? This issue will be discussed by attending to and referencing the principles of developmentally appropriate practice (Bredekamp & Copple, 1997), and the theoretical framework of the Vygotsky’s theory of the zone of proximal development (1978), and Piaget’s theory of interaction (1964). Anecdotal cases experienced by teachers in early childhood settings and a case from a pilot study conducted by the author are provided as examples.

A great body of research has found that computers do help children learn (Clements, Nastasi, & Swaminathan, 1993; Davidson & Wright, 1994; Haugland, 1992; Haugland & Wright, 1997; Hohmann, 1994; Hoot, 1986; Shade & Wright, 1994), raise their self-esteem (Clements, et al., 1993; Haugland & Shade, 1988) and promote children’s positive attitudes toward learning (Adams, 1996; Cardelle-Elawar & Wetzel, 1995; Clements, 1994). The research literature has encouraged many teachers to incorporate the computer into curriculum and classroom teaching and learning.
Haugland (2000) put forward a question of “how computers are used with young children” (p. 12) and viewed this concern as more important than “if computers are used at all” (pp. 20-21). Relating Haugland’s point of view to the reality, is an issue that may be worth discussing. In both preschools and the primary grades, children are often seen working on their own at computers while teachers are busy with other children or other obligations. Is there a widely held belief that children will develop cognitively if they interact with computers? Costello (1996), an elementary school-teacher, disputed this notion. In his perspective, it is inappropriate if a child is placed in front of a computer and told to “have fun” without close monitoring from an adult during computer time. Lundak (1996), a high school technology teacher, pointed out that computers were not Game Boys, but a learning tool. In children’s learning with computers, Jones and Liu (1997) emphasized that human interaction is vital. With respect to genuine learning, in Healy’s (1998) understanding, children achieve gains socially and cognitively with the attention and support of another person. Their argument centers on a key point, that is, learning occurs in the context of human interaction.

The purpose of this article is to examine whether or not the attention of the teacher is needed as children work at computers and if the absence or near absence of teacher observation is developmentally appropriate (Bredekamp & Copple, 1997). What is the role of teacher observation as children play at computers? This issue will be discussed by attending to and referencing the principles of developmentally appropriate practice (Bredekamp & Copple, 1997), the Vygotsky’s theory of the zone of proximal development (ZDP) (1978), and Piaget’s theory of learning through interaction with the environment (1964). Anecdotal cases experienced by teachers in early childhood settings and a case from a pilot study are also provided as examples.

THE ROLE OF THE TEACHER AS CHILDREN LEARN WITH COMPUTERS

Developmentally Appropriate Practice (DAP)

In the book Developmentally Appropriate Practice in Early Childhood Programs, Bredekamp and Copple (1997) urged teachers to observe children at work for the following reasons:

Teachers observe and interact with individuals and small groups in all contexts (including teacher-planned and child-chosen learning experiences) to maximize their knowledge of what children can do and what
each child is capable of doing with and without coaching, scaffolding, or other supportive assistance. To help children acquire new skills or understandings, teachers select from a range of strategies, such as asking questions, offering cues or suggestions, demonstrating a skill, adding more complex materials or ideas to a situation, or providing an opportunity for collaborating with peers. (p. 128)

Teachers acquire knowledge regarding children’s learning levels through observation and interaction. With obtained information, teachers plan a variety of concrete learning experiences and provide a learning environment that addresses children’s interests, engages them in learning, and enhances their conceptual development. Knowing children well, teachers are also able to employ an array of teaching strategies that not only meet children’s needs, but also encourage their desire to learn. Moreover, observation enables teachers to pose the right questions at the right time to stimulate their critical thinking (Edwards, Gandini, & Forman, 1993) and deepen the wonder of the world. Successful learning experiences foster children’s initiative and active exploration of materials, yet challenge children “to work on the edge of their developing capabilities” (p. 124). Additionally, their success enhances self-confidence and a positive disposition to learning.

The Zone of Proximal Development (ZPD)

Vygotsky’s (1978) ZPD is a way of understanding the relationship between learning and development (Bodrova & Leong, 1996). In the perspective of Vygotsky, development of a behavior takes place on two levels that construct the boundaries of the ZPD: the lower and upper levels. The lower level represents that which a child is able to perform or learn independently. Within this level, a child can be left alone to strive in four developmental domains, namely physical, social, cognitive, and emotional. The higher level represents the height at which a child is able to arrive with external help from concerned adults or competent peers (Bodrova & Leong, 1996). Filippini (1993) translated the ZPD into the relationships among three points of A, B, and C:

If children have gone from [point] A to B and are getting very close to C, sometimes to reach C, the child needs to borrow assistance from the adult at that very special moment. We feel that the teacher must be involved within the child’s exploration, if the teacher wants to understand how to be the organizer and provoker of occasions. (Edwards, 1993, p. 153)
It is worth noticing that “what a child does with some assistance today is what the child will do independently tomorrow. What requires maximum support and assistance today will be something the child can do with minimal help tomorrow” (Bodrova & Leong, 1996, p. 35). And yet, the degree of assistance offered to children varies considerably. To gain a small step in learning, some require much more assistance than others. Others need much less assistance, but make a quantum leap (Bodrova & Leong, 1996).

More important, the choice of instruction methods and strategies are determined by teachers. Schetz and Streimmel (1994) placed an emphasis on the role of the teacher (or more skilled partner) in teacher-assisted computer implementation. Children effectively learn with computer technology facilitated by teachers. With observation and contemplation, teachers structure the setting and the task, and employ appropriate strategies, including “questioning, prompting, encouraging, and modeling in mediating children’s interactive experiences with the computer” (Schetz & Streimmel, 1994, p. 19). These researchers, in particular, bring attention to the role of the teacher as children interact with computers: “We argue that the teacher’s role, regardless of the software used, needs to be responsive to the particular needs and understandings of children” (p. 19). To assist a child, the teacher must have a good understanding as to when intervention would be appropriate. The teacher’s intervention serves the purpose of promoting a child’s learning before problems and a high level of frustration defeat the learner. The step-in should avoid disruption and intrusion, while the assistance is timely (Chang, 1996; Filippini, 1993).

Piaget’s Theory of Interaction

According to the Piagetian perspective (Piaget, 1964), children independently construct knowledge through direct encounters with the environment (Schetz & Streimmel, 1994). The active involvement of the child through exploration of the environment and interaction with provided materials enables him or her to make sense of the world (Rogoff, 1990; Walsh, 1991). Schetz and Streimmel (1994) have extended the Piagetian theoretical framework applied in a general learning context to microcomputer implementation in early childhood education. This extension is factually grounded on the perspective of Papert (1980) that children are able to acquire and construct knowledge through interaction with computers. In harmony with the Piagetian perspective, research has shown that working with computers offers children valuable opportunities to discover and develop new ideas (Haugland & Shade, 1988). Shade and Waston (1988) suggested that meaningful interaction with computers provide children with hands-on activities,
including blocks, manipulatives, and puzzles much like those supplied in early childhood settings.

In spite of the acknowledgment that computers benefit children’s acquisition of knowledge, “a greater concern is the role of the teacher in children’s successful computer use” (Schetz & Stremmel, 1994, p. 19). It is the teacher who offers relevantly suitable software and it is the teacher who provokes children’s thinking with appropriate intervention at a right moment (Edwards, 1993). Vygotsky’s theory is similar to that of Piaget in that both expound the significance of interaction with others for learning and developing more complex understandings and critical thinking skills. Collaborative activity and interaction between adults and children facilitate intellectual development by providing opportunities to expose learners to alternative ideas (Lomangino, Nicholson, & Sulzby, 1999).

Grounded on the principles of DAP and the theoretical framework of Vygotsky and Piaget, leaving young children alone and granting children complete freedom at the computer does not promote children’s learning. To design ongoing curriculum, choose suitable software, and select appropriate teaching strategies, teachers must first understand how individual children learn, monitor their learning progress, and become aware of the level of assistance that may be needed (Haugland & Shade, 1988; Haugland, 1997). Observation of children’s work at the computer is a necessary way to acquire information about individual children’s acquisition of knowledge and their degree of computer competence. The teacher can then supply an appropriate learning environment and materials. A series of practical anecdotal cases demonstrating the benefits of observation by the teacher as young children work at computers follows.

**Benefits of Observation at the Computer**

The position statement of the National Association for the Education of Young Children regarding Technology and Young Children—Ages Three through Eight stresses that “the teacher is required to determine if a specific use of technology is age appropriate, individually appropriate, and culturally appropriate” (NAEYC, 1996). Shade (1996) upheld the role of the teacher in ensuring “that the potential benefits of technology for young children are realized” (p. 17). The following examples are drawn from experiences and reflections of early childhood teachers enrolled in two graduate courses and from a pilot study conducted by the author in 1997, examining this issue.

**Intimate knowledge of children.** Observation allows the teacher to learn about children’s interests, likes, dislikes, frustrations, and what it is that makes
them excited about learning (Chang, 1996; Katz, 1993). Observing children at
the computer can open up new ways of accessing children’s learning.

Some children may have developed a considerable body of knowledge
about operating computers before entering kindergarten, whereas others
may not have been exposed to the computer. The teacher’s observation
helps identify differentiated levels of needed assistance and this enables the
teacher to facilitate children’s learning accordingly.

In addition, the discovery of a child’s unspoken interests may also be
made by way of observation and can be applied by the teacher to the design
of curricular activities. For example, in a 5-year-old class, Johnny was fond
of Millie’s Math House, but not of unifix cubes when basic math concepts
are offered. Jamie liked Grandma and Me, but was not interested in reading
books. These discoveries enabled the teacher to design relevant curricular
activities that might capture the interests of these two children for the en-
hancement of their math and reading abilities.

Promotion and support of confidence. Active observation in the class-
room may expand the teacher’s ability to support and promote children’s
computer confidence (Wright, 1994). It is important to observe children
working on the computer because as children are unable to figure things out
immediately, they become highly frustrated. If such experiences are unre-
solved, but continue, children may develop a tendency to lose confidence
and withdraw from inquiry with computers. To maintain children’s motiva-
tion and their confidence at learning with computers, timely and appropriate
intervention/assistance from a knowledgeable adult, (parent volunteer, aide,
or teacher) is indispensable (Edwards, 1993; Filippini, 1993; Malaguzzi,
1993; Vygotsky, 1978). Helpers, however, should not completely take re-
ponsibility for problem solving, but together with children, they should ex-
amine the root cause for the frustration and work through the problem until
it is resolved. This working style permits children to observe and be in-
volved in methods of reducing frustration with technical strategies and
problem solving skills.

For example, Mary, a 7-year-old girl, enjoyed playing on the computer,
but was easily frustrated by some of her games. The games that she worked
on most were the Freddie Fish and Putt-Putt games by Humongous Enterta-
iment. In these games, Freddie Fish or Putt-Putt must solve a mystery
and help someone else. For instance, in Putt-Putt Saves the Zoo, Putt-Putt
goestothezoodiscoverthatallofthebabyanimalsaremissing,soPutt-
Putt must travel around the zoo to locate the baby animals. Throughout
Putt-Putt’s journey through the zoo, he encounters many different road-
blocks that he must find a way around in order to find the hidden animals.
Sometimes, the game did not go as Mary wished and she became discouraged. If immediate assistance were not available, Mary would give up the game. Fortunately, Mary had an observant adult, Jan, who allowed the child to take control, but stepped in when needed. Jan was knowledgeable about assisting Mary and employed a developmentally appropriate way of doing so. Instead of telling Mary what to do next when she was stuck, Jan invited Mary to discuss some possibilities for a continuation of the game before making suggestions. It was Jan’s discernment that when Mary took the time to figure out the problem, Mary felt good about herself. By the fifth time of stepping in at the right moment, Jan found that Mary was confident and announced that she would like to have some time alone to solve the problem. The big smile on her face, a smile of accomplishment, let Jan know that she would most likely maintain her endeavor at the computer with a newly acquired assurance.

Knowing about children, the teacher provided scaffolding without intentionally interrupting children’s concentration and did so in an opportune manner. The teacher’s intervention served the purpose of promoting a child’s learning before problems and a high level of frustration defeated the learner. “Intervene when children appear frustrated or nothing seems to be happening” (Haugland, 1999, p. 28). The step-in should avoid disruption and intrusion while the facilitation and scaffolding are appropriate (Chang, 1996; Filippini, 1993).

Selection of software. Haugland (1997, 2000) stressed that learning with the computer was markedly influenced by software selection. Shade (1996) stated that the teacher was held responsible for selecting software and determining if computers were to be used as add-ons or integrated into curriculum. Both Haugland and Shade made it clear that selecting software for the use of young children was the primary and critical decision that the teacher had to make.

Grounded on knowledge about children that the teacher obtains through observation and other means, the teacher is able to judge existing software in a classroom. Inappropriate software does not promote children’s learning and personal growth or solicit and maintain children’s involvement with computers (Davidson & Wright, 1994; Hohmann, 1998). By keen observation, one teacher realized that even if a title or software was designed for a certain age level, it might not work appropriately for every child within that age group. For instance, though software is designed for ages 3 through 6, an individual child in this age range may find it too easy due to his/her extensive exposure to and interest in the computer. A one-size-fits-all policy does not help the teacher make appropriate decisions
about suitable software for particular children. Individual differences must be fully recognized by the teacher (Bredekamp & Copple, 1997).

A classroom teacher noted that observing students enriched her knowledge: “Some of my students that did not do well in my standard (paper and pencil) math class excelled on the computer! I would never have known this had I not been observing the students.”

Another teacher wrote, “Teachers should be able to provide a clear rational for how and why they use the computer in their classrooms. This rational should be consistent with their educational philosophy and goals. It is important for teachers to keep these goals in mind when selecting software. In addition to evaluating software before purchasing it, teachers should observe children using the program. This allows teachers to recognize if any adaptations are necessary before a final decision is made. A computer should support existing classroom activities and should be integrated into the daily classroom routine.” In general, teachers are becoming aware that when used appropriately, software should align with the curriculum and engage students in creative play, collaborative communication, and mastery learning (NAEYC, 1996).

**Curricular decisions and teaching strategies.** The computer should be integrated naturally into the flow of classroom activities. If computers are not used in a responsible manner, they can be a “distraction from our curriculum objectives” (Prochner, 1996, p. 2). Observation enables the teacher to devise a means of integrating the practice and drill of structured software activities into the curriculum to engage children’s minds and to individualize instruction. The teacher can also be informed by watching children’s facial expressions and listening to their conversations to determine if children are learning. Collected data may also be used by the teacher to determine how to challenge children without negatively affecting their desire to learn. Haugland (1999) suggested that observation enables the teacher to ask questions or propose problems that not only increase children’s learning, but also enhance their computer skills.

For example, a preschool classroom teacher noticed that most of her children were able to log on *Millie’s Math House* and were interested in playing the game of *Cookie Factory*. A common weak point drew her attention. Fifty percent of her children could not successfully distinguish number 6 from number 9 and vice versa. Purposefully, she developed a few folder games and other matching games that allowed children to manipulate the numbers and enhanced their understanding. In addition, one day, she brought two pizzas into the classroom. Consuming the pizza was not her major aim. Her intention primarily was to augment the math concept. The
teacher divided her 18 children into three groups and asked a child volunteer to write on a blackboard the number of children in each group. The rest of the children wrote down the number. The teacher then requested: “Now, please turn the your paper upside down and tell me what the number is?” After the majority of the children identified the number correctly, another volunteer wrote number nine on the blackboard.

To reinforce the learned concepts, the teacher cut one of the pizzas into three parts and delivered to each group $1/3$ of the pizza to each group. She then asked the children into how many pieces each $1/3$ of the pizza should be cut. As the assistant and the teacher were dividing each part of the pizza into six parts, the children were writing numbers one through six. Checking the written work, the teacher detected that the children appeared to have mastered writing the numerals to six (including the numbers one through five).

After the children finished their snack, the teacher broke the whole class into two groups. She had one child write the number of children in each of the two groups on the chalkboard. The remaining children wrote the number on paper. Like the exercise that had just been implemented, the whole class was requested to turn the number upside down. The majority of the children quickly recognized the new number as six. Judging from their facial expressions, the teacher believed that the children had moved to a new level of understanding.

The second pizza was then cut into two parts. After briefly introducing to the children the math concept of $1/2$, the teacher delivered one half of the pizza to one group and the remaining half to the other group. Before eating, one child from each group counted the children in their group. After the two children reported the number of children in each group, the remaining children wrote down the numbers one through nine while the teacher and her assistant cut each part of the pizza into nine pieces. After checking the written work, the teacher happily noted that most of the children had done a good job.

While watching the children enjoy the pizza, the teacher was grateful to the powerful observations obtained as children were engaged in computer play.

**Promotion of children’s construction of math concepts.** Observation enables the teacher to promote a child’s basic math learning. The following example is an excerpt from a pilot study conducted by the author as a researcher in a university campus preschool classroom. There were eight children involved in the study, between the ages of four and five. Prior to the final selection of the subjects, the teacher and parents of the children from the entire class were surveyed with regard to the children’s mathematical knowledge. A pretest was also distributed to verify the results of the surveys. Therefore, the mathematical concepts understood by each child were roughly alike. The selected children had little understanding of six categories of mathematical
concepts, including numbers, sizes, shapes, matching, patterns, and numerical counting 1-10.

The eight children were randomly divided into a control and an experimental group. The researcher set up two computers in the classroom and the children did not operate the computers while the researcher was absent. The researcher spent two hours on Tuesday and Thursday mornings with the subjects throughout the Fall semester of 1997. In the course of the study, the children from both groups worked at the computers for 30 minutes each. While the children from the control group learned independently with the computer, the researcher sat behind a child from the experimental group, watching and observing the navigation and manipulation. Timely facilitation was offered whenever there was a need. This pilot study intended to examine the influential power of teacher observation on children’s inquiry of mathematic concepts using computers.

The excerpt from this pilot study is provided as follows: through observation, the researcher knew that Tyler, a four year-old child, had a difficult time recognizing the numerals 7 and 10. One day, the child logged on *Mil- lie’s Math House* and chose Cookie Factory, a section included in this software. This section requires a child to place a given number of jellybeans on a cookie delivered by a belt right under a tube where jellybeans were dropped out. A horse stands near the delivery belt, waiting to snatch and eat the cookie if the requested number of jellybeans is placed right on the cookie. Otherwise, a frog standing on top of the horse’s head munches the cookie.

The game started. For the first few times, the horse consumed the cookies with one, four, and five jellybeans. When Tyler was required to add 7 and 10 jellybeans, the child was first puzzled and then frustrated. After a couple of failures, Tyler was almost ready to quit. The researcher noticed and intervened at this time. “Let’s count the jellybeans together,” she invited him. The child counted aloud with the researcher. The result of collaborative work sent the cookie right into the mouth of the horse. After a few repetitions, the researcher believed that the child was able to recognize the numbers. She then wrote the two numbers down on a piece of paper and asked the child to identify them. Puzzled for a few seconds, the child proudly stated, “This is 7 and this is 10.”

This instance illustrates that the timely assistance provided by the researcher enhanced the learning of the child. The findings suggest that the researcher provided a space for the child to discover, but also provided support and assistance as needed via observation. A teacher’s interruption at the right moment can rescue a child from an otherwise insurmountable dilemma at the computer (Chang, 2000).
Children with special needs. When working with children who are developing atypically, it is suggested that the teacher use the computer to help children enhance a variety of skills. For example, a teacher in an early childhood special education classroom (ages three through five years) introduced software related to simple vocabulary and other prekindergarten skills. This teacher then observed the children in order to provide assistance when it was needed and to ascertain which programs might best meet their individual needs. It should be noted that the process of knowing children, observing children at play with computers, offering assistance, and providing software to suit individual children’s interests is essentially the same process as that employed for children who are developing in a typical way.

Another teacher shared her experiences of working at the computer with children who were speech and language delayed. Using available classroom software, Almo’s Preschool and Paint Works, the teacher interacted with the two four-year-old children.

With Almo’s Preschool, one child was required to match letters. Almo is in a room with a pipe, displaying and verbally repeating a letter. The child is required to find the matching letter. If the child finds a correct letter, the letter then fits into the pipe. If the child does not find a correct letter, Almo tells the child to try again. After three tries, if the child has not found the correct letter, then Almo displays the correct letter.

The teacher saw that this child was not able to identify or match any letters successfully. However, careful observation made the teacher suspect that it was not the case that the child lacked the letter knowledge needed to complete the task successfully. Instead, the child appeared to be experiencing difficulty in spatially connecting hand/mouse movements to the movements of the cursor on the screen, a situation which might denote the need for some explanation, fine motor practice, or opportunities to increase spatial awareness or perhaps all three.

The other child chose the Paint Works software. The teacher noticed that the child had the capability to create a design with shapes, colors, and patterns. The observation of this child enabled the teacher to realize that this software provided a wonderful opportunity to assess the child’s ability to identify colors, shapes, and also, his fine motor abilities. In addition, the software allowed the teacher to assess this child’s knowledge of positional words (on, in, front, back), and his ability to follow directions.

The teacher summarized that it is valuable to observe children at the computer. Not only can the teacher assess children’s learning, but also the teacher is able to determine some strengths and weaknesses particular children possess. These can then be addressed in the curriculum. In addition, this teacher learned much about the children’s interests. The first child was
fascinated with Almo’s Preschool, whereas the second child really enjoyed the Paint Works program.

Changing the Teacher’s Perspectives

The following episodes obtained from the written reflections of early childhood teachers, reveal their changed understandings regarding children’s social skills, the different effects on the use of computers in a computer lab and in a classroom, and early intervention when children access potentially harmful websites.

Socialization. Although it is still under dispute, technology has been gradually recognized as a special tool that supports the development of collaborative learning in early education (Crook, 1998). The computer offers children opportunities to interact and exchange views, and it allows them to help one another. A general comment noted by teachers is that children are often heard discussing their work with each other at the computer. Playing a computer game allows children to share ideas and make new friends.

However, keeping an eye on children at the computer provides the teacher with additional information. For example, one teacher revealed that by watching her children at the computer frequently, she found that those who were socially immature became quite competent at taking turns. In addition, those who possessed poor social skills tended to verbalize frustrations and kept calm when they were upset with a peer. Another teacher noted, “I have also observed children’s social interactions. Those who are quieter or more withdrawn, but are familiar with computer software, are a great benefit to others who are more outgoing and active. I have seen a decided improvement in shy children’s self esteem when they are put in the leadership role of helping other friends. I have found that the quiet and affectionate children, who tend to be reluctant to approach others for play, are quite likely to offer help to less skilled classmates at the computer. I also have seen the more outgoing, active and verbal children become more subdued as they listen carefully to their friend’s instructions.” Another teacher agreed: “The computer is an excellent means of sparking communication between users. It breeds socialization because children are reinforced to take turns, make decisions, and compromise with others. There is never a lack of communication near a computer. When children create something, or discover something new, from all over the classroom others come to join in their triumph! This makes me think that this is one reason that some teachers are reluctant to have more than one computer in their room. It
tends to get a little noisy by the computer. I like to think of it as productive
noise, but some people would disagree.”

Davidson and Wright (1994) expressed a similar opinion. When children, for example, work on Millie’s Math House, they were able to work to-
gether to choose shapes to construct a mouse house. Together, children cre-
ated a house by taking turns to select the shapes or by taking turns to build
an entire house. A computer in this situation provides an opportunity for
young children to learn and work with one another on an interesting project
and this, in turn, promotes sociability and emotional development.

**Different Effects on the Use of Computers in a Lab and in a Classroom.**

After an observation of the use of the computer lab at her own school, a
teacher found herself holding different notions than before:

Before my observations I had preconceived notions of how the com-
puter lab would be used. I thought that both in and out of the comput-
er lab, students would be using educational software. I perceived the
teacher to be an authority figure, overseeing the children while they
worked diligently to answer questions. However, what I have observed
deviates from what I thought.

The following paragraphs provide a few instances that she obtained
from the observation. The teacher noted:

An aide works with a group of second graders in a computer lab while
the teacher stays in her room to work with a small group of students
who need additional reading instruction. The aide is not trained in the
computer; she is our librarian’s aide. There are 12 computers in the
lab. Most children work with a partner. Most of the programs are edu-
cational games and drill and practice in nature. Stories and More is a
program available in the lab. It is a program in which a story is read to
the children and they are asked to pick the correct answer to questions
regarding the story. The children play a very passive role in this pro-
gram and it does not hold their interest for long.”

The teacher continued:

The kindergartners use the same lab. The same software titles are
available to these children. Unlike the older students, the kindergarten
children seem to enjoy Stories and More and do not lose interest quite
as quickly. Perhaps this is because they are not able to read the stories
themselves.
The same teacher followed the children back to the second grade classroom. The computers were used differently there than they were in the lab. The children mainly selected language arts based software. These programs were very much skill and drill in nature, but for children, this fact was obscured by the compelling graphic designs and showy displays. The children seemed to enjoy these programs more than they enjoyed those in the computer lab. The children also used Kid Works Deluxe to publish their best work. Then they shared it with the class using a computer projector. The children appeared to engage readily in this type of meaningful learning.

After the observation, the teacher was convinced that “Teachers who reject all other types of drill and practice curriculum . . . find themselves using drill and practice software because it is readily available” (Haugland & Shade, 1988, p. 42). She recognized that children’s meaningful learning was related to the developmentally appropriate use of computer software. As a result of the observation and new perspectives, the teacher purchased HyperStudio because she valued software that encouraged children to engage in open-ended activities. After teaching the children basic computer skills, she then had the children put together a HyperStudio presentation about authors whose books they had read or heard in class. The authors were Eric Carle, Lois Ehlert, Dr. Seuss, A. A. Milne, Marc Brown, and Kevin Henkes. The teacher divided the class into six groups and each group selected an author.

The children began to compile data that they acquired from various resources. Each group was requested to create four pages about the selected author. The first page was the title page, which included a picture of the author and the author’s name. The second page was the author’s page. This was the page on which the children described some of the things that they discovered from their research. The third page was a drawing or writing page. Some groups tried to copy the selected author’s style of illustrating while others created a page from a story that they wrote using the author’s writing style. The final page was the creators’ page, on which there was the description of each of the child creators. She concluded that in a developmentally appropriate classroom (Bredekamp & Copple, 1997), both software selection and use of the computer could encourage computer confidence, task-oriented communication with peers, cooperative effort among children, creativity, and unique products. Teaching practices that are developmentally sensitive in the use of computers are one key to a successful early childhood classroom.

**Early Detection of Harmful Websites.** Mindfulness of the teacher prevents unnecessary problems from taking place. For example, a teacher reported:
I was luckily observing my children as they were exploring the Internet. In response to an assignment, the children were searching for a pop star. Typing in the key words, they found numerous web matches. Unfortunately, a pornographic star’s name was also on the list. Consequently, dozens of nude pictures filled the screen. I was observing this whole situation and able to turn the monitor off as soon as I spotted these pictures. If I had not been observing the students at the computer, I am sure there would have been more than a few angry parents calling me.

The NAEYC position statement also encourages teachers to pay attention to the children’s computer play in order to eliminate “stereotyping of any group and eliminating exposure to violence” (NAEYC, 1996, p. 14).

**CONTROVERSY AND RECOMMENDATIONS**

While some teachers recognize the importance of observation, there are still concerns regarding this issue. Due to a large class size and with so many children to attend to, a teacher may not be able to closely watch children at computers. One teacher said, “I’ll be honest; sometimes, I can’t sit at the computer and interact with the students. I have to observe from afar and check in periodically.” The viewpoint represents that of many others. What is suggested is that the teacher needs to be aware of the fact that children at computers deserve the attention of a knowledgeable adult. The teacher is uniquely qualified to provide this assistance by appropriately providing a scaffold for children’s learning, thus fostering their growth and development.

Leaving children completely alone at the computer is developmentally inappropriate and may result in the absence of the benefits that have been described. In addition, children may feel that interacting with the computer does not matter very much to the teacher and that working with the computer is relatively insignificant. The computer may seem to be diminished in the child’s eyes.

**SUMMARY**

The role of the teacher with respect to computer integration into the curriculum is, among other responsibilities, to observe (Haugen, 1998; Wright, 1994). Observation accrues benefits. Observation is one of the best preventive measures against technical or behavioral problems that may arise as children explore software. Haugland (1999) suggested that to keep an
eye on children involved with computers, teachers should move the computer center to a place where it can be observed throughout the classroom.

Paying attention to the involvement of children at the computer helps build children’s depth of knowledge and breadth of interest (Davidson & Wright, 1994; Hohmann, 1994). Observation highlights children’s interests, needs, and rights, providing a secure base that promotes children’s curiosity and desire to learn (Bredekamp & Copple, 1997). Observation of children’s use of computers enables the teacher to design individualized instruction, seize teachable moments, challenge students, and help avoid frustration due to technical or program difficulties or misunderstandings. Observation allows the teacher to step in and help guide children through a difficult patch or steer them in the right direction. It enables the teacher to assess factors that encourage or discourage appropriate use in order to select appropriate software (Haugland & Shade, 1988; Haugland, 1997). Through observation, the teacher can obtain a better understanding of current students’ interactions and enhance future social interactions. The NAEYC position statement indicates that, “Appropriate technology should be integrated into the regular learning environment and used as one of many options to support children’s learning.” (NAEYC, 1996, p. 12). The teacher’s observation is one of the means that makes this happen.

References


