

## **Technology Environment? How do computers affect kids**

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### **Abstract**

Our computer-driven society demands that our children develop the ability to operate a technological environment, young children and adolescents are becoming extremely computer literate and almost anything seems to be easily accessible on the Internet. Video games, chat rooms and websites are popular these days, as computers gain more and more popularity.

Over recent years, computer games have attracted much attention in the form of criticisms, studies, opinions, and surveys, etc. There have been questions raised on whether computer games and the excessive use of the computers, have had negative effects on children, or whether society has overreacted. And parents face increasing questions about how and when their child should be using the Internet or Playstations.

Some psychological [1] reported that, children who use the computer very often, reported spending less time talking with their families, experiencing more daily stress, and feeling more lonely and depressed [2]. This may sometimes come at the expense of other healthy activities such as homework or normal social interchanged. Besides some studies were conducted in the United States [3], showed that children will be more aggressive, stressed, and lonely and will have other problems like computer and Internet addiction [4].

Even with all of the possible problems with children venturing into inappropriate websites and chat rooms on the Internet, there are also positive benefits of computers and video games. They can help a child learn how to read, say their ABCs, even spell their names [5]. They can also be used as a teaching tool for young children who are learning numbers and letters, [6]. "The problem is when they are used in excess."

In Jordan, a study was conducted by the National Information Center in 2001, the number of Internet Service Provider was 11, with 5000 Internet subscribers, and around 25000 users, Number of PC's were 230000, number of websites were 1646, number of E-mail accounts were 200,000. Percentage of households who own computers is about 9.8%, and 2.6% of the households are connected to Internet. There is an increase of about 5% for 2002 [9].

It is important for parents to make sure the programs their child play with are age appropriate.

### **Introduction**

A healthy child has rosy cheeks, moves in a lively way with gracefulness, does not have to be constantly entertained, and is able to play and work with others in a harmonious way. Many factors affect a child's health: good nutrition, adequate sleep, regular mealtimes and bedtimes, adequate warmth, and loving.

One of the practices today most detrimental to the health of the young child is the rush toward premature academics. Children who should be playing out of fantasy and imagination, who should be in movement, who should be singing and painting and hearing stories, are introduced to paper and pencil work, the alphabet, counting, phonics and computers.

Computers are playing an ever increasing role in the education of our children. At the same time, recent education reform have placed increasing emphasis on the development of problem solving skills among the students.

Children are not the same size as adults. Since children are smaller, computers don't fit them well. Most computer workstations are arranged for adult use. Therefore, a child using a computer on a typical office desk often must look up further than an adult. Because the most efficient viewing angle is slightly downward about 15 degrees, problems using the eyes together can occur. In addition, children may have difficulty reaching the keyboard or placing their feet on the floor, causing arm, neck, or back discomfort.

### Education and Technology

Each year more than \$5 billion is spent on computers in the classroom and the technology companies that benefit.

\* In a classroom in New York City [5], a pair of sixth graders at Mott Hall School are doing what corporate executives the world over are doing--creating PowerPoint presentations. For the students, the purpose is to learn about the human liver. They are copying and pasting information from medical Web sites and selecting the right background colors and clip art and the students still can't answer the most basic question: What does the liver do? "I don't know; we were supposed to do the gallbladder," answers a shy Latino girl with pigtails. They are learning how to use PowerPoint, but they have no idea what the content means.

\* Similar situations are playing out in private and public schools across the United States. Students are learning not just PowerPoint, but Excel and a host of other applications [5].

\* A West Virginia study [6], found that fifth-grade students who had access to computers for six years gained an average of 14 points on an 800-point basic-skills test. Researchers concluded that about 11 percent of those 14 points, were attributable to technology tools, which cost \$7 million per year.

\* In 1998 research project by the Educational Testing Service (ETS), a private testing organization, found that school computer use was associated with increasing math scores for eighth graders by one-third of a grade level. However, researchers cautioned, "the appearance of higher test scores in students who use technology more

frequently may be due to the technology, or it may be due to the fact that such students come from more affluent families, and so are better academically prepared in the first place” [7].

\* As young LaShaia's teacher said [6], "When LaShaia first transferred into our classroom she wouldn't go near the computer. Slowly she got used to it. Now she can turn it on and get into the program she wants. She is more outgoing and will ask other children to play on the computer with her. She learned colors and letters and numbers. Her vocabulary increased. The computer boosted her self-esteem. She is an outgoing child now." LaShaia and her classmates are involved in research carried out by a Department of Education grantee which shows that technology – especially together with supervision and interaction can enhance child's learning.

\* Another important aspect is problem solving training with computers is a cooperative learning. At a practical level, students often work with more than one student at a computer owing to the limited number of computers available in schools. However, such a practice could also find support at a theoretical level. Vygotsky (1978) [8], argues that all higher psychological functions (e.g. perception, voluntary attention) have social origins. Specifically, he claims that adults and more capable peers mediate a child's experience. Many of the successful problem solving training studies have been influenced by the Vygotskian notion of guided learning within a learner's zone of proximal development - a distance between what a child can do working alone and what he or she can accomplish with aid. An important implication from Vygotsky's argument is that within a computer learning environment, there needs to be an increase of interaction between the teacher and the learner, as well as between learners.

### **Cooperative learning**

For instance, involved with problem solving [10], learners could be encouraged to reflect on their problem solving experience and skills, and then share the experience with each other. In this context, there are a number of strategies that teachers can use:

- Whenever appropriate, assign students to groups while doing computer work.
- Let the students choose their own roles initially but require them to take on different roles on a rotating basis.
- Encourage the discussion and sharing of the various ways students may solve the same problem, both within groups and between groups.
- Teachers should take on the role of facilitator of discussion rather than provider of answers.
- Encourage students to talk about what they did and why and how they did it.

### **Technology Training Program**

Two hundred ninety-five children participated in a technology training program [11]. All children had daily access to the computer while classroom teachers monitored the children's computer use and provided instruction depending on the teacher's interest and/or skill.

Additionally, some children received weekly computer training from an undergraduate technology trainer, lasting 15-30 minutes each session. In the training, children learned basic computer skills using the educational software.

Program staff used a variety of rigorous quantitative and qualitative methods to measure changes in knowledge and skills among the children and to get feedback from teachers and technology trainers. In addition, focus groups were held with teachers of classrooms receiving the weekly computer training and with undergraduate technology trainers.

Overall, all children in the technology training program improved their kindergarten readiness skills (language arts, math, creative arts). They also had better computer skills and more confidence in using the technology.

According to one teacher, "The computer makes things equal. It really helps those children who usually don't do too well, ... who aren't as fast as other students or who are shy or who don't speak English fluently."

Also found that children receiving the additional weekly training, the results were significantly greater in all areas.

## The Debate

\* With the increasing importance of technology in education and the workplace in America, the ability to effectively use a computer has become as fundamental to a person's academic and occupational success as reading, writing and math. However, the appropriateness of computer use by young children has been hotly debated. Some experts contend that computer use by very young children has harmful effects on physical, cognitive, and social-emotional development.

On the other hand, a wealth of research suggests that technology, when used appropriately, can enhance how a child learns. Technology offers the child opportunities for active engagement in the learning process, cooperative learning, frequent interaction and feedback, and a sense of connection to real-world contexts and applications.

### 1- The Eyes and Visual System

Children can experience many of the same symptoms related to computer use as adults. Extensive viewing of the computer screen can lead to eye discomfort, fatigue, blurred vision, and headaches. However, some unique aspects of how children use computers may make them more susceptible than adults to the development of these problems. The symptoms of physical problems that computer users are experiencing are increasing. Eye doctors have seen an increase in the number of patients who request eye examinations due to symptoms they experience at the computer.

Computer Vision Syndrome (CVS) is "the complex of eye and vision problems related to near work which are experienced during or related to computer use". The symptoms that most often accompany this condition are eyestrain, headaches, blurred distance or near vision, dry or red eyes, neck and/or back ache, double vision, and light sensitivity. Lighting, vision, and posture are all interrelated concepts. We are visually directed creatures, and will alter our posture to alleviate stress on the eyes. Children often have a limited degree of self-awareness. Many children keep performing an enjoyable task with great concentration until near exhaustion (e.g., playing video games for hours with little, if any, breaks). Prolonged activity without a significant break can cause eye focusing (accommodative) problems and eye irritation.

Blinking is often inhibited by concentration and staring at a computer or video screen. Compounding this, computers usually are located higher in the field of view than traditional paperwork. This results in the upper eyelids being retracted to a greater extent. Therefore, the eye tends to experience more than the normal amount of tear evaporation resulting in dryness and irritation.

#### GENERAL EYE CARE TIPS

Here are some things to consider for children using a computer:

- Have the child's vision checked.
- Strictly enforce the amount of time that a child can continuously use the computer.
- Carefully check the height and arrangement of the computer.
- Carefully check the lighting for glare on the computer screen.
- Reduce the amount of lighting in the room to match the computer screen.

#### 2- Internet Addiction and Compulsive Internet Use [12]

Based on criteria that psychologists often use in defining types of addiction, online surveys estimate the incidence of addictive patterns of behavior among heavy Internet users ranges from 6% to as high as 80%. Identified symptoms of the disorder include: (a) using the computer for pleasure, gratification, or relief from stress; (b) feeling irritable and out of control or depressed when not using it; (c) spending increasing amounts of time and money on hardware, software, magazines, and computer-related activities; and (d) neglecting work, school, or family obligations. Relating to the online encounter, some users have also described experiencing a cocaine-like "rush" when using the Internet. In disagreement, some psychologists argue that the list of symptoms seems more oriented toward general personality disorders rather than real computer addiction. According to Maressa Hecht Orzack, director of computer-addiction services at McLean Hospital of the Harvard Medical School, the problem

centers around the people who work the computer rather than the computer itself. She asserts that they use the computer "as a tool to evade, procrastinate and escape," and that "among the most vulnerable are children who are lonely and bored or from families where nobody is at home to relate to after school."

### **3- Pied piper effect**

Children aren't as Internet savvy as most people think - especially when it comes to online advertising. When Jakob Nielsen, a well-known online usability expert, conducted a study May 31 2002 on how children up to the age of 12 use the Internet, he came across a surprising finding: namely that the vast majority of them couldn't tell the difference between content and advertising online. While the majority of adults rarely click Web site ads, the study found that most children do because they mistakenly believe they're part of the sites they look at and yet another source of content.

"With current ads, kids often don't understand what's being done to them and that makes these ads a questionable proposition," says Nielsen, who adds that many parents aren't aware of this.

Following are some suggestions for parents to watch for as their child ventures into the world of computers.

- Monitor the time a child spends on the computer.
- Monitor the content of the games the child is playing as well as the web sites and chat rooms they are visiting.
- Make sure the games and educational programs your child plays are developmentally appropriate.

### **4- Social Skills of Our Children**

Current estimates [13], indicate that 149 million people are online worldwide, and that number is increasing at the rate of 12% a month (Suler, 1996, 1999b). According to a U.S. Census Bureau report, 22.2% of the 76 million American computer users aged 3 and above use the Internet, and one fifth of children with home computers use them to access the Internet (U.S. Census Bureau, 1997). It was also reported that 55 million enrolled children used a computer at school.

There are suggestions that Internet use has a negative influence on individuals and their social skills. A recent study conducted by Carnegie Mellon University [14], concludes that Internet use leads to small but statistically significant increases in misery and loneliness and a decline in overall psychological well-being. The appropriately named HomeNet project studied a sample of 169 people in Pittsburg during their first year or two online. Data showed that as people in this sample used the Internet more, they reported keeping up with fewer friends. They also reported spending less time talking with their families, experiencing more daily stress, and feeling more lonely and depressed.

The suggestive ill effects of Internet use do not stop at the secondary school level.

At a large university in New York, the dropout rate among freshmen newcomers rose dramatically as their investment in computers and Internet access increased. The reason? Administrators learned that 43% of the dropouts were staying up all night on the Internet. In response to a college listserv survey regarding the effect of technology on interpersonal relationships and communication, by far the most frequently mentioned potential problem dealt with electronic communication in the forms of e-mail, discussion groups, and chat rooms. Many respondents spoke of the sense of isolation inherent in this medium and the lack of face to face contact as a contributing factor to feelings of alienation and loneliness. Taking another twist, further findings suggest a small but significant number of people blame excessive online use for the break-up of their marriages [15].

Imaginative play is a valuable aspect of development

"Imagining and the concept of pretend play begins in the earliest stages of childhood, when toddlers might type at a fake computer, wash pretend dishes, or go to the grocery store," says Dr. Rochelle Harris, developmental psychologist at Children's Mercy Hospital. "Children use fantasy play to rein act life as they see it and to mimic adult actions."

Between the ages of three and six, children may begin to engage in imaginative play together, and create vivid scenarios using their relatively new verbal skills. Kids will assume all sorts of magical identities and roles at this stage, from action heroes to kings and queens.

"It doesn't just stimulate a child's creative imagination," says Dr. Harris. "Pretend play can help a child understand important events in his or her life." Pretend play can help a child feel in control of their own world. In real life, parents decide when a child should eat, bathe and go to bed. A child who engages in pretend play is the master of his own destiny, whether he's an action hero or a cowboy. Children make their own decisions when they pretend.

Pretend play can prepare children for real-life changes such as a new baby or moving. It helps children learn to master these changes through pretend play, where he can gain confidence to tackle the event in real life.

Imaginary friends, another aspect of pretend play, can serve a variety of purposes. These invisible pals provide a source of comfort and companionship when a new sibling is born or a real friend moves away.

"Children should work through imaginary creatures and tall tales on their own," says Dr. Harris. "When children get older, they can distinguish between fantasy and reality better. They no longer need to pretend play in order to feel important or secure."

Until that time, you can enjoy and nurture your child's imaginative play. Here are some ideas of ways you can stimulate your child's imagination:

- Buy toys that enhance creativity, such as building blocks, puppets, and dolls.

- Create a dress-up box filled with old hats, jewelry, and clothing for your child.
- Put together some imaginative play list for your child. For example, an "explorers kit" can include a magnifying glass, a flashlight, and old maps. An "artist's kit" can include marking pens, colored paper, masking tape, and crayons.
- Mark off one corner in your home for your child as a "creative corner." If your child builds a cardboard fortress in the family room, for example, let it stand for as long as possible.
- Read to your child. Books can provide the people, places, and things that inspire imagination.

Don't attempt to control imaginative play. Parents often make demands on their child, telling them to drink their milk, wash their hands, get dressed, etc. When kids engage in imaginative play, it's their turn to be in charge.

### An Effusive View of the Net Generation

Tapscott [16] goes so far as to say that this digital revolution will transform today's kids into something entirely new in the world. "Kids aren't kids," he says. "For the first time ever, children are an authority on a central innovation facing society."

Listening to such descriptions, one cannot help thinking of Jeremy Kojima. A brave new world has opened for kids like him. Once they might have been bored in school; now they can interact with a machine and self-direct their youthful energy and passion to formidable creative heights.

### **The Jordan Information Technology Community Centers**

King Abdullah II pledged to narrow the digital divide –by promoting the development of human resources. The government of Jordan is mapping out a national plan of action to bridge the digital gap and empower local communities to use information technology to help themselves. Establishing community centers in every governorate across the Kingdom will offer walk-in access to Internet and information services for the young and old, the poor and illiterate, with special attention to women and youth. The community centers will be part of a national network that will deliver standardized products and services to people. The first Jordan Information Technology Community Center (JITCC) was launched in October 2000 Safawi, a remote desert township.

Seventy five JITCCs have been set up in different governorates of the Kingdom as well as the Badia in the eastern desert. The first group of JITCCs will form the backbone of the country-wide network which will capitalize on economies of scale – with the management and technical support of the National Information Center (NIC), a government body which coordinates national policies and strategies on information

technology. Focus was placed on areas which are information- poor and lack the resources to reap the benefits of the digital revolution .

Every center has the same physical infrastructure and offer standardized services such as distance learning , information technology training with certification, support from local staff for information search on the internet as well as links to institutions that provide enjoy the flexibility to address specific cultural or socio-economic concern unique to the host community .

With every JITCC connected to the NIC's national network , local communities will be able to exchange information and share their experiences in the area of health , education, environment and livelihood in Arabic and English languages.

### **Computer games in Amman**

Visiting three places in Amman we noticed the following:

- 1- Number of players were about 40 at a time
- 2- Ages of the players are between 7 and 25 years
- 3- Average time they spend playing is about three hours per session and this may be for three times a week during school periods. But during summer vacation, it is almost daily if they have the money, and they stay late at night
- 4- Games are mostly violence there are some educational (strategy) games
- 5- Internet cafe's the user are attending for e-mail, chatting, or writing reports.
- 6- For each child the cost is about one JD per hour.

### **Conclusion**

Despite the alarm, research indicates the most children are doing fine. Computers are certainly intriguing and captivating, and the Internet is most assuredly alluring with its research and communicative capacities. But overall, technology can be considered a positive enhancement to growth. This feature is eloquently affirmed by author Don Tapscott:

"... when kids are online, they're reading, thinking, analyzing, criticizing and authenticating - composing their thoughts. Kids use computers for activities that go hand-in-hand with our understanding of what constitutes a traditional childhood. They use the technology to play, learn, communicate and form relationships as children always have. Development is enhanced in an interactive world."

Also we should monitor the amount of time our children spend using the computer, beside, we have to monitor what they are seeing and playing.

An important step we have to emphasize on, is to encourage our children to use imaginative play and buy them what necessary tools they need in their creative phases and exercise with their friends when it is appropriate.

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[5] This article is based on the following sources:  
["Technology Access for Low-Income Preschoolers: Bridging the Digital Divide"](#) (in PDF)

["Closing the Digital Divide: Empowering Parents and Children with Computer Technology"](#) (in PDF)

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