



Boys and Computers

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During the last quarter of the twentieth century microcomputers became commonplace in America, and American boys became avid computer users. There were more boys using computers in America than in the rest of the world combined. During most of the period between 1975 and 2000, more boys than girls used computers regularly, and boys were thought to be more competent, confident and frequent users of computers than their female counterparts (Collis, B., 1987). American children had many role models in the area of computer use, and most of them were male. Computer programmers were generally male; computer teachers in school were male; many dads (and few moms) used computers extensively in their work; computer camps and labs were generally filled with boys and men who considered themselves computer experts (or, more colloquially, *computer geeks* or *nerds*); and advanced math, science and computer classes were populated predominantly by boys. Boys were much more likely than girls to choose careers in computer science and related computer fields. Despite the apparent gender neutrality of any historical period, the main markers of the *age of computers and electronic information* were commonly considered to be male. American scholars asserted that technology was gendered and its gender was male (Benston, 1985). Given broad access to computers and computer software, numerous role models, and the relatively unchallenged perception that the world of computers was a male domain, American boys used computers extensively and in a wide variety of ways. Gender differences in computer use were associated with the differential socialization of boys and girls, made manifest in such places as the home where fathers and brothers used computers the most, or on television where males were often portrayed in computer-related roles in programs and commercials (Sanders, 1990).

Statistics

In the late twentieth century, American boys had unsurpassed access to computers, computer software and the Internet. Many had access at home, camps, and public libraries; many more had access at school. The chart below shows the number of students who used computers in 2000, and the number of students estimated to use computers in 2005, by continent:

	2000	2005		2000	2005
Africa	90,000	357,000	Middle East	157,000	440,000
Asia	6.2 million	22.2 million	North America	13.7 million	36.3 million
Europe	6.1 million	15.3 million	South America	447,000	1.8 million

In 1998, when asked how many hours per week they used computers at home, a small sample of students from New York representative of all American boys, reported the following usage:

No Use	1-9 Hours	10-19 Hours	20-29 Hours	30-39 Hours	40+ Hours
1%	40%	29%	14%	7.5%	8.6%

These boys also reported the number of times they used the Internet per week:

No Use	1-9 Times	10-19 Times	20-29 Times	30+ Times
5%	56%	24%	7%	6%

Access to computers, however, was not distributed evenly across all American households. Many more Caucasian and Asian American boys had home computers than did African American and Hispanic boys. Access to computers and computer software at school was also limited for boys living in poor socioeconomic areas that often included African American and Hispanic boys.



Training

Boys had numerous opportunities to take formal computer classes. Schools provided training in the use of drawing tools such as *KidPix*TM, word processing tools such as *The Children's Writing*

and Publishing Center™, databases and spreadsheets in *ClarisWorks*™, as well as interactive educational programs such as *Oregon Trail*™, and simulations such as *Sim City*™. At all levels in school, teachers were more likely to choose boys rather than girls to assist with technology (Sanders, 1990), and Shakeshaft (1986) concluded that boys had more opportunities for learning and using computers than did girls. Although Lanzinger (1990) reported that most teachers *perceived* that they gave equal time and attention to girls and boys within their classrooms, Sadker, M., & Sadker, D. (1994) reported that male students received more time and attention from teachers than did female students; teachers instructed male students, but often did the task for female students; and teachers allowed male students more opportunities to respond, to question, to engage in activities, and to give opinions than they allowed female students.

Computer training workshops by the Boy Scouts and Trail Rangers helped boys learn the techniques for advanced camping. Many were rewarded with badges for their efforts. This differential treatment often gave boys an advantage in learning about and using computers and computer software.



Many boys, however, were self-taught. Given a computer and time *to play*, boys would experiment with computer hardware and software and learn through trial and error (Christie, 2000). Many American computer entrepreneurs such as Steve Jobs and Bill Gates started their careers as young boys intrigued with computer hardware and software. Many boys learned in similar ways through inventive hypothesizing, testing, and experimenting. Boys in a high school networking class said that learning about computers was the modern version of poking under the hood of a car. However, in its annual report on gender equity in education, the American Association of University Women (1992) warned that computer science had become the new "boys' club" in schools.

Role Models

Role models for boys interested in computers were plentiful. Reinen and Plomp (1993) found that in schools worldwide, computer use was dominated by men; therefore, boys found many



male teachers as role models. Until the last few years of the twentieth century, computer teachers, counselors at computer camps, and family members who used computers extensively were predominantly male. Three times as many boys as girls participated in summer computer camps, and parents were more likely to purchase computers, computer software and peripherals for boys than for girls (Hess & Miura, 1985). That the overwhelming majority of role models were male can be seen in the percentage of males who participated in four World Wide Web Conferences in the late 1990s: 90%, 85%, 86% and 84%. In addition, Jo Sanders (1990) maintained that most girls felt there was a NO GIRLS ALLOWED sign on the door of the computer lab. The computer lab was a place for (often rather nerd-like) boys and men, and it was not a proper place for girls.

Uses of Computers

Boys identified with computers in three primary ways – as toys, as tools, and as a trademark. In general, grade school boys used computers as gaming devices, high school boys used them as tools and as gaming devices, and post high school boys saw themselves as part of the male computer culture. Although these ways of identifying with computers varied by degree over time, boys of all ages played computer games, used computers to accomplish tasks, and saw themselves as part of the predominantly male computer culture.

Young boys used computer gaming machines such as Nintendo™, Sega™ and Sony PlayStation™, as well as a variety of computer software. These games were often competitive or violent in nature. Major categories of these types of games are listed below along with a popular example of each and a descriptive sentence from its publisher:



- **Action and Adventure Games:** *Aliens vs. Predator Gold Edition*TM. The three most ferocious species in the universe are pitted against one another in a battle for the ultimate prize: survival. One wrong move turns you from hunter into prey.
- **Arcade Games:** *Lemmings Revolution*TM. Hot air balloons have been strategically positioned to lure the lemmings into danger. Get the lemmings to safety in this addicting game.
- **Board Games and Puzzles:** *Risk II*TM. It is the time of empires and armies, of countries and conquests. The world is at war and you are in command of an army fighting for global domination.
- **Role-Playing Games:** *Wizards & Warriors*TM. In this enchanted medieval realm, embark on more than 100 quests and adventures - battling in real-time and turn-based combat. Can you uncover the mysteries of the Sword before terror reigns?
- **Simulations:** *Al Unser, Jr. Arcade Racing*TM. Experience high speed thrills as you throw a top performance turbo charged racing vehicle around treacherous stages.
- **Sports Games:** *NFL Fever 2000*TM. You are on the field for every bone-jarring tackle, blitz, rush and sack. This is the NFL with attitude. Dare to go facemask to facemask with the league's best.
- **Strategy Games:** *Myst*TM. Few are chosen. Fewer succeed. Combine keen observation and logic to unlock secrets. *Myst*TM is the surrealistic adventure that will become your world.

"Guys like to have all the raw power. It's a competition thing," a male high school student reported. Models of male behavior, including the computers and computer games marketed for boys, stressed decisiveness, competition, and the imposition of will or power (Turkle, 1984). Computer hardware and software companies marketed specifically to this model of male behavior. The *HotWheels*TM computer pictured here was marketed as a "computer designed with



boys in mind." It came with many of the types of games listed above. The female version of this computer was the *Barbie*TM computer; it included none of the competitive games in the *HotWheels*TM version. Games, even those for young boys, stressed competition, power, and violence. Games remained popular with boys (and men) of all ages.

However, when boys reached junior and senior high school, computers took on another function: that of a tool to help boys complete homework and do research projects.

Tools

Many software applications were available for American youth to assist them in the learning process. This software was available both at school and in many homes. The most popular tools included word processing, database and spreadsheet programs, drawing programs, and Internet browsers and searching tools (Christie, 1997). Examples of each are described below.

The Children's Writing and Publishing Center™ was a bilingual (English and Spanish) word processing program that allowed children to create professional looking reports, newsletters, or other written documents. This software included a program to check the spelling and grammar for students. It also included a graphics library so children could use graphics to illustrate their written work. Boys as young as six years could successfully create written documents using this program.



ClarisWorks™ was in the category called integrated software in that it included a word processing program as well as programs to generate databases and spreadsheets. Boys could use all three components together to create research reports on topics they studied. One popular use of databases was to keep names and address of fellow classmates. Spreadsheets were used to store and graph numeric information gathered through research. Boys often would graph sports statistics using the graphing function of spreadsheets.

PrintShop™ was a program that allowed students to use commercially prepared clip art to create greeting cards, signs, or banners. After completing a study of the solar system, for example, boys could create greeting cards inviting parents to a Solar System



Celebration, signs giving directions to the room where the celebration would be held, and twenty-foot banners that welcomed visitors to the celebration. Since inexpensive color printers accompanied most computers, boys could make colorful, artistic products using *PrintShop*TM.



*KidPix*TM was another graphics generation program, but this program contained little clip art. Instead, boys using this program created the pictures themselves. The young boy pictured here had just written his name in *KidPix*TM. He could then add a background color, draw images, and create a picture to print and share. Boys wishing to create an illustrated story could create a series of pictures - with or without text - and then place them into a slide show - complete with sounds and transitions. Boys as young as four or five years old were very proficient at using this program.

With the advent of the Internet, browsers and searching tools (search engines and subject directories) became very popular tools for American boys. Browsers such as *Netscape Navigator*TM and *Internet Explorer*TM allowed boys to move easily through the many sites that were part of the Internet. Boys could search the Internet using search engines such as *Ask Jeeves for Kids*TM or subject directories such as *Yahooligans*TM. Using these searching tools, boys could find sites of personal interest or sites that would help them complete an assignment for school. These popular tools were available to boys at school, at public libraries, and often at home. As with any tool, students needed to learn the software before they became proficient at using it.



Trademark

Berch (1984) stated that computer technology represented the reconstruction of domination. Since most designers of hardware and software were male, computer technology bore the male

imprint of its designers. The culture that had grown up around technology, in general, and computers, specifically, was not neutral, but was dominated by males. American boys were



enculturated to identify with computers and computing. Many boys enjoyed the role of *computer nerd* or *computer geek*. Such boys liked to spend much of their free time tinkering with computers, playing games on computers, or bragging about what they could accomplish with computers (Christie, 1997).

Career Choices

In 1990, 87% of the PhDs awarded in computer science went to males and 92% of computer science professors were male. Ellen Spertus (1991) reported that causes for this trend included the different ways in which boys and girls were raised, role models that were predominantly male, stereotypes that engineers and computer scientists were male, and resistance from women who did not wish to work in predominantly male environments. In addition, differing expectations of girls and boys often were perpetuated in school. A math teacher at an American high school invited students to use the Internet. Nine students rushed to her desk - eight boys and one girl; she found this ratio typical of the gender distribution in computer use in American schools at that time. She also noted that teachers often allowed boys to dominate computer classes. The less assertive girls, left by the wayside, often didn't increase their technology skills, and thereby limited their career choices.



The American Association of University Women (1992) conducted a landmark study of the issue and concluded that boys received extensive encouragement to go into the sciences, computing and technology-related areas. Girls, on the other hand, felt out of place in these areas. With this encouragement, many American boys chose careers in computer-related industries.

Future

American boys used computers extensively as toys, tools, and trademarks of their maleness and their place in the male-dominated computer culture. With the advent of the twentieth century, however, the distinction between male and female computer users blurred. Both boys and girls were using computers in numerous ways to accomplish personal and school-related tasks. At that time, many Americans suggested that the country should embrace a broader, more inclusive, view of computer culture than the existing male-dominated culture. In this view, all uses and understandings of computers were equally regarded.

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Keystone National High School



<http://www.acfdn.org/get.htm>
American Computer Foundation



<http://www.kidshealth.com/parent/safety/ergonomics.html>
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<http://www.dallasfirstassembly.org/ministries/royal/royal15.htm>
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Brighton Area Schools, Brighton, MI



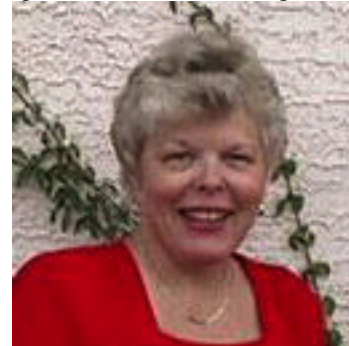
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Hip Hop Music Project



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<http://www.hotwheelspc.com/usahw/default.asp>
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