The Gender Gap in Computing & Technology

By: Kimberly S. McCoy

More and more females have, and will continue to enter the work force. However, the gender gap in computing and technology-related occupations has increased rapidly. Statistics show that the number of women who have been awarded bachelors degrees in science and engineering has increased, but they have declined in computer science. In 1998, Dr. Barbara Simons, President of Association for Computing Machinery (ACM), noted, *"Women make up less than a third of the nation's computer programmers and computer scientists. That spells trouble for our industry. We need to attack the problem by examining the societal factors that are keeping girls and women from entering the computing field."* To illustrate, GirlTech, a teacher training and student technology council program sponsored by the National Science Foundation Science and Technology Center, reported a decline in the percentages of women graduating with computer science degrees from 1985–1995. Another disturbing fact reported by the National Science Foundation shows that in 1997, only 17% of high school students who took the Advanced Placement Computer Science test were female. In 1997, the Bureau of Labor Statistics reported that three of the top occupations with the fastest employment growth from 1996 to 2006 are computer scientists, computer engineers, and systems analysts. Research also shows that less than 20% of The World Wide Web consortium (also known as the W3) are women. The W3 is responsible for many of the standards and protocols that are provided on the Internet.

The National Science Foundation has awarded a grant to the Association for Computing Machinery's Committee on Women in Computing to conduct a one-year study of the gender gap in computer science computing. Some of the ACM's primary goals of this project are:

1. To inform the general public about this issue and conduct additional research that deals with women in computing
2. To promote community awareness through their web site and dissemination of information
3. To describe the current situation
4. To provide information about the future direction of the project
5. To increase the number of women in computing and make computer and technology environments more women-friendly

Some of the activities conducted to date by the ACM's Committee on Women in Computing include mentoring girls through computing programs and monitoring the status of women in computing academic environments. To learn more about this project please visit their web site at www.acm.org/women/.

Software Issues

One of the biggest problems associated with the current shortage of females in the technology or computing field involves software development. Believe it or not, several of the software companies don't cater to females. Most software for children are games that are aimed toward boys. These games contain a lot of violence, guns, speed, and action. Defeating opponents, high scores for personal sake or beating the clock are also stressed. Research shows that females are usually interested in character stories, complexity when playing, and not violence, guns, speed, action, etc. In 1996, Mattel Media introduced Barbie Fashion Designer. This CD-ROM allows girls to design and print out clothes for their Barbie dolls; it was a number one seller. Research has shown that children who play with computer games at a young age start to feel comfortable and knowledgeable about technology. Research also shows

that playing with computer games plays a part in young children's learning skills, focusing, concentration and problem solving.

School Issues

Another major issue deals with the school environment. According to a recent article (February, 1998) by the Center for Research on Parallel Computation entitled "Are Girls Being Shortchanged?", many girls in middle school find computing games and technology boring and tend to drop out of their math and science courses because of it. In several high schools around the country, teachers have stated that girls are usually not as intrigued with computers and technology as boys are. Research has also shown that teachers frequently allow boys to dominate computers in classes. Unfortunately, in some schools, girls who are not assertive or aggressive will be left by the wayside, causing many of them to lose interest in technology or computer-related fields. Boys are also encouraged to go into advanced areas such as computer science, math and technology, while girls are not.

Getting Girls Interested in Computers

The Center for Research on Parallel Computation, a National Science Foundation Science and Technology Center, reported that girls find chat rooms via the Internet interesting. Chat rooms tend to provide an opportunity for relationships, community and personal bonds to develop. According to research, girls who participate in various Internet activities, such as chat rooms, are more likely to be interested in technology and computing positions.

Girl TECH, a teacher training and student technology council program sponsored by the Center for Research on Parallel Computation (CRPC) and The National Science Foundation Science and Technology Center, has stated that educators, parents, friends and associates can do several things to make females more interested in technology. Listed below are a few of their suggestions.

- If you are a part of a computer group or club, invite girls to join as a group.
- Girls need to see women using computers competently and confidently. Make an effort to invite women speakers to workshops, conferences, etc. to discuss their computer skills, current, and past positions and responsibilities.
- Encourage girls to be lab assistants. Call on girls more often in workshops and classes. Ask girls to help you with adding software and hardware, etc.
- Make it a point to discuss the different occupations that deal with technology. This would include computer science, computer programmer, system analyst, technical support, network administrator, webmaster, technology training, or consultant.
- Purchase computer games that might appeal to young girls.

- Teach girls how to use the computer as a tool and a toy. These would include playing games, typing papers, creating web pages and sites, making graphics, using a spreadsheet and creating a database.
- When parents or guardians purchase a computer for the home, make sure that the computer is located in a centralized location; studies have shown that when parents purchase computers for their children the computer usually goes into the boy's bedroom.

Currently, here at the Ohio Literacy Resource Center, I am part of an all-female technology team also known affectionately as the "Tech Chicks." Some of our primary duties include

- Managing the computer network
- Overseeing a network of technology consultants
- Conducting local and national literacy workshops and training dealing with various technological concepts and applications
- Providing tech support to over 150 ABLE funded programs in Ohio (phone and on-site)
- Creating and maintaining the OLRC's web site
- Creating databases

For Additional Resources – Please Visit These Sites:

*Technology and gender
<www.nald.ca/province/que/litcent/workshop/gender.htm>
*Logged on or left out?
<www.sacbee.com/news/projects/women/index.html>
*GirlTECH
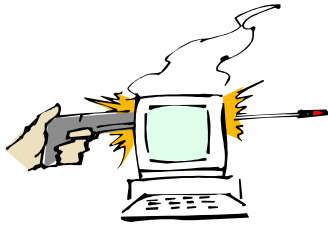<math.rice.edu/~lanius/club/girls.html#Tips>
*Association for Computing Machinery
<www.acm.org>
*National Science Foundation
<www.nsf.gov>
*Are Girls Being Shortchanged?
<www.crpc.rice.edu/CRPC/newsArchive/parade_2_8_98.html>

Before Calling Tech Support . . .

adapted from: The Cleveland Plain Dealer, December 21, 1998

Having a computer is definitely a common luxury; however, sometimes dealing with the technical support may not be. Unfortunately, dealing with tech support can be a challenging experience and in some instances, one might have to pay additional fees that are not included in the software or hardware packages to receive this expert advice. Regardless of whether you are paying or not it is a good idea to try and keep these things in mind.

- Write down the problem or error before calling. It saves you and the person on the other end time.
- Make sure to tell the technician what you were doing before or when the error occurred.
- If you have access to the Internet, try to find the solution by going on-line before calling. Most technical companies and organizations will have a web site that lists known problems and/or bugs.
- Always back up your data. You should be doing this anyway; nevertheless, in the event you start to have trouble in the program and you haven't backed up recently, stop what you are doing and backup, backup, backup!
- Check your computer cables and connection. Many times a loose cable may be causing you to have errors with the system.
- Write down the name of the person you are speaking with. This will be helpful if you encounter additional problems in the future.
- If you are calling a computer manufacturing company, have the serial or invoice number handy. In other cases, it is always a good idea to know what type of system you are working with such as Windows 3.1, Windows 95, 98, NT, Power Macintosh or iMAC. If the technician doesn't ask you in the beginning of the conversation, make a note to inform him/her. Remember all operating systems don't work the same and knowing the platform (Macintosh vs. IBM) makes a difference.
- Let the technician walk you through the questions. This allows him/her time to mentally process the problem. Also, make sure to tell the technician if something unusual happened to the system such as a power outage or shutting down improperly.
- If the technician needs time to research the problem, ask when you should expect a return call.

Whether you are calling **The Ohio Literacy Resource Center** for your ABLE Link program or **Gateway** for your computer system, keeping these things in mind before calling tech support should decrease your chances of having a nerve-racking experience.

Great Resources for the Classroom

Career Planning on the Internet From ERIC

If you or someone you know is interested in learning how to use the Internet for locating job opportunities or creating a resume or cover letter, then ERIC's latest publication on Career Planning on the Internet has some great resources. This publication provides great details on how the Internet is being used as a professional development tool for various employment opportunities, salary, location, resume writing tips and interviewing skills. Some, but not all, of these databases charge a fee for their services. In order to receive this free publication please go to the ERIC/ACVE web site at ericacve.org or send your request to wagner.6@osu.edu and indicate whether you would like an electronic or paper copy.

Something More Than Technical Skills

According to a recent publication entitled, "Work Force Education: Beyond Technical Skills" written by Susan Imel (1999) employers want employees who are able to work harder not smarter. Not to say that technical skills are not essential in the work place, but employers are looking for individuals who are competent in other arenas. These other areas include the ability to learn, comprehension skills, computation abilities, and good oral and written communication skills. Employers also stated that they are looking for individuals who can work effectively in a team environment. If you are interested in learning how to assist learners with work place skills, please visit ERIC/ACVE web site at ericacve.org or send your request to wagner.6@osu.edu and indicate whether you would like an electronic or paper copy of this project.

NET Cards?

Are you looking for mini lesson plans that contain a web site address (URL), step-by-step surfing directions, and several activities to complete for your ABLE student? If so, Net Cards have the answer. Net Cards are a wonderful concept, created by Jackie Hamlett, focusing on using the Internet in the adult education classroom. Net Cards were created for adult learners who are new emerging, developing or competent readers. Each Net Card contains an Internet address (URL), a short description of the Internet site, guide to links and activities to complete based on the web site. Net Cards can be

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learners who are new emerging, developing or competent readers. Each Net Card contains an Internet address (URL), a short description of the Internet site, guide to links and activities to complete based on the web site. Net Cards can be ordered in sets of 15 for $25, the topics include History, English as a Second Language (ESL), Animal and Nature, Student Writings, and Family Literacy, just to name a few. For more information on Net Cards please visit the Adult Learning Center at nsn.nslsilus.org/wkkhome/adult, and Click on Net Cards to view two samples and for additional ordering information.

Virtual Classroom Projects

Educators from New York, California and Germany have just signed up their adult classes to participate in a new virtual classroom project. This virtual experience allows adult students and teachers the opportunity to use the Internet, electronic mail and chat rooms. The primary purpose of this project is to provide adult learners an opportunity to learn about and experience other cultures via the World Wide Web. In addition to experiencing other cultures, this virtual project provides chances to increase their reading, writing and computer skills.

To learn more about adult Virtual Classroom projects please go to <www2.wgbh.org/mbcweis/ltc/alri/vv.html> and < www2.wgbh.org/mbcweis/ltc/alri/vvclass.html >. If you are interested in joining this project send an email to David J. Rosen at DJRosen@world.std.com or sgaer@earthlink.net

Newsletter for Adult learners and teachers

The Key Newspaper Online is an **"Easy to Read"** newsletter that is geared towards the new and beginning reader in any adult classroom and also contains teaching ideas and materials for the adult

educator. The Key Newspaper Online has various sections dealing with current events; science/technology, civics/government, health and parenting just to name a few. When available, teacher and student guides are provided with the articles as well. The newspaper is also updated on the 15th of each month and all materials may be reproduced. To learn more about this site please visit The Key Newspaper Online at <www.keynews.org>.