Using Internet Metasites to Foster Teenage Girls' Interest in Technology

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Around the world, girls do not have equal access to technology either physically or intellectually. School library programs are uniquely positioned to address this issue by promoting Internet sites where girls can use technology. Providing relevant and attractive Web sites for girls has interested education, organizations, and business in recent years. Because thousands of Web sites target teenage female audiences, the focus of this research was metasites or directories of public Web sites that would link to sites on technology for teenage girls. These metasites and other Web sites that support teenage girls' knowledge and involvement in technology are analyzed.

Introduction

In the 21st century, it seems strange that school library media specialists still have to address issues of gender inequity relative to technology. However, current studies and day-to-day observations confirm the sad reality that girls do not have equal access to technology, either physically or intellectually, either in the United States or elsewhere in the world. This issue becomes critical in the adolescent years, although it starts earlier. Hackbarth (2001) found that grade 4 girls in the US (aged 9-10 years) had the same positive attitudes toward computers as boys, but girls were less likely to have access to computers outside school and were less likely to use computers to do projects; so the girls lagged behind the boys in technical vocabulary and ability. In addition, the social pressures on pubescent girls start to affect technology access and use. Boys spend more time on computers, and parents tend to buy boys their own computers more than they purchase them for girls.

Girl Scouts of the USA and the Advertising Council put together a series of advertisements about girls and technology to offset these negative stereotypes and behaviors. In addition, the Girl Scouts Web site (http://www.girlscouts.org/girlsgotech/index.html) provides a forum for girls aged 5 to 17 to engage in technology activities and offers suggestions to adults for ways to encourage girls to learn about technology. Of special interest are the online discussions among girls about their interest in math, science, and technology careers. Their comments are woven throughout this article to provide authentic personal perspectives.

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The Situation

Are girls interested in technology? Yes. Do they use it? Yes. In the US, almost half of 9- to 12-year-olds use the Internet; over two thirds of 13- to 17-year-olds do, with no significant difference in the overall amount of use between girls and boys. However, the type of use differs: girls use the Internet more for education and communication than do boys, whereas boys use it more for entertainment (National School Board Foundation, 2003). The report of the American Association of University Women (2000) on girls and technology *Tech-savvy: Educating Girls in the New Computer Age* reported that girls were not technophobic; rather, they did not like the computer culture. They found programming boring, they did not like the nature of most computer games, and they saw few positive adult female role models. Girls preferred software that was open-ended and creative.

> My favorite science and technology career would have to be a Web page designer, because you know that people are looking at your great work all of the time. (age 11)

> I'd like to major in computer engineering because of my interest in computers, my reputation as a computer geek, and to show those old-fashioned boys that a girl can do whatever she aspires to do. (age 13)

In 2000, the Bureau of Labor Statistics in the US stated that almost three-quarters of jobs incorporate technology, but that only a quarter of women work in technology-related fields and only 10% are in top technology jobs. Part of the "blame" has to be placed on educational institutions and practices therein. Schools do not always provide equal learning experiences for girls and boys relative to technology. Silverman and Pritchard (1999), in a study of technology use in middle schools, observed that technology-enhanced projects were either gender-neutral or inherently of more interest to boys than girls (e.g., cars, machines). Girls were discouraged from taking advanced technology courses; nor did they wish to risk being one of only a few girls in the class.

> I like Biology cuz I'm good at it. I think I have talent in math, but I'm not good enough and my teacher never pays attention to me. I think encouragement is very important to students. People in the USA encourage students more than they do in China. That's a good way to educate students. I won a physics prize. Before I won, my teacher always called boys to answer questions more. Girls should have the same chance as boys, whether in China or the USA. (age 16)

In the US from 1989 to 1999, the percentage of girls taking the Advanced Placement (AP) Computer tests rose only 1%, from 16% to 17%, and of the 6% of students who identified computers or information science as their major as they were taking the AP Computer test, only 23% were girls and they scored significantly lower on the test than did boys. In 1999, fewer than 34% of math and computer science majors were female, down 25% since 1989.

> I think that girls should be able to strive in the technology/information world of today. I also think that if a girl can do the work, why try to hold her back. (age 14)

In terms of career exploration, girls tended to lack information about the effect of technology on salaries and promotions. This reflects the realities of many other K-12 school settings (Silvermann & Pritchard, 1996).

> I just wanted to encourage all young women to get interested in Technology, Math, and Science. I recently graduated from the University of Wisconsin-Madison with a degree in Math and in all of my classes there were never more than 5 or 6 women in a class of 30. I think that you should not be intimidated, but know that you can do anything you want to do!! (age 23)

In its report about information technology in education relative to girls, UNICEF (2003) made several recommendations:
- use information and communication technology as an ends to a means, not an end in itself,
- use the Internet to collect information and collaborate,
- use the Internet to foster an interactive learning environment,
- promote cross-site communication via the Internet.

These issues and recommendations can be addressed effectively by school libraries when they provide teenage girls access to technology itself and information about technology.

Search Engine Metasites and Directories
for and About Teenage Girls

Because in the US women and girls now comprise most Internet and telecommunication users and about three quarters of teenage girls frequent these services, providing relevant and attractive Web sites for girls has interested education, organizations, and business in recent years.

> I think technology is great!! It helps with lots of things. It helps you stay in touch with others around the world. (age 11)

Because thousands of Web sites target teenage girl audiences, the focus of this research was metasites, or directories of public Web sites that would link to sites on technology for teenage girls. Particularly because teenagers use the Internet independently, often outside school hours, public Web sites became the baseline for resources. Because it is so often used and accesses a greater percentage of Web sites than other well-known search engines, Google was used to identify the most popular cited URLs. Vivisimo was also used to check for reliability; this clustering search engine also captures more non-US sites than the US version of Google.

The most relevant hits were derived when using the phrase *teen girls and technology*. When the phrase *Web sites* was used, often articles about pornography or teen use of Web sites arose. Using the term *female* often generated mature sites (i.e., sex trade sites) The top metasites largely overlapped both

search engine results. The list of URLs below identifies the metasites that most closely fit the parameters of the study. After the initial search was conducted, Google's own directory was noted.

Most of the metasites had the same appearance: pages of text listing a title, brief description, and usually the URL. Arrangement of the sites tended to be alphabetical, with Google's being listed according to the PageRank order (which notes frequency of hits, linking, and to some degree sponsorship by the URL producer). Saviodsilva's Reference.com's, and i-une's arrangement seemed almost random. Topical arrangement was seen occasionally in university and often in commercial Web sites. This arrangement would appeal to the browsing user, but would not facilitate the efforts of those looking for a more narrow focus. To give the directories credit, however, many of the individual sites had overlapping content emphasis, and most directories included an internal search engine to facilitate specific inquiries.

The directory hierarchy itself reflected the categorization of teenage girls by age group and then by gender. A couple started with *culture* or *home* as the defining category. Most metasites began with categories, which tended to include online journals/chats/magazines, romance advice, and fashion. The most extensive list, Cantufind, also included art, computers, entertainment, health, news, people and society, school, sports and hobbies, health, and family. Afterward, individual sites are listed.

Most sites linked to 100 (Google) to 150 (Cantufind) Web sites. Several of the metasites were based on the Open Directory Project, which describes itself in this way: "the largest, most comprehensive human-edited directory of the Web ... constructed and maintained by a vast, global community of

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http://search-info.com/search/engine/index/Kids_and_Teens/Teen_Life/Girls_Only/

http://directory.webguest.com/index.cgi/Kids_and_Teens/Teen_Life/Girls_Only/

http://dmoz.org/Kids_and_Teens/Teen_Life/Girls_Only/

http://zone.mirago.co.uk/Kids_Teens/Teen_Life/Girls_Only/

http://www.cool4kids.com/Teen_Life/Girls_Only/

http://directory.i-une.com/Kids_and_Teens/Teen_Life/Girls_Only/

http://directory.google.com/Top/Kids_and_Teens/Teen_Life/Girls_Only/

http://dirs.educationworld.net/cat/468841/Home/Web_Directory/Kids_and_Teens/Teen_Life/Girls_Only/

http://sg.dir.yahoo.com/society_and_culture/cultures_and_groups/teenagers/Girls/

http://www.reference.com/Dir/Home/Teenagers/Girls_Only/

http://www.saviodsilva.net/dir/girlsites.htm

http://dir.whatuseek.com/Kids_and_Teens/Teen_Life/Girls_Only/

http://cantufind.com/teen-girls.htm

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volunteer editors" (http://www.dmoz.org). The Open Directory Project is loosely affiliated with Netscape and has as its philosophy Open Source, that is, freely sharing information. A total of 361 programs and search engines make use of this project, which is sometimes called DMOZ (Directory Mozilla). Some metasites note their relationship with the Open Directory Project at the end of their list (e.g., Webguest, Any-search-info, Cool4Kids, Mirago), but some have duplicated the information almost exactly and yet are not listed in the Open Directory Project Web site (e.g., http://weather.maximumedge. com). In no case is the connection obvious, and each site changes its look just enough (typeface size and style, spacing, inclusion of URL or not, order of the links) to lead the user into thinking that the list is largely original. One unique feature of the cool4kids metasite is its note of date for adding the site and an option for the user to rate and review it. Vivisimo's search results include the first phrase or two from the cited URLs; over a dozen distinct, seemingly unrelated metasites had the phrase "dedicated to empowering young teen girls to develop their strengths and potential by using technology in a safe, unique/collection, multicultural, online community." When the domain names were checked with DMOZ's list, they were usually included. Stunning.com is an example of a site that duplicates *Education World*'s metasite except for a couple of links (e.g., http://www.amazon.com), the latter largely duplicating DMOZ and also drawing on Cantufind.

Another small set of metasites largely overlapped links, but each listed some links. Reference.com listed more online chatrooms. WhatUseek listed more Web sites on athletics, health, careers, and magazines. Yahoo listed only 22 Web sites, but covered a broad range of topics and included more online communities. Cantufind (144 links) had the most extensive list of URLs not noted by DMOZ metasites; it overlapped Saviodsilva's and WhatUseek. Google's directory also did a good job of covering a broad range of topics selectively. Other metasites were examined but found wanting for various reasons: too limited, without an apparent focus, disorganized, dead links, repetitive entries, and links to adult-only sites. The site that exemplified these factors was OmniSeek's.

All these metasites largely resembled each other, so a webmaster would do well to list only a couple. Cantufind is good because of its extensiveness, but it is not attractive. Google and WhatUseek are good alternatives. The individual sites tend to cover the following topics: magazines for and by girls, online communication, advice, teen issues (relationship, appearance, self-esteem, substance abuse, etc.), sexuality, gossip, health and fitness, fashion, beauty, entertainment, recreation/pastimes, occult, sports, current events, finances, academics, and careers. Fewer than 10% actually talked about technology. Rather, technology served as a tool rather than an end; girls chatted and wrote, took online surveys, downloaded screen savers, listened to mpgs, made Web pages, and created videos.

The viewer usually has to click on a site to figure out the content because over a third of the domain names include the word *teen* or *girl* in various forms: girls, gurl, grrl, grrl, grrrls, girlz, gurlz. It is difficult to differentiate between URLs such as http://www.gURL.com, http://www.girlslife.com, http://www.girlsplace.com, http://www.girlsite.com, and http://www.girland.com. In some cases, the extension (gov, org, edu) reveals an educational perspective, and an ISP indication (deocties, angelfire, homestead) probably reflects a personal interest in a topic. Still, navigating these sites can be confusing, and even when the user arrives at the site, she may have a difficult time differentiating the content as so many deal with girls' issues and personal concerns and often include chat or e-mail features.

Commercial Metasites

Realizing that teenage girls constitute a powerful buying force with potential for decision-making influence, businesses have developed metasites that target teenage girls. The overt agenda is to provide girls with useful and fun sites; the covert agenda is often to sell products and services. The best-known metasite of this sort is http://www.go-girl.com, which was developed by the College Board Network. Typical of this group of metasites, these portals are attractive and lively. They tend to use lots of color, images, and frames. Links are grouped topically. For example, the go-girl metasite looks like a news or broadcast portal and includes information on beauty, celebrities, fashion, "hotties" (awesome guys), play, serious (teen issues), study, and "buzz." The site also has lots of pop-ups, another typical feature of commercial Web sites.

Another popular site among teenage girls is http://www.girltech.com, which uses an icon-based "picture" as the splash screen. Colors are bright; purple seems to be the favorite teen girl page color right now; orange, green, and hot pink follow in popularity for many of these types of sites. Topics include games, sports, creativity, current female "movers and shakers," shopping, chatting, and girl-friendly sites. The emphasis is on interactive participation. A highlighted activity is a "Truth or Dare" survey. The Web creators clearly know their audience; what is not so clear is the originator: Radica Games, which makes electronic entertainment games.

Commercial sites such as teen magazines or hygiene companies can be helpful in incorporating or supporting technology, but users need to view them critically and be aware of the producer's perspective. School librarians can help teens develop and apply objective criteria for evaluating them.

In some cases, the technology industry partners with education and government to help prepare the upcoming generation for high-tech jobs. One such effort, e-skills in the United Kingdom, is addressing the issue of girls and technology by sponsoring ITbeat, a competition for 11- to 15-year-old girls to build a Web site of their favorite pop star or band (http://www.it-beat.com). They hope to build on teens' natural interests and channel their

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enthusiasm into creative technology projects. ThinkQuest in the US has a similar agenda. Ignite-us partners the Seattle School District and local technology industries to "inspire girls now in technology evolution" (www.ignite-us.org). It shows technology opportunities for high school girls through industry visits and mentoring with professional women in technology; in addition, the organization sponsors an e-zine created for and by high school girls. Originating in SiliconValley, Girls for a Change (http://www.girlsforachange.org/) builds on girls' societal awareness and ability to collaborate by facilitating community-based improvement projects that incorporate technology. In all these cases, the metasite is not the focus—engaged action is.

> I did a thing with my school for a mentoring program. I spent two whole days with my mentor in her workspace. I learned so much about how she is involved in making computers. (age 14)

Educational Metasites

Educational institutions, government agencies, and professional organizations have become aware of the gender gap relative to technology. Mills College's ADA project (http://tap.mills.edu/scripts/organizations.tcl) provides an extensive list of organizations that actively support the engagement of teenage girls in technology through projects and Web sites.

Sometimes these groups include metasites that target teen girls. For example, http://www.smartgirl.org, which is supported by the National Science Foundation and the University of Michigan, provides a forum for younger teenage girls to share their concerns, to express themselves creatively, and to review commercial products (e.g., games, TV, catalogs, Web sites). The Web site has a clean, colorful layout, which is quiet yet inviting. Girls' Best Friend Foundation focuses on empowering girls from 8 to 21 years old. The portion of their Web site that targets girls (http://www.girlsbestfriend.org/artman/publish/links_girls.shtml) is highly selective (only 22 URLs), but includes links that were not found in any of the search engine metasites examined above: Teenwire, Eve, Girlhood, Work4Women, Girls Initiative Network, Blue Jeans Online, and Sex Etc. (a teen-written advice newsletter). The list is a bit uneven but certainly intriguing.

Over a dozen other universities have Web sites and activities to recruit teenage girls into technology careers: DeVry Institute of Technology, Kansas State University, Kentucky University, Loyola, Mills, Rice, Rowan, Simmons, Stanford, University of Colorado at Boulder, University of Maryland Baltimore County, University of Michigan, University of Washington, and University of Wisconsin are leaders in the field. Occasionally, their sites include a page for teens with relevant links.

Probably the most popular Web page of this kind is the University of Maryland, Baltimore County's http://research.umbc.edu/~korenman/wmst/links_girls.html. It deserves such recognition. Maintained by the

Center for Women and Information Technology, this metasite focuses on girls' interests and resources, although it includes links to sites that target adults interested in supporting teenage girls' involvement in technology; sites for and by girls are noted with a red asterisk rather than separated from the other URLs. This metasite is unique because it focuses much more on careers, particularly in math, science, engineering, and technology. It has a feminist perspective, but is not dogmatic in its approach; for example, it lists a Web site for dads and daughters. Rather, it addresses the digital divide and techno-gender divide and provides ways to overcome possible barriers.

High school students are now beginning to develop their own metasites that address technology and teenage girls. The most visible was created at Monte Vista High School in Danville, California. It categorizes URLs along these topics: career, other, school, and technologies. Interestingly, most citations are found at the University of Maryland Web site, and most other URLs are university sites as well.

Implications for School Library Media Specialists

There is a need for information about technology that targets teenage girls. Teenage girls need to have opportunities to become more technologically competent and to apply their knowledge meaningfully. School library programs are uniquely positioned to address issues of gender inequity in technology by promoting Internet sites for girls to use technology. By leveraging girls' interest in the Internet for communicating and education, school library media specialists (SLMSs) can provide resources and the means to evaluate them for authentic use.

Quality metasites about teen interests and issues can provide a teen-friendly way to become more comfortable using technology to get information, to communicate, and to create and broadcast technology-based products. Links to projects that support teenage girls' involvement in career exploration and in community-based action broadens girls' perspectives and gives them venues where they can make a difference. SLMSs should also alert their colleagues to these metasites and develop learning activities that use these metasites in particular. Not only should SLMSs include such sites on library portals, but they can also push technology, for example, by e-mailing the URLs of these sites to appropriate classroom teachers in a timely fashion.

In addition, SLMSs should also encourage students to locate, evaluate, organize, and post these Web sites on the library or school portal. As students assume control of Web content, they model technology competence and influence.

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