



ISSUES IN TECHNOLOGY

GENDER AND TECHNOLOGY: A QUESTION OF EMPOWERMENT

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In 1984, the English Natural Form Instruction Project (ENFI) was developed at Gallaudet College to assist deaf students in collaborating through computer communication with one another. Since deaf students typically experienced English as a static school language and conversed with one another through sign language, computer communication enabled many hearing-impaired students for the first time to participate in live conversation in English (Tornow, 1997). The use of computer communication for deaf populations offered promise for other marginalized groups, such as the speech impaired (Fey, 1994b), English language learners (Tornow, 1993), and girls and women (Fey, 1994a). As computers have become more commonplace, the question that continues to be addressed is to whether such environments facilitate egalitarian and democratic forms of communication (Ess, 1996; Guzzetti & Fey, 2001).

Issues of gender in the classroom relate to findings by Gilligan (1982) that point to unique characteristics of women in their collaborative, caring stance. This assumption has led teachers and researchers to seek out learning environments more ameliorative to women. Belenky, Clinchy, Goldberger, and Tarule (1986), for example, noted that women prefer a more collaborative, social learning space rather than the traditional individualistic, competitive environment in which many men thrive and which persists in schools (Sadker & Sadker, 1994). Thus, researchers turned to the computer environment, particularly online communication, to explore whether its freeing qualities afforded to deaf populations might also be

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applicable to others who may be silenced in the classroom. However, since a perceived gender gap in terms of computer use has historically pervaded schools and colleges (Christie, 1995), some researchers (Selfe, 1992, 1999) have been concerned that the computer environment duplicates the masculine hierarchy in contemporary society.

Though only limited numbers of research studies have related specifically to gender, technology, and literacy in schools and colleges (Guzzetti, Young, Gritsavage, Fyfe, & Hardenbrook, in press), the studies that do exist report disparate findings (Blair & Takayoshi, 1999; Guzzetti & Fey, 2001). The following representative studies of other researchers as well as my own reveal the possibilities and problems that girls and women face as they use computers in their education.

GENDER AND TECHNOLOGY IN ELEMENTARY SCHOOLS

To understand how and when gender attitudes toward computers are instilled, Nicholson, Gelpi, Young, and Sulzby (1998) observed first-grade students as they worked in same gender and mixed-gender groups to compose stories on the computer. Girls generally gave supporting comments and encouraged each other but yielded to boys when working with them. Boys, on the other hand, gave orders and instructions on what was allowed. They also created competition by such behaviors as bragging on the length of their stories and calling attention to their superior skills in drawing. Researchers concluded that although some girls had positive experiences, other young girls' confidence in using computers waned because of the competitive language and actions of young boys. To make such experiences more gender equitable, the researchers recommended careful monitoring of students' language use when they are working with computers. They also suggested that teachers should model appropriate ways of collaborating in the computer environment.

Pryor's (1995) study of nine- and ten-year-olds in a school in the United Kingdom yielded diverse findings when boys and girls used computers. Concerned that even teachers sensitive to gender issues are not always effective in bringing about gender equity, Pryor engaged in a two-year study in which he worked in a classroom once a week to understand gender issues as they applied to groups of students working with computers. A pilot study the first year revealed a kind of "pecking order" in which smart boys were at the top and girls and learning disabled students lower on the scale. Building on his observations the first year, Pryor in the second year undertook an action project in which he worked with a teacher to overcome gender stereotypes in the classroom. Intervention strategies included visits to the class by women experts in technology, discussions of

gender issues whenever related behavior concerns arose, a focus on the process of groups as they used computers rather than primarily on the completion of tasks, and involvement of the children themselves in the goals of the project. Pryor's aim of not only exploring how bias operates but also finding ways to promote equality was successful with this group of students. In working to achieve equality of opportunity for computer use for girls as well as boys, Pryor concluded that a greater emphasis on group work proved liberating for boys as well as girls.

GENDER AND TECHNOLOGY WITH MIDDLE-SCHOOL POPULATIONS

A study of real-time collaboration through instant messaging (Lewis & Fabos, 2000) also reflected the duality of gendered experience. The researchers examined the social practices of two middle school girls who used their home computers to negotiate identity and power, even taking on a male persona at times. The girls were skilled with instant messaging and used it to bond with one another and to have a place in the social sphere of classmates. They reported that their online discussions made communication more comfortable and at times enabled them to hide age or gender when advantageous. The researchers noted that in these practices the girls did not use the online chat to break down gender barriers that exist outside and within the Internet, nor were they aware of the subtle controls of the medium as they focused their energies on having some control of their social interactions during this middle school stage of adolescence.

GENDER AND TECHNOLOGY IN SCHOOL-COLLEGE COLLABORATIONS

In several of my own studies with college and high school students, I have noted inconsistent findings relating to gender issues. Two school-college listserv collaborations that linked college students to high school students in urban and suburban schools adopted a critical literacy stance that focused on controversial issues. The first study (Fey, 1997) focused on ethics, and the second study (Fey, 1998) dealt directly with gender issues. In the 1997 collaboration, the agonistic, hierarchical language of some males silenced several female participants, though other participants reported that they benefited from the discussion and from the opportunity to experience a new form of connectivity through computers. In the 1998 collaboration, females persisted in voicing their ideas despite differences of opinion and the presence of agonistic language.

The contexts as well as participants' characteristics may have led to the differences in outcomes. College students in the 1997 collaboration were part of a general education class with little focus on gender issues, whereas college students in the 1998 collaboration were enrolled in a women's studies class in which issues of gender were the focus of the study.

REFLECTIONS ON GENDER AND TECHNOLOGY IN SCHOOLS AND COLLEGES

The above research underscores some of the promises that computers offer in transforming traditional class instruction into more student-centered pedagogy. Our experiences tell us that silencing can occur in the computer environment as well as in the traditional classroom. Teachers, however, can have some influence in encouraging gender equity in the use of computers. Both Pryor (1995) and Nicholson et al. (1998) pointed to the role of the teacher in preparing students for collaborative work with computers, in being sensitive to issues of gender as they work with students, and in encouraging students to reflect on the *process* of using computers as well as on the *product*. When computers are used as a communication tool, teachers can suggest that students reflect on their language use as recorded on the computer transcript and thus become aware of their own language styles. As teachers and students reflect on the processes of interactions relating to computer use, silencing may decrease and computer use may offer comfortable environments for all.

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