Computer Fear

To avoid repeating mistakes of past decades, we need to recognize affirmative action implications of the computer bandwagon.

CYNTHIA BAKON, ANTONIA NIELSEN, AND JAMIESON MCKENZIE

The fourth period bell rings, signaling the start of class. The high school computer lab quickly fills with several dozen students, mostly male. Three girls, looking somewhat adrift in this sea of boys, take their seats for an advanced class in PASCAL. The instructor, a highly skilled male math teacher, begins with a demonstration of a new programming technique.

Three hours later, the final bell of the final period sends students hurrying toward lockers, athletic fields, and home. The high school computer lab, however, is once again packed with students. Only, this time, all of them are male.

These scenes are being repeated in school after school. There is growing evidence that the long-documented gap between male and female participation in elective math and physical science courses is now being replicated in computer labs.

The Equity Gap: Real or Manufactured?

In reviewing the literature on differences between males and females in math and science, Skolnick reports a very wide gap:

> Across the nation slightly more girls than boys are enrolled in our schools. Yet studies reveal that twice as many college bound senior boys as girls have taken three years of physical science, and some other discrepancies are evident in advanced mathematics enrollment. In a typical school district boys outnumber girls by more than 2 to 1 in most high school physical science courses, 3 to 1 in physics. Although girls may outnumber boys in advanced eighth grade math, by twelfth grade twice as many boys as girls are enrolled in calculus. As a result, relatively few girls are prepared to take the calculus sequence necessary for many college majors.[1]

A survey of ten New Jersey high schools offering elective courses in computer programming revealed a consistent and substantial male dominance of enrollment in such courses—slightly more than 60 percent. Studies of computer use in California schools support the New Jersey trend:

> The ratio of male to female enrollment was approximately 5:3 (11,441 males to 6,843 females). Enrollment in computer science courses at the University of California, Berkeley, is also heavily male-dominated beyond the introductory courses; only 23 percent of computer science majors at Berkeley are females.[2]

Ensuring Equity

A district implementing or revising a computer education program should take a strong position on sex equity at the onset. Once this position has been clearly stated, program implementation must be shaped accordingly. Among other things, schools need to gather their own data to assess how significantly they are meeting their sex equity goals. Participation in advanced computer programming courses at a high school level should be monitored annually. If this data provides evidence of male dominance, the investigation should probe the foundations of the program. If the district provides substantial computer literacy experiences at the middle or junior high level, for example, and all subsequent computer courses are elective, a sample of incoming high school students should be interviewed to determine why students may be dropping out of computer courses. The inquiry might begin even earlier during the computer literacy courses themselves.

The results of a study conducted at Princeton High School showed that gender, grade, and the type and section of math class were all related to how much students learned. Males, younger students, students in sophomore and junior precollege math, and students in advanced math courses gained relatively more than females, seniors, and students enrolled in other math courses and levels. In general, access to and experience with computers were unrelated to gain in computer literacy. However, asking for help from the teacher benefited female students, and access to a computer outside of school affected the scores of ninth- and tenth-grade female students.[3]

Those of us who are responsible for implementing computer programs must be conscious of the affirmative action implications of such programs. The social consequences of preparing a tiny male technological elite to provide leadership are ominous and foreboding. Now that we have passed through the initial states of computer enthusiasm, serious issues need to be addressed. □

Cynthia Bakon is Teacher/Computer Literacy, Antonia Nielsen is High School Computer Coordinator, and Jamieson McKenzie is Assistant Superintendent, all with the Princeton Regional Schools, Princeton, New Jersey.

[1] Joan Skolnick and others, *How to Encourage Girls in Math and Science* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1982), p. 3.

[2] Nancy Kreinberg, and Elizabeth K. Stage, "Equals in Computer Technology," in *The Technological Woman: Interfacing with Tomorrow*, ed. J. Zimmerman (New York: Praeger, 1983), p. 253.

[3] M. E. Lockheed, A. Nielsen, and M. K. Stone, "Some Determinants of Microcomputer Literacy in High School Students: Pilot Study," paper presented at AERA, Montreal, 1983.