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Counseling the Young

Young people have access to two networks of counselors to provide the information they need for career choices. The first is the formal network of professional teachers and counselors at school. This group is frequently considered to influence the allocation of students to courses and tracks in high school. Ironically, it considers itself helpless in the face of peer pressure, parental pressure, and societal pressure to merely "get by."

The second network of counselors is the informal one of peers, parents, relatives, neighbors, and other people who serve as role models for students. This group is a constant source of influence and information in a context of greater legitimacy and credibility than that of the professionals. Ironically, it suffers from lack of accurate information on supply and demand in the labor force, the kinds of courses needed to meet current demand, and the curriculum best fitted for the particular student's needs, aspirations, and abilities.

In the past, the two counseling networks have dissipated their energies in an exchange of recriminations for failure to meet the needs of students. Professionals have blamed the home and society for the students' lack of motivation. Parents and families have shifted blame back to the schools for providing information that is inaccurate, out-of-date, or delivered too late to rescue high school students from the noncollege track, and college-bound students from the nonscience track.

Readers of *Science* have a special opportunity to contribute to the effectiveness of counseling of the young, both as informal counselors to our own relatives and friends and as formal or informal counselors to educators and school board members. We know the importance of high school algebra and geometry for technical jobs that do not require a college degree. We know the importance of four full years of high school mathematics if one is to survive in freshman calculus. And we know the importance of the "hard" calculus sequence in college for careers in the sciences and engineering. Less well known is the requirement for the "soft" calculus sequence at the undergraduate level for careers in business and management and in economics. For instance, a recent survey of companies planning to recruit employees at a University of Maryland campus showed that only 16 percent were looking for new employees without a calculus background; one-third were looking for at least a soft calculus sequence and one-half were looking for a hard calculus sequence in the undergraduate major.*

Further, the high school mathematics filter has important implications for equalizing employment opportunities. A study of entering freshmen at the University of Maryland in the fall of 1977 showed that 63 percent of white men had 3.5 years of precalculus high school mathematics, compared to only 31 percent of white women, 27 percent of black men, and 19 percent of black women. Increasing employment opportunities for minorities and women clearly depends on providing them with maximal high school mathematics skills so that they will have access to the calculus sequence. Differences in achievement in mathematics represent a loss of human potential as well as ineffective utilization of scarce educational tax dollars.

Equalizing access to high school mathematics skills will create a situation in which everyone wins: students and their families seeking to expand career opportunities, colleges and universities seeking to expand opportunities for minorities and women, and employers seeking to meet the needs for more scientists and technicians.

The critical message for formal and informal counselors to share with the young is that minimal competence means minimal job opportunities: keep your options open by maximizing your competence in mathematics.—LUCY W. SELLS, *Consultant in Educational Research and Affirmative Action, 1181 Euclid Avenue, Berkeley, California 94708*

**Placement Manual, Spring 1978* (Office of Career Development, University of Maryland, College Park, 1978).