

Student aspirations decidedly financial

Richard Pearson

Careers in high-technology industry and scientific research are not top of all graduates' lists, and college-leavers are taking a hard-headed approach to employment.

In theory, the ever-increasing investment in information technology in schools and the education system to make students computer literate should make life easier for high-tech recruiters. But in reality the reverse is true, as more and more college students in the United States are turning away from computer studies and towards careers in the professions. This shift in career preferences, when allied to the demographic downturn¹, makes gloomy reading for the high-tech industries and the research community. The one positive outcome of the latest freshman survey is the recent rise in student interest in careers in education.

The survey^{3,4}, which covers over 250,000 students in 550 colleges and universities across the United States, has now been running for 20 years and charts the movement from the heady optimistic days of the 1960s to the harsher more competitive climate of the 1980s. Over this period, the student population has grown by 40 per cent and the representation by women and minorities has grown even faster; in 1986 the proportion of women had risen to nearly 52 per cent. Black representation had nearly doubled to 9 per cent, although most of this increase had come in the 1960s and early 1970s. The evidence on entry standards is mixed, with students rating themselves higher in terms of personality and skill traits, and their high-school grades being considerably higher. The latter is, however, put down to grade inflation. College test scores have declined as have faculties' judgement of their students' abilities, especially their verbal skills. The one growth skill has been that of computer programming, 50 per cent now having this skill, up from 17 per cent in 1982 and 5 per cent in 1977.

The survey shows rising student dependence on student loans and part-time and summer working as federal aid and grants have been cut back. One consequence has been the squeezing out of students from low-income families; in 1980, 40 per cent of freshmen reported family incomes of under \$20,000 a year compared with only 20 per cent in 1986, with comparable falls for students with families earning under \$30,000. These are far higher rates of decline than can be accounted for by inflation. Heavy reliance on loans may contribute to the decision of some students to drop out of college, further emphasizing the growing divisions between the children from poorer and richer families.

What then are the students seeking? In the 1960s, "developing a meaningful philosophy of life" was a key objective for students; this is now of very low interest, while "being well off financially" is now endorsed as a priority by 71 per cent of students, up from 44 per cent 20 years ago. Other related values that have increased dramatically in importance relate to power and status — a key motivating factor in going to college in the 1980s is "to be able to make more money". Altruistic and social concerns have plunged, "helping others", "promoting racial understanding" and "cleaning up the environment" are now out of favour.

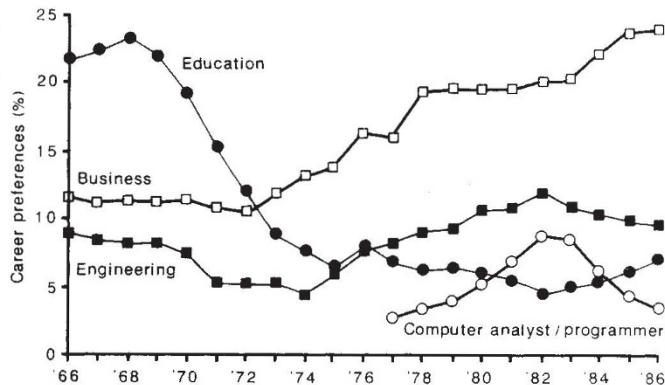
The main growth subject areas over the past 20 years have been business studies, which accounted for one in four students in 1986, up from less than one in six 20 years earlier, and engineering and computing, although interest has started to decline in the past few years (see figure). Originally these were male-dominated subjects. Women now have parity in business studies, but are still outnumbered 6 to 1 in engineering and 2 to 1 in computing. Interest in these latter two subjects peaked

in 1983 and they seem particularly sensitive to students' perceptions of job opportunities in these fields which suffered reverses over this period. However, the decline in student interest in computing seems to have preceded the shakeout in the computer industry. In the sciences, mathematics and statistics show a major decline from nearly 5 to under 1 per cent of freshmen over the 20 years. Other subjects showing major declines include both the physical and biological sciences, psychology and until recently education². The latter has been dominated by women but the decline has been equally severe for both sexes.

Subject and career choice are closely allied and there has been a doubling of the proportion of students intending to take up careers in business over the past 20 years, to account for 1 in 4 in 1986. Computing also grew rapidly to a peak of 9 per cent in 1982, but interest has since halved. Engineering likewise grew until 1982 and

has since fallen back. Education has also shown a massive decline but with the present shortages of teachers and improved pay and conditions, students are beginning to rediscover teaching as a career. The level of interest is still, however, far too low to accommodate the rapid increase in demand for new teachers that will be needed to overcome the retirement bulge in the 1990s. Another problem is the declining interest in doctoral studies, further compounding worries about shortages of faculty in the next decade. Other areas of declining interest include medicine, dentistry, nursing and social work, and interestingly, law.

The freshman surveys provide a valuable guide to changing student. It is clear that, for some subjects, labour market conditions have a direct and rapid effect on



Freshman career preferences for the years 1966–86. From ref. 3.

student aspirations, as is shown by the significant and rapid downturn in the case of computing. Unfortunately, this sensitivity relates to current conditions and not those likely to be prevailing 5 years from now when students will be job-hunting nor to longer-term career prospects. What is less clear is why only some subjects are susceptible to such influences. Is it that in certain potentially vocational subjects such as biology, no vocational linkages are made, or do the apparently 'vocational' subjects attract less committed students whose interests are in the more tangible rewards accruing to their studies?

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- Pearson, R. *Nature* 326, 528 (1987).
- The American Freshman: Twenty Year Trends* (University of California, 1987).
- The American Freshman: National Norms for Fall 1986* (University of California, 1987).