
High school students lag in science

Youngsters in the United States continue their steady decline in scientific knowledge, but the trend is somewhat less discouraging among elementary and junior high school students than among 17-year-olds. This pattern was reported among the results of a nationwide survey of 80,000 U.S. youths at 9, 13 and 17 years of age.

The report, released by the HEW-sponsored National Assessment of Educational Progress, shows a 4.7 percent drop in science achievement scores of 17-year-old high schoolers since 1969. For the same three examination periods — in 1969 to 1970, 1972 to 1973 and 1976 to 1977 — 13-year-olds show a 2.5 percent score decline and 9-year-olds a 1.4 percent drop. However, that decline was primarily in the physical sciences; neither 9- nor 13-year-olds dropped in biological sciences between the second and third assessments. Seventeen-year-olds declined in both areas, although slightly less in biology.

Scientists involved in the survey trace part of the problem to the de-emphasis of science education in U.S. schools. The number of students taking science courses in high school has dropped from roughly 18 percent in the late 1960s to less than 10 percent now. But although the largest de-emphasis has been for the younger students, "the largest decline in knowledge and skills appears to be among the 17-year-olds," says John M. Akey, immediate past president of the National Science Teachers Association.

Arthur Livermore, director of the Office of Science Education for the American Association for the Advancement of Science, suggests that "for 17-year-olds, anyway, . . . the steep decline in physical science achievement is related to decreasing enrollments of high school students in physics and chemistry. In fact, less than half the high schools in the country even have physics courses." Akey also singles out the "back to the basics" education movement and efforts to cut costs as other possible factors in the decline. "Let's face it," he says, "science education, with its expendable equipment and supplies, is expensive. We are seeing a few science labs being eliminated as school districts are forced to cut new construction costs."

Among other findings of the survey, which researchers say is representative of 11 million students across the nation, are the following:

- Subgroups that tended to perform above the national average in each assessment include males, whites, students who have at least one parent with post-high school education and those who live in the Northeast, in economically advantaged urban communities and in suburbs of big cities. Students from the Southeast

area states scored lowest.

- Although blacks and other children in economically deprived areas continue to score lower than average, the gap appears to be closing. Black 13-year-olds improved in physical sciences between the second and third assessments.

- Males scored higher than females, on the average.

- Students in rural areas at all age levels have improved their scores to the point where they are now above the national average. □

The IQ debate: Score 1 for nurture

French behavioral researchers have reported what they believe is strong evidence supporting the view that intellectual performance is mainly determined by environment and not genetics. The results are almost sure to rekindle the decades-long argument.

The scientists, from the Institut National de la Santé at la Recherche Médicale in Montrouge, France, compared IQ scores and school performances of 32 adopted school-age youngsters and 20 of their siblings who had remained with their biological parents. The parents were primarily of lower-class status and worked in "nonprofessional" jobs. In most cases, the children they gave up were adopted by couples of higher socioeconomic status.

The IQ and school performance of the youngsters correlated almost perfectly with their environment, the researchers report in the June 30 *SCIENCE*. Just 13 percent of the adopted youngsters failed in class and 17 percent in IQ (scores below 95), compared with 56 percent and 49 percent, respectively, of their brothers and sisters who had been reared by their biological parents. Moreover, the adoptees' failure rates closely matched the predicted failure rates of children of upper-middle-class families, rather than rates of those born to lower-class parents.

Various past studies have yielded conflicting conclusions about the origins of intelligence, but some recent work points to a larger environment component than might have been suspected. Yale University psychologist Sandra Scarr has found that both genetic and environmental factors influence IQ (SN: 9/3/77, p. 150).

Now, the French team says its results indicate "that there are no important genetic differences between social groups for factors relevant to school failures. . . . The failure rates observed for the A [adopted] children are almost embarrassingly close to those expected solely on the basis of the social class of their adoptive parents," they report. The research team includes Michel Schiff, Michel Duyme, Annick Dumaret, John Stewart, Stanislaw Tomkiewicz and Josue Feingold. □

Earthquake hazard reduction program

It may have seemed like trying to legislate nature, but Congress passed the Earthquake Hazard Reduction Act in 1977. The act directed the President to develop a year-by-year plan at least through 1980 that would reduce the risk of quake-related loss of U.S. lives and property. Accordingly, the National Earthquake Hazard Reduction Program released recently by the Office of Science and Technology Policy describes a comprehensive effort to plan for the unpredictable.

Between handling a fickle-natured phenomenon and a web of conflicting agencies and groups, the OSTP set the following immediate priorities, which either are funded in the 1979 budget or will be with a little "reprogramming":

- Setting up a lead agency. On June 19, the President asked Congress to establish a Federal Emergency Agency to handle other hazard reduction programs in addition to the quake program.

- Completing federal, state and local contingency plans for densely populated and high quake risk areas. (\$300,000 is allocated in fiscal year 1979.)

- Developing "seismic-resistant" design and construction standards for federal buildings and encouraging their addition to state and local codes. (\$200,000)

- Determining the hazard posed by existing federal facilities. (\$100,000)

- Determining the financial impact of earthquake disaster and planning. (\$100,000)

- Establishing a research program for prediction and for projects such as mapping seismic risk areas.

The U.S. Geological Survey and the National Science Foundation will receive \$31.5 million and \$32.4 million respectively for research. □

Four aboard Salyut 6

The two cosmonauts aboard the Soviet Salyut 6 space station (SN: 6/24/78, p. 406) were joined on June 28 by two more, when Soyuz 30 crewmen Pyotr Klimuk and Miroslaw Hermaszewski linked with the station's other docking port following their launching the previous day. Klimuk is a veteran of the Soyuz 13 and 18 missions, during the latter of which he spent 63 days aboard the Salyut 4 station. Hermaszewski, a space rookie, is the first Polish and second non-Russian cosmonaut to have been in space. The earlier non-Russian was Czechoslovakian cosmonaut Vladimir Remek, who was also part of a double-crew occupancy of Salyut 6. The Soyuz 30 crew was expected to return to earth late this week, probably leaving Soyuz 29 cosmonauts Yuri Romanenko and Georgi Grechko aboard. □