

Study urges early emphasis on science

What do you want to be when you grow up? Eighth-graders asked this question in 1988 were two to three times more likely to earn science and engineering degrees in college if their answer was a science-related career. The National Research Council recently reported the United States is slipping in its leadership in science and technology fields and recommended "vastly improving" K-12 education in math and science.

Research by Robert H. Tai, assistant professor of science education at the University of Virginia's Curry School of Education, agrees with this recommendation. At a time when more schools are focusing on reading and math to beef up standardized test scores, Tai's research, to be published in the May 26 issue of *Science* magazine, suggests this focus may ignore the importance of an early emphasis on science.

Tai and U.Va. researchers Christine Qui Liu, Adam V. Maltese and Xitao Fan analyzed data from the National Educational Longitudinal Study, begun in 1988, to see if expectations about science made a difference in later choice of college academic study.

"To the question, does it matter if a person decides early on whether to pursue science? The answer is yes," Tai said. "While the outcome may not be surprising, in light of the many stories we've all heard about the lives of famous scientists, this study put this notion to the test and found a link between early life expectations and future life outcomes."

Tai and the research team looked at a random national sample of 3,359 students who had first been surveyed in eighth grade and who received college degrees by 2000. The study focused on the survey question, "What kind of work do you expect to be doing when you are 30 years old?" Connecting this question to data collected from the same students years later, the researchers could identify those who had selected the option of science-related jobs compared to students who chose nonscience jobs and then majored in life sciences or physical sciences and engineering. Those youth who expected to go into the sciences were two times more likely to get their degree in a life science and three times more likely to get a degree in the physical sciences or engineering than students who chose other career options.

The study controlled for variables including students' demographics, academic characteristics and achievement scores, as well as their parents' backgrounds, such as education and professional versus nonprofessional occupation.

Although mathematics was important, mathematics achievement doesn't take the place of science interest, Tai found. The results indicate that average eighth-grade math achievers with science-related expectations are much more likely to earn physical science or engineering degrees than high math achievers without this interest.

Lately, federal policy has put more emphasis on high school curricula, ignoring science education for elementary and middle school grades. Tai's concern is that teachers are increasingly teaching to the test because under the federal NCLB regulations, their schools will get penalized if students don't pass and they don't make adequate yearly progress.

"Life is not a standardized test. We should use testing to help us learn more about how best to teach children. But kids are not being encouraged to go into science by testing."

The paper concludes: "Although our current analysis does not provide proof of an uninterrupted causal chain of influence, we should pay close attention to children's early exposure to science at the middle and even younger grades."

Source: University of Virginia

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