

## Trying to Make Math (and Science) Count

By Paul Tosto

Pioneer Press

Wed, Jul. 19, 2006

<http://www.twincities.com/mld/twincities/living/education/15069365.htm>

A recent survey shows that, for many middle and high school students in Minnesota, a career in science or engineering seems, well, obtuse. Katherine loves experiments and problem solving. At a science camp Tuesday, the seventh-grader quickly figured out a way to balance a brick on an index card, rolling it into a cylinder to distribute the weight. "I like hands-on the best," said Katherine, 12, who plans to be a surgeon. More students would embrace science, she added, if it were more about labs and less about books.

In an article entitled "WHY AMERICAN COLLEGE STUDENTS HATE SCIENCE" by Brent Staples on May 25, 2006, he reported that "Science education in this country faces two serious problems. The first is that too few Americans perform at the highest level in science, compared with our competitors abroad. The second problem is that large numbers of aspiring science majors, perhaps as many as half, are turned off by unimaginative teaching and migrate to other disciplines before graduating. The science establishment explains these defections as part of a natural "weeding out" - a view flatly rejected by University of Maryland (U.M.B.C.) and a few other campuses where administrators are getting top performance from students who would ordinarily have become demoralized and jumped ship.

A U.M.B.C. program Initiated in 1989, (Meyerhoff Scholars Program) is so well known that the university no longer needs to recruit for it. High school counselors and teachers nominate about 1,900 students annually, mostly from Maryland, for merit-based scholarships. The new students are welcomed into a well-established community of scientists and scientists-to-be through a summer program that sets the stage for the next four years. The students are encouraged to study in groups and taught to solve complex problems collectively, as teams of scientists do. Most important, they are quickly exposed to cutting-edge science in laboratory settings, which demystifies the profession. At the same time, however, the students are pushed to perform at the highest level. Those who earn C's, for example, are encouraged to repeat courses so they can master basic concepts before moving on. The laboratory approach keeps the students excited and prevents them from drifting off into less challenging disciplines. Indeed, according to student follow-up records, 86 percent of the Meyerhoff participants have graduated with science or engineering degrees. Nearly 9 in 10 of those graduates went on to graduate or professional programs."

[http://www.amhersttimes.com/index.php?option=com\\_content&task=view&id=1651&](http://www.amhersttimes.com/index.php?option=com_content&task=view&id=1651&)

Minnesota leaders say the state needs more scientists and engineers for the future. They'd love to enlist legions of smart, curious children like Katherine, who goes to Wayzata East Middle School in Plymouth. The reality, though, is that many Minnesota teens are saying,

“No, thanks.” About 1-in-10 eighth-graders and 2-in-10 high school sophomores express interest in pursuing careers in the fields of science, technology, engineering and math, the state Education Department reported July 18<sup>th</sup>. Instead, social services and the arts seem to have a stronger pull. Nearly half the eighth-graders expressed an interest in social services, and just over half the 10<sup>th</sup>-graders picked social services and the arts as preferred careers.

Although no one believes a middle-schooler’s career choice is set in stone, officials view this and other data with increasing worry. After all, a big chunk of future job growth in Minnesota is expected to be in scientific and technical fields.

“My sixth-grade science teacher made science really fun. We did experiments every day,” said Nicole Manson, 12, from New London, Minn., as she worked on the brick-balancing task with Jazzmin Brooks of Bloomington’s Trinity School at River Ridge. Jazzmin said she had a knack for science early on, and her mother encouraged her. “I found out there’s more to science than ‘boring.’ “Some of their friends like science, but many don’t. What do they want to do instead? They’re looking for fame, says Jazzmin, “They want to be on reality shows, (but) there are other things besides fame that get you famous.” Nicole agreed.

The survey data was part of voluntary college-readiness testing the students took last fall and winter. Nearly all of the state’s 10<sup>th</sup>-graders and about two-thirds of the state’s eighth-graders took the exams, which are designed to predict how a student will perform on the ACT college entrance exam. This is the first year the state paid for any eighth- or 10<sup>th</sup>-grader who wanted to take the tests. The Legislature earmarked about \$1.7 million for the tests for this year and next as part of Pawlenty’s “Get Ready, Get Credit” college initiative.

The data also revealed wide, early gaps in college-readiness. Even in eighth grade, white students significantly outperformed students of color, dramatically so compared to African-American and Latino students. The results underscore the need to keep pressing to get more students involved in math and science, said Education Commissioner Alice Seagren. Part of the problem is that math often is the door to science and technology, and Minnesota generally has struggled to get more students to take high-level math. Although Minnesota’s average ACT scores always look great, the state ranks low in the total number of high school students who take any math, let alone advanced math.

State leaders plan a summit of high school students this fall hoping to build interest in the sciences, Seagren said. “We tend to lose them in math,” said Kaye Smith, an instructor at the science camp who also teaches engineering at Century College. Still, she recalled winning over a student who didn’t see the value of algebra until she connected it to the sport he played, baseball. Talking to students about the practical uses of math, she said, makes a big difference in how they see the subject.

Paul Tosto covers higher education and can be reached at 651-228-2119.

10.8% Eighth-graders interested in careers in science, technology engineering and math.

49.3% Eighth-graders interested in social services careers.