

## 3M's science project: Scientists can't simply be hired, they must be created

May 15 2009, By Liz Fedor

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After donning a navy lab coat, Huava Xiong moves through a 3M Co. lab like an old pro as he cuts strips of pressure-sensitive adhesives for testing.

Despite his age, 18, the spiky-haired senior is at home in the lab, part of the manufacturer's sprawling headquarters campus in Maplewood, Minn.

Xiong, who's planning to attend Carleton or Macalester in the fall, is among a few dozen [high school students](#) from St. Paul public schools who've been chosen to learn about [science](#) and math directly from 3M's engineers and scientists. Twice a week, they attend classes at 3M for the entire spring semester.

But Xiong's strong interest -- and skills -- in science make him the exception.

Despite years of public debate and numerous attempts to emphasize math and science education, many students still lag in these areas.

Just 56 percent of Minnesota's 2008 [high school](#) graduating classes met an ACT college readiness score in math. Only 40 percent of the students hit the performance benchmark for science. On a worldwide scale, American fourth- and eighth-grade students scored below their counterparts in Hong Kong, Singapore and Japan on math tests, according to the Trends in International [Mathematics](#) and Science Study.

Today, from the Obama administration to the Minnesota Business Partnership, leaders are talking about the need to beef up math and science programs and to funnel more young people into science and technical careers.

Even as corporations, including 3M, cut thousands of jobs, leaders are worried about the workforces of tomorrow, which studies show will increasingly need to have science and technical skills.

U.S. Education Secretary Arne Duncan proclaimed the need for more engineers in March while speaking to the National [Science Teachers Association](#).

"Too many middle school students are being taught by a generalist," Duncan said. "Math and science teachers leave the profession in greater numbers than others because there are better job opportunities out there."

Dan McElroy, commissioner of Minnesota's Department of Employment and Economic Development, said people with science and technical backgrounds will land the jobs of tomorrow. His department projects rapid growth through 2016 for jobs such as industrial engineer and computer software engineer.

Charlie Weaver, executive director of the Minnesota Business Partnership, said high-quality education is a priority of many of the chief executives who lead large corporations. But Weaver said that his "biggest fear" is that "they are going to look around five years from now and find out there are just not the people to hire."

And while Minnesota's higher education institutions have excellent programs in math and science, McElroy would like to see greater emphasis paid to those studies in grade schools and high schools.

Nor is it just the school's responsibility. Even the right toys can spark a child's interest in science. Buying Legos, erector sets and serious games "are more likely to have them create an active imagination than passive toys," McElroy said.

3M executives concur. "You have to get to kids early," said Fred Palensky, 3M's chief technology officer.

"I was in grade school when Sputnik was launched" by the Soviet Union, said Palensky, a chemist. That launch ignited a space race between the United States and the Soviet Union. Palensky recalled the American culture was one that "motivated so many students at that time to think of science and engineering as a profession."

The success of 3M, Minnesota's largest manufacturing company, hinges on its ability to continually invent new products through technological innovation. Bottom line: It needs trained, creative scientists and engineers.

"We need a constant flow of that talent into our organization," Palensky said.

So 3M puts its dollars where its needs are. The 3M Foundation contributed about \$20 million last year to education programs, with most of them focusing on math and science.

"We are seeing kids in the fourth through eighth grade starting to be interested in science and all of a sudden getting turned off," said Alex Cirillo, vice president of the 3M Foundation. He's funding efforts -- inside and outside of classrooms -- in which children can have fun with science and develop their confidence in solving math and science challenges.

Cirillo, who holds a doctorate in chemistry, said that the company decided to build on its long-standing education commitment recently by becoming the lead national sponsor of the Young Scientist Challenge with Discovery Education.

Students in grades five through eight compete with one another by making videos about science concepts. Ten finalists will win a trip to New York, where they will compete for the top young scientist award and \$50,000 in U.S. savings bonds. (Entries are due May 20.)

James Kruse, an eighth-grader from St. John the Baptist School in New Brighton, Minn., was a national finalist last October. His video explained how objects "like the space shuttle stay in orbit by keeping their speed."

Kruse, who has been fascinated by dinosaurs since he was 2 years old, said he was thrilled to take part in science challenges inside NASA's Goddard Space Flight Center near Washington.

"After I left the competition, I had nine new best friends," he said. "You meet so many people with (analytical) minds similar to yours."

Tom Wood, a 3M corporate scientist and judge for the Discovery competition, said science opens the eyes of students to the world around them. "It is much more satisfying for a young person to learn how an iPod works than how to work an iPod," Wood said.

In a typical year, 3M, which has 76,000 workers, hires several hundred scientists and technical experts. "You have to have people who are savvy and educated in the systems and technologies of today," Palensky said.

In its St. Paul schools program, 3M invites parents to visit the Maplewood campus, a step Cirillo called critical because "a parent can actually see that child in the laboratory and see them as a potential

scientist."

Kara Ekunseitan, a senior in the program, said she's intrigued by science because "there can be more than one answer to a problem" and she likes to test her theories.

Ekunseitan, who plans to study mechanical engineering at Hope College, a private school in Michigan, will work at 3M this summer in a paid job. After [college](#), she said, "I could see myself working here."

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