

Public and Private Sector Initiatives in Education

Forum 2007

Thursday, October 25

GERALD MCELVY: I'd like to talk about the National Math & Science Initiative, as well as several other initiatives being pursued by the ExxonMobil Foundation to help improve the teaching and learning of math and science in the U.S. This includes efforts to increase participation by low income and under-represented minority students.

Our efforts in this area are not new, as we have a long history of supporting programs that improve education and career opportunities for many who have not been able to gain access, particularly those who desire to work in those disciplines.

ExxonMobil is one of the original supporters of organizations such as the National Action Council for Minorities in Engineering, SECME, and the National Society of Black Engineers. We support the Society of Women Engineers, which has one of my favorite programs called, "Introduce a Girl to Engineering." We sponsor a new math and science award given during the Hispanic Heritage Youth Awards. We've opened our three-to-one matching grant program for ExxonMobil employee contributions to be made to the United Negro College Fund, to the Hispanic College Fund, and to the American Indian College Fund, even if our employees don't have a direct affiliation with those institutions.

We also support programs at many different higher education institutions to help members of under-represented groups to matriculate and graduate in the math and science disciplines. Our current activities are influenced by the report of the National Academies, and the one that you know, entitled, "Rising Above the Gathering Storm."

Our analysis of this report resulted in a renewed sense of urgency to increase our efforts to help improve math and science education in the U.S., including increased outreach to historically under-represented groups. I believe most of us are aware of the sad statistics describing the troubled state of math and science education in the U.S.

Following are just a few that continue to haunt me personally. Only 29 percent of our fourth graders, 32 percent of our eighth graders, and even fewer, 18 percent of our high school seniors, performed at or above the proficient level in science. 30 percent of high school math students, and 60 percent of those in the physical sciences are taught by educators who either did not major in the subject in college or are not certified to teach it.

If you're a low income or minority student, you're twice as likely to be taught by teachers who have fewer than three years of experience. We certainly welcome them in the

classroom, but it's certainly a bit unfair that more inexperienced teachers happen to be teaching kids who are in need of the assistance the most.

For many low income students, the classroom situation borders on the catastrophic -- this is my judgment. An estimated 70 percent of their middle school math teachers majored in some other subject in college. According to the Education Trust, only about a quarter of low income and minority kids are taking an academic track in high school that will prepare them for college. Honestly, I think this is a new American tragedy.

You don't have to look very far into the future to see the resulting disparities in income, health, welfare, and social justice that will be experienced by this next generation of Americans. Despite plenty of discussion, and the many well-intentioned initiatives, we don't seem to be making much progress in closing the achievement gap. In fact, some are even taking the notion to calling it the disparities gap. For a company that employs 14,000 scientists and engineers, more than 2,000 of whom hold the Ph.D. degree, these data are, in fact, troubling. Not only in terms of the growing difficulty we will have in replacing this talent pool. We're also troubled by the lack of economic opportunity and social mobility that will be experienced by so many low income or minority young people in their lives.

Our company is committed to invest in helping improve communities where our employees live and operate facilities. We have taken notice of these adverse trends in the United States and resolved to try to help to do something about it.

What are we doing to help low income kids, a group that is overwhelmingly comprised of minority kids? What is working? What role can corporations and private foundations play, and how can we all do much better in this arena?

This past March, ExxonMobil took an unprecedented step. We announced the largest corporate grant directed at improving math and science education in U.S. history. ExxonMobil became a founding sponsor of the National Math & Science Initiative, or NMSI as we affectionately call it.

NMSI was created as a non-profit entity to support improvements in math and science education. NMSI's novel approach -- and this is my word here -- is to take successful and proven programs, and help them expand nationally. NMSI will initially take two existing programs with proven track records, UTeach, a program to develop highly effective math and science teachers that has been operating for more than a decade at the University of Texas at Austin, and the second program is a public school initiative that has achieved remarkable results for low income and minority kids in the Dallas Independent School District. The program focuses on increasing the numbers of trained advanced placement teachers in classes, and attracting more young people to take these rigorous courses. Teachers and students have the opportunity to earn incentives for passing scores in math, science, and English.

We believe the incentive program will give thousands of high school seniors a rigorous introduction to these subjects, and many of these students may, in fact, choose to major in these disciplines in college.

So why did ExxonMobil support NMSI's initial selection of these two programs? Knowing that a majority of low income students are receiving math and science instruction from teachers who have not majored in the field led to an easy decision on our part to support replication of the UTeach Program. UTeach currently certifies more than 70 teachers a year, and the number is growing. And 92 percent of them go directly into teaching at secondary schools, and almost half have chosen to teach in schools in low income areas.

What's more, 82 percent are still teaching four years later, a remarkable retention level when you compare it with the 56 percent nationally. NMSI, working with UTeach, will expand this successful program nationally by awarding competitive grants to individual colleges and universities of up to \$2.4 million for those who are willing to adopt the program.

NMSI has the ambitious goal of expanding UTeach to more than 50 universities over the next ten years. By 2020, more than 10,000 graduates of these programs will have impacted more than three million students. Placing hundreds of talented and dedicated teachers in public schools around the country will play a dramatic role in helping restore the United States to the top ranks of math and science education in the world.

As many UTeach graduates go on to teach in high poverty schools, I'm personally excited to see the impact that a scaled up version of UTeach could have on urban school districts across the country. I also believe UTeach graduates will complement and extend the benefits that we've seen from excellent programs such as Teach For America, and the impact that they have had in bringing bright, energetic young people to teach in urban schools across the country. In the coming weeks, NMSI will be announcing grants to 12 additional universities in the first round of expansion.

Moving to advanced placement, our deliberations were based on a thorough data collection and analysis effort, and we concluded that AP training and incentive programs designed to encourage more students to take AP classes can be remarkably effective. When the first AP incentive program began in ten Dallas schools in 1996, the percentage of students who scored passing grades on AP math, science, and English, was just two-thirds of the national average. A decade later it's two-thirds above the national average.

Dallas, by the way, is a school district that's approximately 80 or 85 percent minority, and a similar proportion are qualified for free or reduced lunch programs.

For minority kids, the results are remarkable, as African-American and Hispanic students have increased their Advanced Placement participation and passing rates by four and five-fold over the decade. The number of passing scores continues to increase, and it did so again in 2007.

Not surprisingly, success on Advanced Placement translated to even greater success in college. Over a six-year measurement period, we've seen that college graduation rates have risen from 15 percent for both African-Americans and Hispanic kids, to more than 60 percent for those kids who scored well on at least one Advanced Placement exam.

Today, Advanced Placement and pre-Advanced Placement incentive programs operate in some 80 Texas school districts, but NMSI intends to expand the program to at least 150 districts in 20 states, with the goal of boosting the numbers of passing AP math, science, and English test takers by more than 50,000 students.

While these Advanced Placement classes are terrific, we know they have to be directed to a wider group of students. A report by the College Board indicates that participation rates among both African-Americans and Hispanics are something less than half what their proportion in the population is. So there's ample room for us to grow these groups of young people in Advanced Placement.

NMSI has made excellent progress to date, in my estimation, within two months after the launch. In fact, for those of you that really want to know, the entire idea of NMSI is less than one year old. Elapsed time from inception of the idea to the national launch on March 9th of this year was six months; here we are six or seven months later, and NMSI's AP program has attracted proposals from some 28 states -- and more than 55 universities applied for UTeach programs.

NMSI representatives, many of whom are here today, spent weeks traveling around the country to interview applicants and their governors, and we thought it was very important that this be accepted by the legislative officers in the various states.

The former Assistant Secretary of Education, and my good friend and current President and Chief Executive Officer of NMSI, Tom Luce, said that he "wanted to look the applicants in their eyes to see if they had the dedication to sustain these programs." In September I was pleased to participate in some of the launches for the first seven events of the NMSI AP programs. I can report that the states were excited by the well documented success that AP incentive programs have enjoyed in Texas, and are confident that they will see similar results in their states.

In Arkansas, the Governor [Caperton] mentioned that the NMSI Grant will support legislative efforts that he is leading to help make AP courses available to every high school student in Arkansas. I applaud this outcome. I applaud Arkansas and the other winning states: Alabama, Kentucky, Massachusetts, Connecticut, Washington, and Virginia. And I can think of no better response to our initiative. Others such as New York City have even designed and begun to implement their own AP incentive programs.

Some of you may ask, "Why support a program based on incentives?" Well, first, we have real data that shows that it works, as demonstrated by the success of the program in

Dallas. We think extraordinary steps need to be taken to attract students who have historically not participated in Advanced Placement. In some schools, overcoming cultural stereotypes, or providing income substitution may be necessary to attract some students to Advanced Placement.

And, what is wrong with the notion of providing -- we call them mini-scholarships -- that will help these kids when many need it the most? So we've seen that incentives work, and we will continue to promote the use of incentives as long as we see a positive impact on the participation of low income and minority kids in Advanced Placement.

UTeach and the training and incentive programs for AP and pre-AP are major steps to providing children across the U.S. with the training and guidance they need to reach their full potential. But, even more steps will be needed, including raising nearly \$1 billion for the current NMSI plan. As you recall, I only mentioned 150 districts in 20 states and 55 universities. There are many more universities and many more states, and so this is a program that will need the collective involvement of many sectors of our society and economy.

I'd also like to mention some other programs that we hope will help inspire and motivate more low income and minority kids to aim for the stars, to succeed in their class work, and to enter college one day. First, we partner with the former astronaut, Dr. Bernard Harris, to provide two-week residential summer science camps at colleges and universities, and target disadvantaged or underserved youth who have demonstrated an aptitude in math and science. There's no cost to the camper -- all costs are paid by the ExxonMobil Foundation.

We began this program modestly in the summer of 2006 by holding two camps, one at the University of Houston, and the second at Southwest Oklahoma State University. We accommodated about 80 students at the two camps, but we were struck by the more than 1,000 applications we received with virtually no advertising. So in the summer of 2007, we expanded the offering to 20 camps at 19 different universities across the country. These camps were also successful. We will again expand our offerings in the summer of 2008.

What we've learned is that there is a significant unmet demand for this kind of offering. Not just because it comes at no cost to the student, but because there are many disadvantaged kids or low income kids, or whatever we choose to label them, who desire a rigorous academic summer camp experience rather than only playing basketball or idling their time away.

In the aftermath of Hurricane Katrina, ExxonMobil committed \$10 million to help the schools in greater New Orleans to restore and enhance their math and science programs. As you know, New Orleans is essentially rebuilding its entire system of public education. We see encouraging signs of progress and have started our initiative there by working with Xavier University to develop a state of the art math and science teacher training institute. This will serve the teachers of greater New Orleans. This institute has been endorsed by the leadership of the Recovery School District, by the State of Louisiana, Orleans Parish, the Charter School

Community in New Orleans, and several parishes around New Orleans. We hope it will make a major impact on the teaching of math and science in that area.

The final program I want to mention to you is one that I'm pretty excited about personally. It's a program called Reasoning Mind. It has the potential to significantly increase math proficiency among disadvantaged students. And you can see the entry screen or the portal to what is called RM City.



We think, in fact, that for many students simply having an attractive, modern technological approach -- this is the PlayStation Generation -- can encourage them to learn math. We still teach math the way I was taught, and Governor, I'm not sure if I was taught before you were, but it was a long time ago in both cases.

Reasoning Mind is an innovative Web-based fifth and sixth grade -- and soon to be seventh grade, and extended downward to fourth grade -- math education program that uses artificial intelligence, interactive graphics, and a world-class math curriculum to actively engage middle school students.

It includes an automated tutor, individual or self-paced learning, facilities for online tutoring, and online text books, and a glossary of mathematics terms. It also includes a point

scoring system, to allow students to be rewarded for work done correctly, and to help teachers assign grades and accurately assess progress.

Of great interest to us: consistent survey data shows that the great majority of students who have used the system enjoy learning math with Reasoning Mind. As many of you know as educators, that's about half of the game, if you can get them interested, you can get them to actually enjoy it. I once thought of math, Governor, as "I'd rather get my teeth pulled," but the reality is, it can be made much more acceptable to more kids.

Initial pilot results obtained through well-documented random control tests show improved math proficiency for all students, and a significant narrowing of the achievement gap between girls and boys, and between minority kids and non-minority kids. The ExxonMobil Foundation has been involved early on in this project, and we've supported development and implementation costs.

Despite the promising early results, the pace of adoption has been painfully slow. Last year the ExxonMobil Foundation offered to pay the cost of pilot programs in two school districts in Texas. The first district, in the Houston area, found a multitude of reasons not to do the pilot, and withdrew from consideration. The second district, which happened to be in the Dallas-Fort Worth area, immediately signed on and started up a pilot program for more than 200 fifth graders last January. While we're happy with the response in Dallas-Fort Worth, it's extremely difficult for us to understand the reaction of the Houston area district. It was disappointing to us, because this was a district with large numbers of economically disadvantaged African-American kids who desperately need the additional resources, as well as more creative approaches to educating them. The kids are already at risk. Many are performing well below grade level. So what would they lose from participating in the pilot? I wish I had the answer to that question, even today.

But, we're not discouraged. Now, more than 2,000 mostly economically disadvantaged students are learning middle school math through the Reasoning Mind system, and we expect the numbers to grow exponentially as more education professionals become aware of the program.

It will take the collective efforts of all of us to improve the economic future of our children, by ensuring they have the necessary tools to compete in the global economy. Math and science education are critical. We must involve all sectors of our society. I applaud the work that you do at the College Board. I applaud the work of all of you who are educators and teachers. We know how difficult it is. We're doing as much as we can to try to help and to try to be a part of the solution.