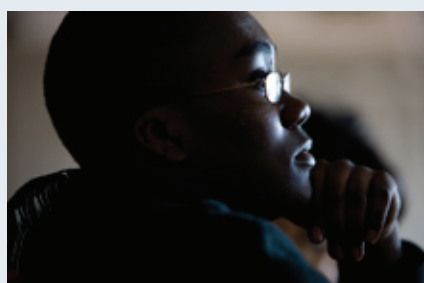


Changing Lives



Strengthening America



WE MULTIPLY SUCCESS

The National Math and Science Initiative

is an **agent of change** focused on improving student achievement in math and science across the public school system. NMSI brings best practices in management to the education sector by replicating **proven** programs on a **national** scale.

Here's what people are saying about NMSI:

President Obama highlighted the UTeach program and announced NMSI's second cohort of UTeach replication sites:

"To bring more educators into the classroom, the National Math and Science Initiative is working with Texas Instruments and the Dell Foundation to prepare almost 5,000 new math and science teachers in the next five years – through a program that allows young people to earn teaching certificates and science degrees at the same time."

– President Barack Obama, January 6, 2010
"Educate to Innovate" Campaign and Science Teaching and Mentoring Awards

President Obama announced a new effort to rally private sector support for education that spotlights NMSI programs:

"We're also announcing other commitments from companies and foundations and nonprofits that will create fun and educational programs for students in science museums, build hands-on learning centers and 21st century libraries, make sure that the students of military families have access to AP courses, and improve professional development for math and science teachers."

– President Barack Obama, September 16, 2010
Announcement of "Change the Equation" Initiative

U.S. Department of Education Secretary Arne Duncan highlighted NMSI's APTIP program and student achievement:

"The 67 schools in the new National Math and Science Initiative on AP are great examples of the power of quality instruction, more time spent on task, and rigorous, content-focused teacher training. The NMSI schools are having phenomenal success in raising AP scores among minority students. In the single year of implementation to date, the number of African-American and Latino students who scored a 3 or higher on AP exams in math, science, and English jumped more than 70 percent."

– Secretary of Education Arne Duncan, July 15, 2010
College Board AP Conference

A Message from the CEO:

Four years ago, the National Math and Science Initiative was just an idea.

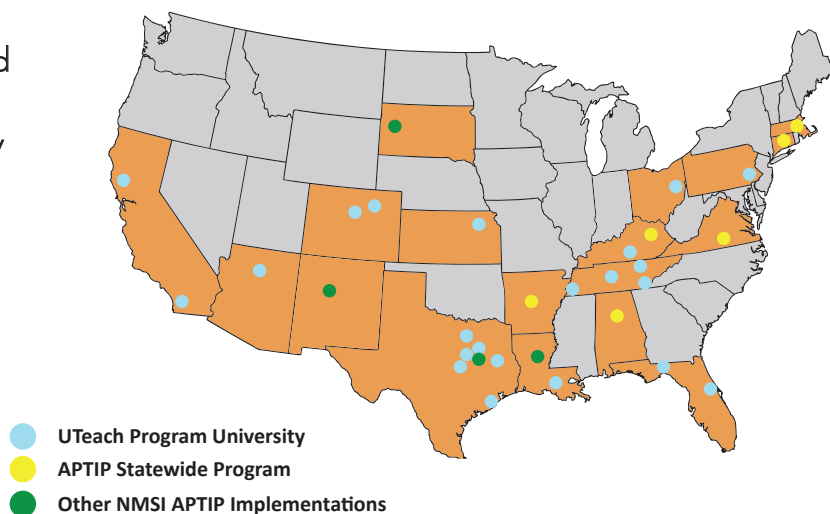
The concept for NMSI emerged from the blue-ribbon “Rising Above the Gathering Storm” report that issued an urgent Paul Revere call: Our nation must improve math and science education to catch up with our global competitors and defend against new threats.

NMSI not only hit the ground running in 2007, we picked up the best ideas in the country and rolled them out in schools and universities from coast to coast.

Within a year of its creation, NMSI had awarded grants to six states to bring college-level Advanced Placement courses to more students, raising the bar in math and science education in public high schools. A new foundation was established for more students – rich or poor, urban or rural – to succeed in college. Grants were also awarded to 13 universities to implement the highly successful UTeach program to recruit, inspire and train the next generation of math and science teachers.

By the next year, we had results showing NMSI had increased the AP passing scores in our grantee states by **52 percent**. Enrollment in the UTeach program doubled. By the third year, we had results showing the number of AP passing scores was raised **98 percent** in first cohort of high schools and **85 percent** in the second cohort of schools. Enrollment in the UTeach program tripled: Twenty-two universities are now offering the program, with more in the pipeline.

We’ve been so busy that, when we stepped back and looked at the U.S. map dotted with NMSI programs, we were surprised ourselves how much we have accomplished in four incredibly fast-paced years.



We are especially grateful to the stalwart supporters who have made this paradigm change in math and science education possible – **Exxon Mobil Corporation, Bill & Melinda Gates Foundation, Michael & Susan Dell Foundation, Carnegie Corporation of New York, Texas Instruments, O’Donnell Foundation** and **Lockheed Martin Corporation.**

But we are not finished yet. We have established without a doubt that our replication process works, but we need to expand these highly effective programs even further if the U.S. is to remain competitive in the global marketplace.

The recent follow-up report to the original 2005 “Rising above The Gathering Storm” study showed the ability of America to compete for quality jobs in the global economy has continued to deteriorate in the last five years. Consider these alarm signals:

- In 2009, 51 percent of U.S. patents were awarded to non-U.S. companies.
- China has replaced the U.S. as the world’s number one high-technology exporter and is now second in the world in publication of biomedical research articles.
- Almost one-third of U.S. manufacturing companies responding to a recent survey say they are suffering from some level of skills shortage.

The good news is that a strong start has been made in tackling those challenges, with NMSI leading the way. As you will see in this report, NMSI has made documented progress in four years. Thousands more of our young people are being prepared to succeed in college, careers, and life. In turn, that strengthens America.

It will take an even more concerted effort to raise the bar in math and science education for more of our children. Our nation needs a SUSTAINED investment in education and basic research to keep from slipping further behind. Congress, corporations and foundations must commit the necessary resources to effect change on an even broader scale. Doing so will not only help our nation compete globally, it will help us solve many of the issues before us: reviving the economy, improving healthcare, maintaining affordable and safe food, protecting the environment, developing secure energy sources, and defending against cyber threats.

We invite YOU to be part of the solution. Together we can produce an invaluable return on investment: a more secure future for our young people and our country.

Sincerely,



Tom Luce

Advanced Placement Training and Incentive Program

NMSI's Advanced Placement* Training and Incentive Program is re-imagining and re-invigorating America's classrooms. By opening the door wider to college-level AP courses, training teachers, and inspiring students, NMSI is preparing more of our students to succeed in college.

How do we meet the innovation challenge in the U.S.? Subtract the boredom from the classroom and add high expectations.

APTIP is a comprehensive approach that increases achievement in math, science, and English through content training, ongoing teacher and student support, open enrollment, and incentives.

NMSI has provided grants to replicate APTIP in six states: Alabama, Arkansas, Connecticut, Kentucky, Massachusetts, and Virginia. The goal is to broaden access to college-level coursework to more students and significantly improve passing rates.

"...we need to wake up and realize that one of the keys to our nation's historic success is now a wasting asset. Education made America great; neglect of education can reverse the process."

- Paul Krugman, Nobel Prize winner in Economics

Recent data confirms that alarming numbers of U.S. students are not ready for college — or to compete with their counterparts in other parts of the world.

The 2010 ACT scores — which measure college readiness in reading, science, math and English — showed that only 24 percent of the students in our country are college ready. What's more, the U.S. has dropped from first place to 12th place in college graduation rates when compared to the rest of the world.

The cost of this "college gap" can be seen every day in headlines about unemployment rates: The jobless figures for workers without a college degree are nearly double those for workers with college degrees.

Results from the most recent PISA (Program for International Student Assessment), administered by the Organization for Economic Cooperation and Development, ranked U.S. students 23rd in science and 32nd in math among 65 nations tested. Secretary of Education Arne Duncan called the results "a wake-up call."

President Obama has announced the goal of retaking the lead in college graduation rates by 2020. If we expand the Advanced Placement Training and Incentive Program, many more students will get the chance to master college-level coursework while they are in high school.

Why would expanding APTIP help?

- AP students are three times more likely to earn a college degree.
- Mastering the rigorous coursework is transformative: If a high school student passes just one AP course, the prospect of graduating from college jumps from 30 percent to 72 percent.
- International rankings show American students who take AP math and science courses are among the very few who compare favorably with their foreign counterparts.

Advanced Placement Training



NMSI's APTIP results are game changing.

Since 2008, APTIP has trained over 6,000 AP and pre-AP teachers in curriculum development, pedagogy, and content in the following subjects: biology, calculus, chemistry, computer science, English language, English literature, environmental science, physics, and statistics.

NMSI's state affiliates partnered with 65 schools for Cohort I and 75 schools for Cohort II, bringing APTIP to 140 public high schools in the 2009-10 school year in over 100 American school districts. For the 2010-11 school year, APTIP is operating in 229 schools in over 150 school districts, and we plan to reach 350 high schools by fall 2012.

NMSI APTIP COHORT I RESULTS FOR 2008—2010

- + There was a **97.7 percent increase** in AP exams passed in math, science and English, which is over **seven times** the national average.
- + There was a **154.6 percent increase** in AP exams passed in math, science and English by **African-American and Hispanic students**, compared to 27.7 percent nationally.
- + There was a **116.4 percent increase** in AP exams passed in math and science by **female students**, which is almost **13 times** the national average.

NMSI APTIP COHORT II RESULTS FOR 2009—2010

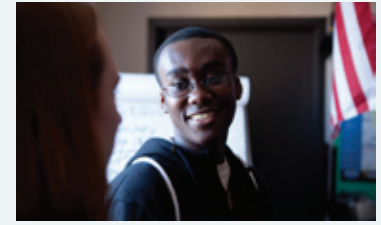
- + There was an **84.6 percent increase** in AP exams passed in math, science and English, which is more than **11 times** the national average.
- + There was a **107.3 percent increase** in AP exams passed in math, science and English by **African-American and Hispanic students**, which is over **eight times** the national average.
- + There was a **91.5 percent increase** in AP exams passed in math and science by **female students**, which is almost **17 times** the national average.

and Incentive Program



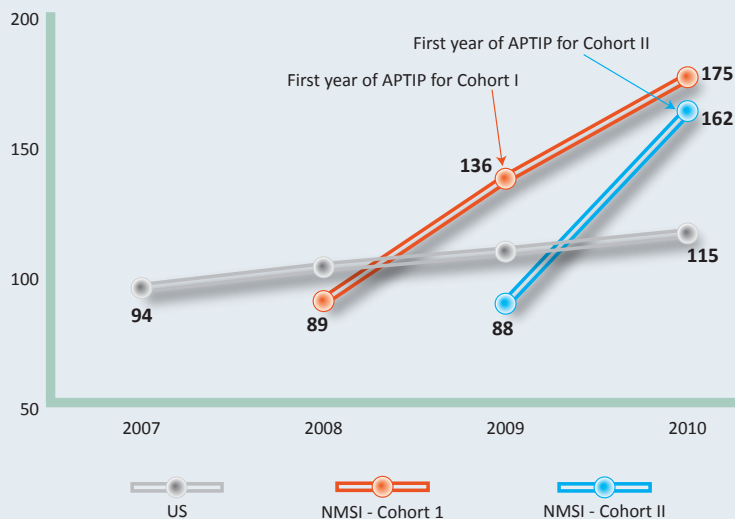
"It is a great way to have the college experience while in high school, and allows students to be developed and molded into college-ready adults."

APTIP Student



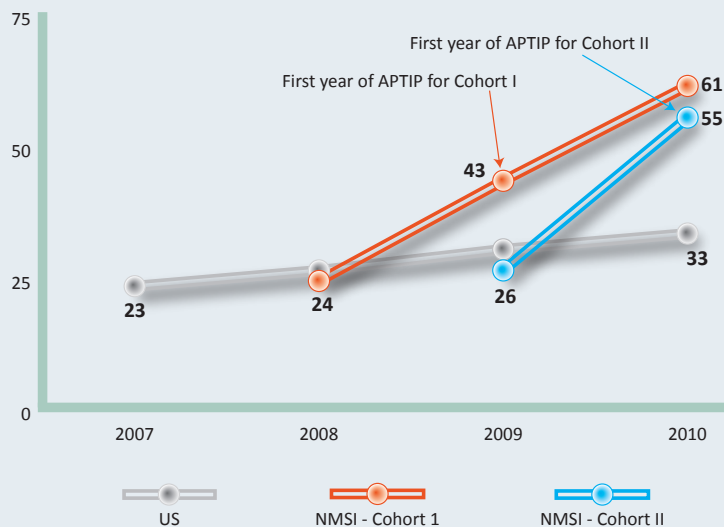
NMSI schools soared above national average after APTIP implementation.

Scores of 3 or greater in math, science and English AP exams per 1,000 juniors and seniors enrolled in U.S. and NMSI schools



APTIP Is closing the African-American and Hispanic achievement gap.

Scores of 3 or greater in math, science and English AP exams for African-American and Hispanic students per 1,000 juniors and seniors enrolled in U.S. and NMSI schools



Partners:

- + In fall 2010, NMSI launched the first phase of the new **Initiative for Military Families (IMF)**. NMSI is partnering with the Military Child Education Coalition to bring APTIP to high schools serving children in military families.
- + In order to reach rural schools that do not have the enrollment to support full AP programs, NMSI is also providing AP instruction online in South Dakota through the **Learning Power** program.
- + In addition, since 2008 NMSI has supported an AP Incentive program in New Orleans, **Advanced NOLA**, through Tulane University, as part of efforts to rebuild public schools there after the devastation of Hurricane Katrina.
- + NMSI also is working with the new **Advanced Programs Initiative (API)** to launch APTIP in New Mexico this fall, beginning with two high schools.
- + NMSI is working with the **Colorado Legacy Foundation** to launch the program in seven high schools this year.

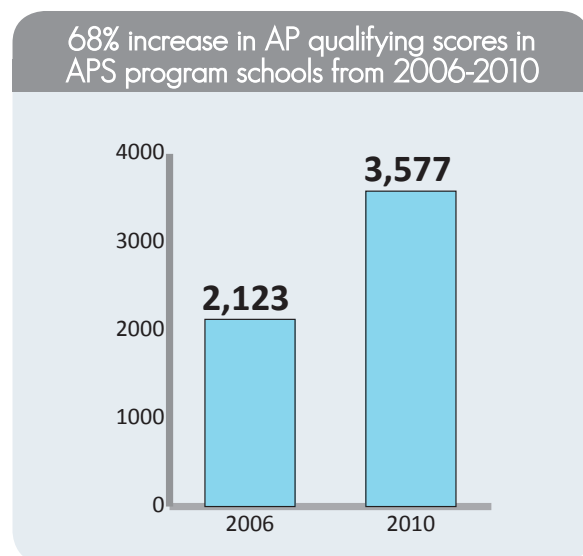
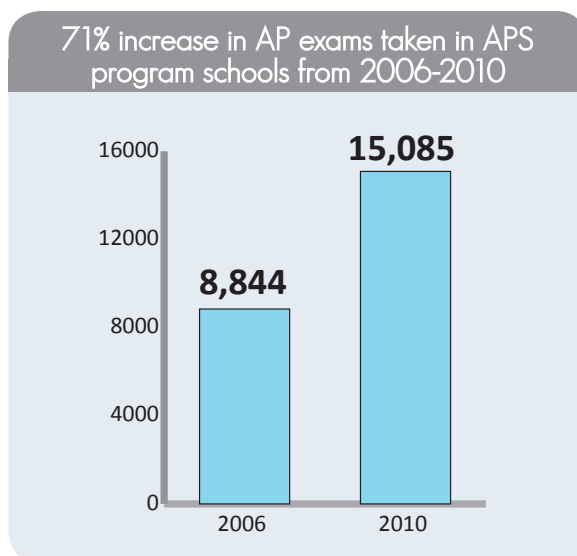
Advanced Placement Strategies

APTIP is modeled on a highly successful public/private partnership initiative launched in 1995 by **Advanced Placement Strategies™, Inc. (APS)**. APS works with Texas schools and private sector donors to increase participation and performance in Advanced Placement math, science, and English courses for traditionally underserved Texas public high students.

APS is currently working in 56 public high schools throughout Texas, supported by O'Donnell Foundation, Texas Instruments Foundation, Michael & Susan Dell Foundation, KLE Foundation, Roger and Rosemary Enrico Foundation, Hoblitzelle Foundation, and CH Foundation.

APS is changing the culture in these schools. Working in large, urban school districts with an 80 to 95 percent minority population and an 80 to 95 percent Free/Reduced Lunch population, APS has 15 years of data that confirm its success – producing substantial increases in the number of students passing college-level AP exams and sustaining those increases over time.

According to College Board data, from 2006-2010, the APS program schools produced a **71 percent increase** in the number of AP exams taken in math, science, and English, from 8,844 in 2006 to 15,085 in 2010, and a **68 percent increase** in the number of qualifying scores, from 2,123 in 2006 to 3,577 in 2010. Progress continues to be recorded in the original 10 schools that launched the program with a **15 percent increase** for all students and **29 percent increase** for African-American and Hispanic students. APS plans to add a minimum of 10 new schools in 2011.



Initiative for Military Families

NMSI is Strengthening Support for Children in Military Families

NMSI kicked off the first phase of the Initiative for Military Families in fall 2010 for children in America's military families.

The goal of this much-needed initiative is to provide consistent, high-level math and science education in high schools that serve military bases in the United States. For the many children whose parents are serving in the military, this is an opportunity to receive the cutting edge knowledge and inspiration that will help them succeed in the careers of tomorrow.

- ✦ There are 160,000 U.S. children who have a parent currently deployed in active duty combat, and over one million children have had a parent deployed during the last eight years. In total, there are over two million children of active duty, National Guard, and reserve military personnel in public schools in the U.S.
- ✦ These students face greater challenges than ever before. Their parents are often deployed for longer periods. In some families, both parents are deployed. Repeated tours place additional stress on the families. Because of frequent reassignments, children often attend multiple schools before they graduate.

The Initiative for Military Families a partnership between the National Math and Science Initiative and the Military Child Education Coalition to support these children. The initiative addresses the national STEM (Science, Technology, Engineering, and Math) need and helps military families by providing quality STEM education and continuity in that coursework when their family is transferred.

- ✦ The initiative brings NMSI's Advanced Placement Training and Incentive Program to public high schools serving military families. In Fall 2010, four high schools (two serving Fort Campbell in Kentucky, and two serving Fort Hood in Texas) began implementing the program.
- ✦ It is expected that with additional funding, the program will expand to include as many as 100 public high schools on or near military bases.
- ✦ The IMF program is already having an impact. Before the program was launched in the four schools, there were around 600 students enrolled in AP math and science classes. Thanks to the NMSI program, that enrollment has jumped to 994. And that means more children in military families are receiving the best math and science education our country can provide.

"Our future success and the future technological success of our nation is dependent on a pipeline of highly trained, highly capable technical talent. This project will help ensure that children of service members who are guardians of our freedom have access to the best education resources available."

– Dr. Ray O. Johnson, Lockheed Martin Senior Vice President and Chief Technology Officer

IMF Student Profile: Eduardo Gonzalez

Eduardo Gonzalez signed on for the AP calculus course his senior year at Harker Heights High School in Killeen, Texas, because he thought it will come in handy for a career in civil engineering and landscape architecture.

He is the president of the school's ROTC unit and proud to part of a military family, although it has not been without a cost. When he was in the fifth grade, both of his parents were sent overseas as active duty Army personnel. As his parents were sent from base to base, he attended three to four elementary schools and two middle schools.

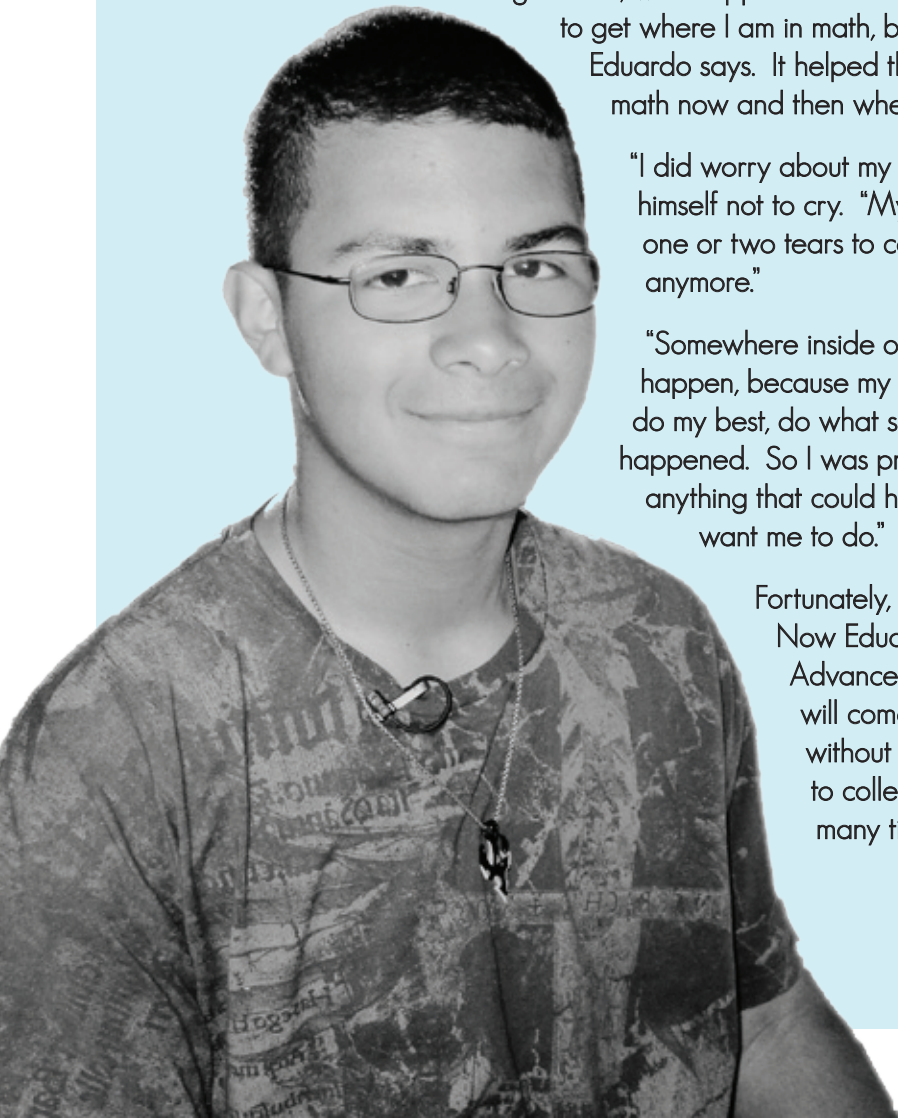
To make sure he got to attend all four years of high school in the same place, his parents made a tough decision: They asked to be assigned to Fort Hood, knowing that would mean more overseas deployments where they would be in harm's way (most of the Fort Hood Army units are regularly deployed to the Iraq and Afghanistan). As a result, his parents have been deployed five times while he has been in high school.

His mother left the U.S. Army to serve as a Major in the National Guard, but was recently deployed overseas again. His father is a Chief Warrant Officer 3 logistics officer. During his junior year, both of his parents were absent at the same time, so he was looked after by a temporary guardian, who happened to be a math teacher. "I have to work pretty hard to get where I am in math, but I am pretty confident in my math abilities," Eduardo says. It helped that his guardian could coach him with his math now and then when he needed it.

"I did worry about my parents," he said, but he coped by training himself not to cry. "My mom trained me to do that. I can only get one or two tears to come out if I tried to instigate tears. I don't cry anymore."

"Somewhere inside of me, I knew what to do if something would happen, because my mom always taught me to move on and do my best, do what she would want me to do if something happened. So I was prepared for the worst or prepared for anything that could happen. I tried to achieve what they would want me to do."

Fortunately, neither one of his parents was wounded. Now Eduardo is preparing for college, where the Advanced Placement credit from his calculus course will come in handy. He's already prepared to live without his parents when he graduates and goes off to college, Eduardo said, because he has done it so many times before.



IMF Student Profile: Bryahna Morton

Bryahna Morton is taking Advanced Placement courses in economics, English and pre-AP physics her senior year at Harker Heights High School to help her prepare for a career in dentistry.

"I would like to become a dentist because I am interested in the field of science, but I also like being social with people; becoming a dentist would allow me to use my science education and allow me to be involved in conversing with people. I would be miserable in a job without interaction with other people, so dentistry seems perfect."

Bryahna is one of the first participants in the Initiative for Military Families, which brings high-quality, college-level courses to students from military families. Bryahna's father, a Chief Warrant Officer 2, has been stationed all over the United States and the world – Fort Carson in Colorado, Fort X in New York, Afghanistan, Iraq, Italy, Korea, and now Fort Hood – in Texas.

"I do worry about him," she says. "You can't help but do all those things you can – we wrote, we emailed. We had to email in the beginning of his deployment to Iraq when all of that started; they had trouble calling, and the calls were limited. We had to wait until really late at night to get his phone call. The last deployment was easier. They have figured out how to organize those things."

Christmas without her dad was always "different," she said. "My mom would give us motherly loving gifts. My dad would send us boxes. During the month of December, we would have a box at our door every other day. The presents would come in brown cardboard boxes, so we would wrap them up and put under the tree. He usually tries to call us on Christmas, but his Christmas Day might be the day after or the day before or something like that."

During her school career, Bryahna has attended two high schools, one middle school, and three elementary schools, all in different cities or countries.

Where does she tell people she is from? "To be honest, I was actually born in Alabama. I visit family in Alabama, but I don't feel am from there. I tell people where I was born and the last place I was before I came to the current area, so I say, 'I was born in Alabama, but I moved here from New York.'"

It is difficult to get a part-time job when you are moving all the time and hard to make new friends, she acknowledged. "It's really hard to find friends like you had before, but you have to try to fit in."

"I know they call military dependents 'military brats,' but I am not a brat," she says with a smile that will be an asset in dentistry. "I'm proud of my schoolwork. I love to feel successful academically. Getting my college credits with this opportunity just makes me feel like I have a future in school."



South Dakota

Bringing rigorous math and science courses to the rural areas of South Dakota

Thanks to a grant from the National Math and Science Initiative, an innovative, online program called “Learning Power” is bringing college-level courses to high schools in South Dakota that average fewer than 100 students. It is now in nearly half the school districts in South Dakota. For many students, passing the AP courses piped in by Learning Power on the internet is their only hope of gaining enough college credits to afford college.

Learning Power students can choose from seven AP courses: AP Calculus AB; AP English Literature and Composition; AP English Language and Composition; AP Biology; AP Physics B; AP Statistics; and AP Chemistry.

If students score a 3 or higher on the College Board AP end-of-course exams, the program pays students \$100 cash awards.

With the AP courses under their belt, Learning Power participants are positioned for greater success as they enter college or technical programs. Many colleges and universities grant college credit for AP courses if student exam scores are 3 or higher. Success in Learning Power results in savings of college tuition for families, many of whom operate farms.

“I’m taking AP statistics online to get ready for college,” says senior Leslie Elmore. “It’s very challenging, but I think it will pay off.”

Leslie is one of the first students at Hot Springs High School in South Dakota to enroll in the Learning Power program. Like most of the students in the Advanced Placement program, she says frankly that she will not be able to afford college if she doesn’t earn college credits in advance. Her father is a saddle-maker in Hot Springs, South Dakota, and raises quarter horses. Her mother is taking some college courses herself so she can help put her two daughters through college.

Leslie helps out with the horses on their ranch - she’s a Prom Princess and a Homecoming Nominee, but she also is active in 4-H and knows how to fix fences, cut wood, and chase cows. During the summers she is often on the road at horse shows. Riding horses is a passion, but going to college is her goal. She will be the first in her family to get a college degree. She has competed in geometry and algebra competitions and is considering a career in math and science - if she can get enough college credits through her AP courses.



The Learning Power Story

Michelle Van Tassel has to drive 37 miles from her family's ranch in the vast rangelands of South Dakota to her classes at Philip High School. She often stays late at the school for extra-curricular activities. She plays in the school jazz band, sings alto in the All-State Chorus, and helps manage the volleyball, basketball, and track teams. She is also active in Future Farmers of America and 4-H. That means she often has to get up at 4 a.m. to finish her AP assignments.



Thanks to the Learning Power program, she is taking the course online, which fits with her jam-packed schedule. "Being able to log on at home after dinner or before school is nice," she says. Although watching the chemistry lessons on video required some adjustment, the online tutorials are convenient and she can replay a segment if she has difficulty with a concept.

"I really like chemistry," she says. "I took it last year and LOVED it, so I decided to take the AP chemistry course so I could continue with it."

She has her sights set on becoming a chemistry teacher, so the exposure to one of the top chemistry teachers in the state via Learning Power is an extra benefit. "It helps you see how to teach when you see someone really good at explaining science," she says.



Nicolas Quinn admits he "had a few rough spots" in school before a teacher encouraged him to take an AP course. It was just the challenge he needed. "I reversed direction my junior year and have been steady since," he says.

He now makes "A"s in pre-calculus, geometry, chemistry, and physical science and has developed an interest in physics. He's taking AP science courses online that might not otherwise be available at Hot Springs High School, which only has a total of 300 students.

"I enjoy math and science," he said. "I think the AP courses will help me do better on my ACT scores."

The online courses have their pros and cons, he says. While students don't have face-to-face interaction with their teachers, they can follow up with emails. "It's nice to be able to work with other students online. Sometimes I can work out problems quicker with them than by emailing the teacher."

Shelby Bergeson was one of the first at Philip High School to sign up for an online AP course. She's determined to succeed for a lot of reasons. She works part time in a local hospital where she has gotten to know a little boy with autism, which has inspired her to work with children with severe learning disabilities. "I love that little boy," she said. "I want to be able to teach kids like him."

Shelby also has a child of her own now and wants to create a better future for her 9-month-old daughter. She named her daughter "Breezy" for the soft breezes that flow across the prairie in summer and gave her a Sioux middle name that means "Mine."

Shelby was born on a Sioux reservation in the Black Hills and, although the schools she has attended have been small, Shelby has done well enough academically to earn early admission to Augustana College, a private, liberal arts college in Sioux Falls.

Each day she gets up early to feed her daughter, then takes her to day care while she attends classes. She works after school at the hospital; in the evenings, she juggles homework with parenting, which means she often finishes up her AP assignments late at night on a laptop lent to her by the school.

"Getting a passing AP grade is really important to me," she says. "The college credit will help me get through college quicker and help me get myself established."



UTeach Program



NMSI is giving tomorrow's teachers the tools they need.

The U.S. is failing to produce and retain sufficient numbers of qualified math and science teachers to keep America internationally competitive. It is estimated that the U.S. will need 200,000 more math and science teachers by 2015. Talented math and science teachers with strong content knowledge are urgently needed to help our students reach their full potential.

NMSI's UTeach program transforms the way universities prepare teachers. UTeach was developed at The University of Texas at Austin in 1997 to improve the way colleges and universities recruit, prepare, and inspire new math and science teachers. This program encourages more math and science undergraduate majors to pursue a teaching career.

The UTeach program produces teachers that are confident and competent in their subject matter.

In partnership with the UTeach Institute, NMSI is replicating the UTeach program to greatly increase the number of qualified math and science teachers in America's public schools. In 2007, over 50 universities applied to NMSI to participate, and 13 were selected for our first replication cohort. By fall 2010, the program was being implemented in 22 universities. It is anticipated that the UTeach program will be implemented in 25 more universities in the next five years.

The U.S. Bureau of Labor Statistics predicts that over 50% of the fastest growing jobs in the next decade will require substantial math and science preparation.*

The UTeach Institute was created in 2006 to provide direction and leadership to expand and replicate the UTeach mathematics, science, and computer science teacher preparation program at universities across the nation. The primary goal of replicating UTeach is to increase the quantity and quality of mathematics, science, and computer science teachers in American public schools. Since its inception, UTeach has doubled the number of mathematics and science majors being certified at The University of Texas at Austin.



"It provides an opportunity for us to experience actual public school classrooms and meet with mentor teachers and other students in the program."

UTeach Student



The core elements of the UTeach program include:

- + Active recruitment and financial incentives, such as offering the first two courses free or providing tuition stipends.
- + A compact degree program that allows students to graduate in four years with a degree and a teaching certification.
- + A strong focus on acquiring deep content knowledge in math and science, in addition to research-based teaching strategies focusing on teaching and learning math and science.
- + Early and intensive field teaching experience, beginning in the students' first semester.
- + Personal attention and guidance from highly experienced master teachers, faculty and successful public school teachers.

Experience has shown that:

92%
82%

of students who complete the program go into public school teaching.

of UTeach graduate hires are still teaching after five years, compared with fewer than 65% nationally.

“

Here is a little dose of reality about where we actually rank today:

Sixth in global innovation-based competitiveness, but **40th** in rate of change over the last decade; **11th** among industrialized nations in the fraction of 25-to-34-year-olds who have graduated from high school; **16th** in college completion rate; **22nd** in broadband Internet access; **24th** in life expectancy at birth; **27th** among developed nations in the proportion of college students receiving degrees in science or engineering; **48th** in quality of K-12 math and science education; and **29th** in the number of mobile phones per 100 people. This is not a pretty picture, and it cannot be wished away.”

”

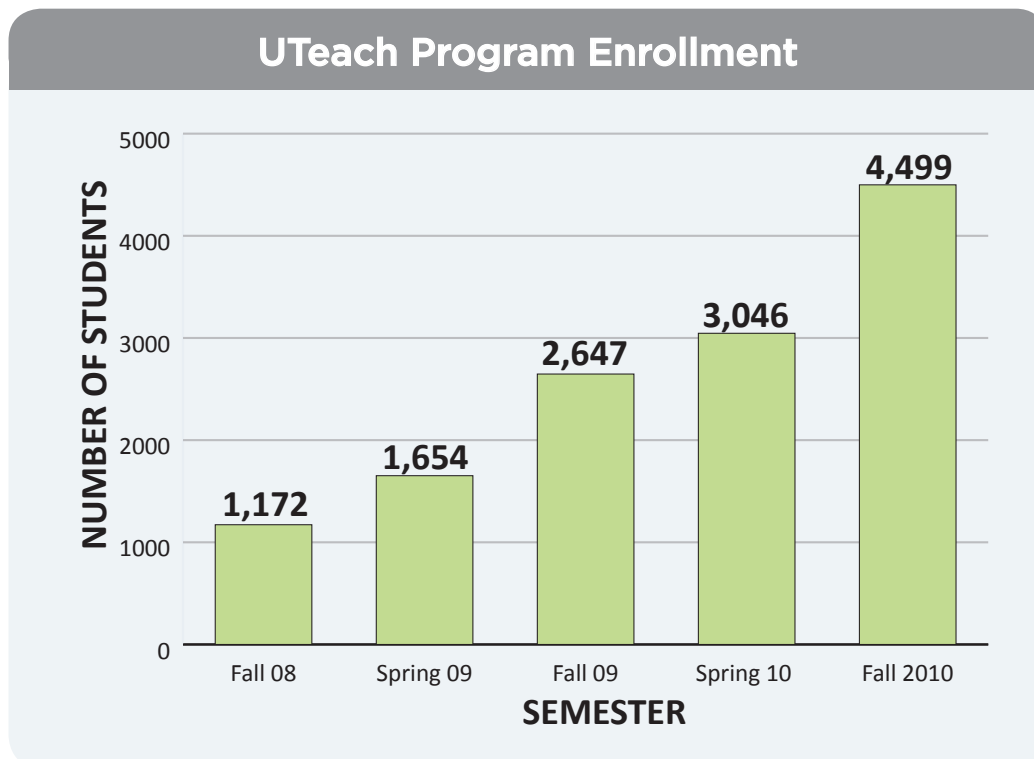
– Charles Vest, President, National Academy of Engineering

UTeach Program

UTeach Program Results

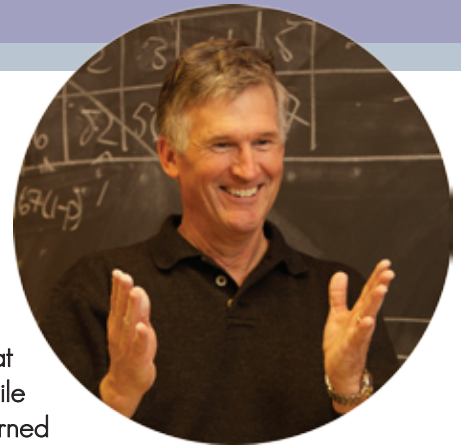
UTeach is providing a new wave of much-needed, highly qualified math and science teachers:

- + This fall, the UTeach program is being implemented at 22 universities with enrollment of 4,499 students.
- + The UTeach Institute estimates that the new math and science teachers from the first cohort of 13 universities alone will impact more than one million students over the course of their teaching careers, based on the average retention rate for UTeach graduates.
- + UTeach was mentioned in many "Race to the Top" federal grant applications, including Georgia and Massachusetts, which were among the 10 states selected to receive funding.
- + There is demand to expand UTeach to many more universities across the U.S., and NMSI is looking for partners to meet this demand.



Teachers Count

Dr. George Johnson has won multiple awards for his engineering research as well as his teaching – he’s been honored by Sandia National Laboratories and as one of the top teachers at the University of California at Berkeley. But, what really gives him a kick is seeing the light come on when students in the CalTeach program get excited about teaching math and science.



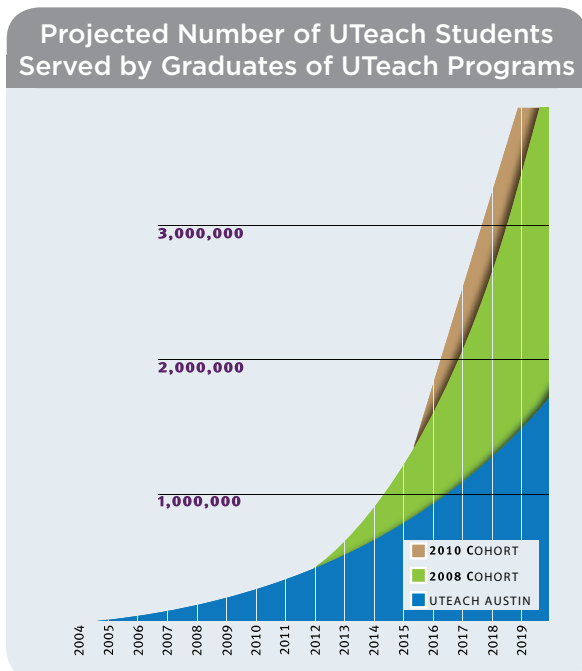
Johnson was drawn to teaching himself while he was working on his doctorate at Stanford University, and his research advisor asked him to take over his class while he was gone a few days. “It was a little daunting,” Johnson remembers, “but it turned out that I greatly enjoyed teaching. The engagement with really bright students makes it a LOT of fun.”

Johnson is a professor in the Department of Mechanical Engineering at Berkeley, but he also teaches several key courses in the CalTeach program, which is part of the **UTeach** program for training math and science teachers. The teaching program at Berkeley is proving so popular with students that enrollment has grown from fewer than 20 students per semester five years ago to more than 175 today.

Johnson’s enthusiasm for teaching math and science is evident in the energy he brings to the classroom – along with the occasional oddball idea like having students measure the water flow in a toilet to demonstrate how differential equations work.

“One of the things I really want to do with CalTeach is have the teachers be reflective about what they are doing and not just get into a routine of lecture/give homework/grade – the kind of rut we all can get into. We really want our teachers to reflect on what they are doing, what they are seeing.”

The payoff is seeing CalTeach students develop into poised and prepared teachers by their senior year – with a commitment to go out and make it a better world, as many do.



“A lot of our students get their field experience in schools that might not be considered the ‘best’ schools – many are quite challenged, with a high percentage of under-represented and low-income students. We want our CalTeach graduates to come out with the belief that ALL students can learn math and science, that it isn’t limited to any population. And we want them to carry that belief into what some would call under-served schools,” Johnson said. “We hope CalTeach will be a way these schools can offer learning at the highest level for all of the students in what we view as the critical subjects of math and science.”

More than that, he said, “We really hope there is a long-term payout to this that extends well beyond when we retire, so that the teachers we are developing will still be in the classroom years from now, and we will still be developing outstanding teachers at CalTeach for the next generations.”

Young Leaders Program

The American economy relies on the productivity, entrepreneurship, and creativity of its people. Of the 10 fastest-growing occupations, eight are related to science, math or technology. Yet, women, in particular, are being left behind in the critical fields of math and science. To maintain its scientific and engineering leadership amid increasing economic and educational globalization, the U.S. must aggressively pursue the innovative capacity of all its people - women and men.



Women constitute 46 percent of the workforce in the U.S., but hold just 26 percent of the jobs in STEM fields. Those numbers have to change – and soon – if the U.S. hopes to remain a leader in today's global marketplace. The issue is not that girls can't do the work. Girls have closed the gap in many math and science achievement measures with boys, and girls are frequently the winners in top science competitions like the Intel Science Talent Search, sometimes called the "Junior Nobel Prize." The problem is girls often don't feel welcome in STEM classes or jobs.



In order to meet this unique challenge, the **National Math + Science Young Leaders Program** was launched in 2009 to provide leadership role models for young women at key decision-making points in their academic careers – generally their junior year of college.

This year, 22 college students from around the country were matched with FORTUNE 500 executives who provided leadership mentoring. During the five-month program, the students participated in webinars and visited their mentors at their job sites. At the program's concluding "capstone event" in New York City in June, the students finally had the opportunity to meet one another and share their personal experiences and hopes for the future.

By the end of the program, the college students reported they had been inspired – to aim higher, go to graduate school, get their Ph.D., become a CEO, get involved with science policy, or mentor the younger generation. As one put it, "I want to show them that social stereotypes about women in science being 'uncool' are silly."

"This was a tremendous experience. It not only helped me think about my future differently, but it also conveyed the importance of developing young girls and other women. It's about women empowering women."

- 2010 Student Participant

Students Give NMSI Programs an A+

Cindy Cao, 17, a senior, has taken seven **APTIP** classes and found AP sciences the most interesting, particularly AP biology and calculus. She works at a shop in the mall and hopes to become the first person in her family to attend college. "AP is tough at first, but once you figure out how to balance your time and fix your study methods to earn a good grade, the triumph feels good. Plus the depth at which you study in AP is actually really interesting and might surprise you. Lastly, of course, it will really help you in college!"

Matthew Chen, 21, majoring in microbial biology, says he would definitely recommend the **UTeach** program to friends because of "the support that you get from the program, from the mentor teachers to the professors."

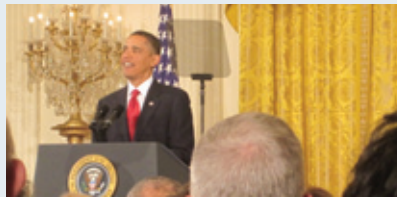
Andrea Gonzalez Negrete, 19, a UTeach math major, had a teacher who inspired her to study math and now wants to work with young people herself and make a difference. Besides, she says, of the **UTeach** program: "It's fun! The courses are amazing."

"It is a great way to have the college experience while in high school, and allows students to be developed and molded into college-ready adults," says Vinh Duc Nguyen, 17, a junior taking three **APTIP** courses. "I want to major in biology. Since my freshman year, I have been so intellectually excited by the themes of biology, that so much of who we are and the world we live in is so deeply rooted and determined by the very core of our genetic expressions. I think that is so unbelievably cool."

Max Zisman, 19, a sophomore pure mathematics major, has had a lifelong interest in math. He enjoys the **UTeach** program, he says, "because it focuses on actually teaching rather than the educational system."

2010

THE YEAR THAT WAS



jan

NMSI starts off the year with its Advanced Placement Training & Incentive Program (APTIP) expanded from 67 schools to 145 schools in six states, and the UTeach program in 18 universities in nine states.

President Barack Obama highlights the success of the UTeach program at a White House event spotlighting the importance of teachers in shaping our country's future.

jul

NMSI names Kenneth P. Cohen, Vice President of Public and Government Affairs for ExxonMobil, and Ray O Johnson, Chief Technology Officer for Lockheed Martin Corporation, as the newest members of its board of directors.

U.S. Secretary of Education Arne Duncan, during an address to the annual meeting of the AP National Conference, singles out NMSI for its remarkable progress with students participating in the AP incentive program.

NMSI honored 18 outstanding teachers from APTIP as "NMSI All American Teachers" for their remarkable contributions to their students and the teaching profession in May in Washington, D.C.

APTIP Math Teachers:

Kelley Rouze, Montgomery, Ala.
Jeana Williams, Greenbrier, Ark.
Fred Carofano, East Hartford, Conn.
Dianne Beckman, Paducah, Ky.
Christine Nagle, Malden, Mass.
Noel-Ariel Cabautan, Farmville, Va.

AP English Teachers:

Marlee Neel, Hueytown, Ala.
Dawn Higgs, Vernon Brooks, Ark.
Patricia Trask, Coventry, Conn.
Coury Osbourne, Lebanon, Ky.
Nora Tsoutsis, Roxbury, Mass.
Linda Gallagher, Amelia Court House, Va.

AP Science Teachers:

Marilyn Niemann, Irondale, Ala.
Shelley Forbess, El Dorado, Ark.
Laura Dodita, Stamford, Conn.
Anthony Mires, Glasgow, Ky.
Amy Johnson, Northampton, Mass.
Amy Shaver, Rocky Mount, Va.

feb

The College Board releases its sixth annual AP Report to the Nation, which highlights the effectiveness of NMSI's AP incentive program in driving student achievement.

CEO Tom Luce is a guest on the nationally syndicated, issues-driven television program, *McCuiston*, on the topic of "Education and Our Nation."

Cornell University researcher Dr. C. Kirabo Jackson releases "A Stitch in Time: The Effects of a Novel Incentive-Based High School Intervention on College Outcomes." This report demonstrates that AP incentive programs, like NMSI's, increase the number of students attending and graduating from college, especially minority students.

aug

NMSI announces its superlative, second-year results from APTIP, which led to a 98 percent increase in the numbers of AP exams passed in participating schools - more than seven times the national average. The increase in AP exams passed by minority and female students were 155 percent and 116 percent, respectively.

NMSI partners with Advanced Programs Initiative in New Mexico to launch a program in two new high schools to boost teacher effectiveness and students' math and science achievement.

mar

The U.S. Department of Education awards \$2.25 million in Teacher Quality Partnerships grants to NMSI to implement the UTeach program at Cleveland State University in Ohio. Additional funds through Race to the Top federal grants facilitate implementation of UTeach at University of Tennessee at Chattanooga and University of Memphis.

CEO Tom Luce testifies at the Texas House Committee on Public Education, which is focused on policies making quality science, technology, engineering and math (STEM) education available to all students and implementing strategies to increase the supply and retention rate of quality STEM teachers.

sep

NMSI announces the expansion of UTeach to its 22nd campus, the University of Colorado at Colorado Springs, thanks to the support of philanthropist Lyda Hill.

The White House announces the launch of "Change the Equation," a CEO-led effort to dramatically improve STEM education in the U.S. NMSI's APTIP and UTeach programs are prominently featured as best practices.

CEO Tom Luce appears on C-SPAN's "Washington Journal" and CNN's "Chalk Talk" to discuss the urgency of the need for better math and science education, which is essential to meeting our economic challenges.

Dr. Mary Ann Rankin, Dean of the College of Natural Science at The University of Texas and founder of the UTeach program, participates in NBC TV's "Education Nation" summit in NYC.



apr

NMSI announces the inaugural winners of its Teacher of the Year awards, celebrating the accomplishments of the top math, science and English teachers in the six states that have implemented NMSI's AP program.

NMSI is spotlighted in a national television commercial produced by ExxonMobil, one of NMSI's founding sponsors, during the 2010 Masters Golf Tournament.

UTeach is honored as a "Best Practice" model by the Center for Excellence in Education (CEE) at the launch of the new National Lab Skills Symposium in McLean Va.

Tom Luce appears on KERA-TV's program, "Think," with host Kryss Boyd.

oct

NMSI board member Dr. Bernard Harris, the first African-American to walk in space, accepts the Award of Distinction from the Science and Engineering Alliance, in recognition of NMSI's success in boosting minority students' achievement in math and science.

NMSI's Young Leaders Program is spotlighted at *Fortune's* annual "Most Powerful Women Summit" in Washington, D.C. A recent program graduate and an executive mentor from NMSI founding sponsor ExxonMobil spoke to the group, promoting the successful mentoring and leadership program and recruiting new executive participants for 2011.

More than 15,000 students are enrolled in NMSI's APTIP program.

may

Lockheed Martin Corporation awards a grant to NMSI to launch the Initiative for Military Families at public high schools near four U.S. military bases, ensuring that children of military families have access to and succeed in AP math and science classes.

Dr. Stephen Robinson, special assistant in the Office of Elementary and Secondary Education for the White House Domestic Policy Council, gives the keynote address at the inaugural All American Teacher of the Year Awards Luncheon in Washington, D.C.

CEO Tom Luce testifies before the U.S. Senate Committee on Commerce, Science and Transportation on the topic of building a high-tech workforce.

The UTeach Conference draws a record 410 participants to its annual conference in Austin, with attendees from 21 current replication sites across nine states and 17 other universities interested in replicating the program. Sally K. Ride, former NASA Astronaut and NMSI board member, delivers the keynote address.

nov

NMSI announces that enrollment figures for the UTeach program have tripled for the 2010-2011 school year. More than 4,499 students are enrolled in the teacher training program in the fall semester.

NMSI's "Learning Power" program is implemented by 72 school districts in fall 2010-11, representing nearly half of the 153 school districts in the state.

Tom Luce speaks at the Atlantic K-12 Education Forum with top national education leaders in Washington, D.C.

jun

NMSI hosts the Fortune Young Leaders Program in New York, bringing together FORTUNE 500 female executives and the young college women they have mentored, for a two-day leadership conference.

Newsweek releases its list of "America's Best High Schools." Of the 1,600 schools identified (representing only six percent of all U.S. high schools), 36 high schools that have implemented NMSI's AP incentive program are on the prestigious list.

Enrollment continues to grow in the innovative South Dakota online AP program developed by NMSI and "Learning Power" to deliver college-level courses to students in rural areas. Registration for fall 2010 classes drew interest from more than 407 students, more than doubling the 190 student enrollment in 2009.

dec

NMSI Chief Program Officer, John Winn, participates on the Florida discussion panel for the Foundation for Excellence in Education's third annual Excellence in Action Summit.

Colorado Legacy Schools Advanced Placement Training and Incentive Program reception is held in Denver, Colorado, to rally support for first seven APTIP schools in Colorado.

Virginia Advanced Study Strategies is awarded the L. Douglas Wilder Award for Excellence, Virginia Government Award at the Richmond Convention Center.

"Education for Innovation" is held at Town Hall, The Newseum in Washington, D.C., featuring Secretary of Education Arne Duncan and *New York Times* columnist Thomas Friedman.

Here's how you can help:

Help us multiply success across our nation. We are off to a great start, but we need more allies for this crucial national mission. You can get involved by:

- + **Providing a donation.** Help invest in America's future. Donations from corporations, foundations, and individuals are needed to move math and science education forward.
- + **Applying for a grant.** Encourage your state leaders or university leaders to apply for NMSI grants in the future.
- + **Supporting NMSI programs in your area.** Local donations, mentors and in-kind support will leverage the impact of NMSI grants close to home.
- + **Contacting government officials.** Call on your governors, state education commissioners and Members of Congress to support science, technology, engineering and math (STEM) as education priorities.

Contact us at info@nationalmathandscience.org for more information.

Giving Options

You can help fund the implementation in a public high school of the AP Training and Incentive Program - which has demonstrated proven ability to increase the number of students passing college-level work in math, science, and English.

APTIP or Initiative for Military Families (One school)

ANNUAL COST: \$120,000 per site per year over three years*

IMPACT: 1,400 students

TOTAL THREE-YEAR COST: \$360,000

UTEACH (One campus)

TOTAL COST: \$2.2 million over four years

IMPACT: Each new math and science teacher could inspire at least 150 students a year; over the course of a 25-year career, that teacher could equip more than 3,750 students for careers in science, technology, engineering and math. It is expected that the current universities implementing UTeach will graduate more than 1,000 math and science teachers a year by 2018. The graduates from the 13 universities in the first cohort alone have the potential to impact more than a million students during their teaching careers.

*Average cost, depending on state and local variables and number of program schools in the area.

Multiplying Success Across America

NMSI would like to thank our generous supporters for making these results possible and for their commitment to improving math and science education in America.

A non-profit organization, NMSI has received major funding support for its ground-breaking national initiatives from **Exxon Mobil Corporation, Bill & Melinda Gates Foundation,** and **Michael & Susan Dell Foundation,** with additional support from **Carnegie Corporation of New York, Texas Instruments, Lockheed Martin Corporation,** and **O'Donnell Foundation.**





NMSI BOARD OF DIRECTORS

Tom Luce
CEO, National Math and Science Initiative;
former Assistant Secretary, U.S. Department of Education

Bruce Alberts
Editor-In-Chief, *Science Magazine*;
former President, National Academies

Norm Augustine
Lead Director, NMSI;
former Chairman and CEO, Lockheed Martin Corporation

Gaston Caperton
President, College Board;
former Governor of West Virginia

Kenneth P. Cohen
Vice President, Public and Government Affairs
Exxon Mobil Corporation

Nancy Grasmick
Superintendent, Maryland State Department of Education

Bernard Harris, Jr., MD
President and Founder, the Harris Foundation, Inc.;
former NASA astronaut, first African-American to walk in space

Ray O Johnson
Senior Vice President and Chief Technology Officer, Lockheed
Martin Corporation

Shirley Malcom
Head of Directorate for Education and Human Resources,
American Association for the Advancement of Science

Sally Ride
President and CEO, Sally Ride Science;
former NASA astronaut, first American woman in space

Arthur F. Ryan
Chairman, CEO, and President, Prudential Financial, Inc.

Beverly Daniel Tatum
President, Spelman College

Roy Vagelos, MD
former Chairman and CEO, Merck & Co., Inc.

Charles M. Vest
President, National Academy of Engineering;
President Emeritus, Massachusetts Institute of Technology

NMSI LEADERSHIP

Tom Luce
Chief Executive Officer;
former Assistant Secretary of Education and Co-Founder
of the National Center for Educational Accountability

Clay Mulford
Chief Operating Officer;
former Senior Partner, Jones Day

John Winn
Chief Program Officer;
former State Education Commissioner of Florida

Gregg Fleisher
National AP Training and Incentive Program Director;
former President of AP Strategies

Dr. Mary Ann Rankin
Director of UTeach National Replication;
Dean of the College of Natural Sciences at The University
of Texas at Austin

Tracy LaQuey Parker
Director of the UTeach Institute



WE MULTIPLY SUCCESS

National Math and Science Initiative
325 North Saint Paul Street
Suite 2900
Dallas, Texas 75201
214-665-2500
www.nationalmathandscience.org