

The National Math and Science Initiative's College Readiness Program

BOOSTING YOUR STUDENTS' POTENTIAL FOR COLLEGE SUCCESS!

Welcome

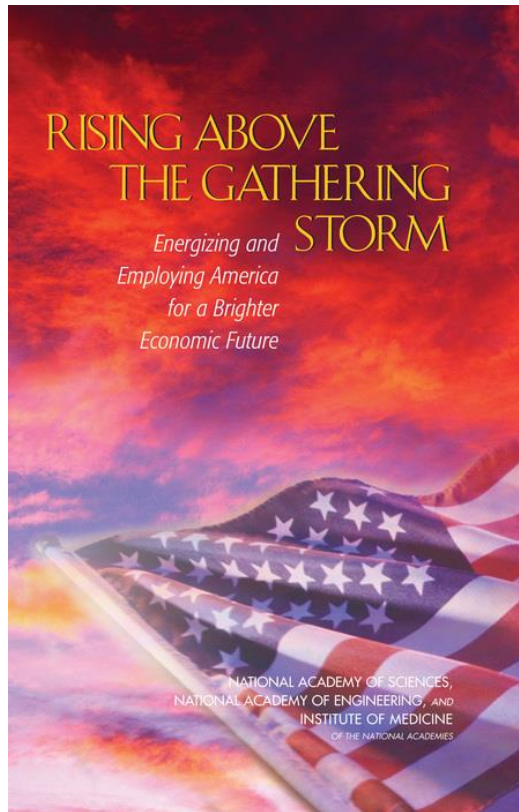
Brian Henry, Ed. D.

- Superintendent, Waynesville R-VI School District
- Serving students on the Army's Fort Leonard Wood (all branches are represented on Fort Wood)
- Approximately 75% military-impacted student population
- High transiency rate

Jarred Wheeler, Ed. D.

Crystal Ward, National Math and Science Initiative

ORIGINS



The National Academies of SCIENCES • ENGINEERING • MEDICINE

COMMITTEE ON PROSPERING IN THE GLOBAL ECONOMY OF THE 21ST CENTURY

NORMAN R. AUGUSTINE (Chair), Retired Chairman and CEO,
Lockheed Martin Corporation, Bethesda, MD

NANCY S. GRASMICK,
Maryland State Superintendent of Schools, Baltimore, MD

PETER O'DONNELL, JR., President,
O'Donnell Foundation, Dallas, TX

LEE R. RAYMOND, Chairman and CEO,
Exxon Mobil Corporation, Irving, TX

P. ROY VAGELOS, Retired Chairman and CEO,
Merck, Whitehouse Station, NJ

This 2007 report highlighted the erosion of U.S. competitiveness in science & technology and called for a national effort to increase America's talent pool by **vastly improving K–12 science and mathematics education.**



OUR SOLUTION

PHILOSOPHY

True educational transformation requires meeting students and teachers where they are today—in public school classrooms across the country—and offering effective programs that ensure all students graduate from high school college and career ready

MISSION

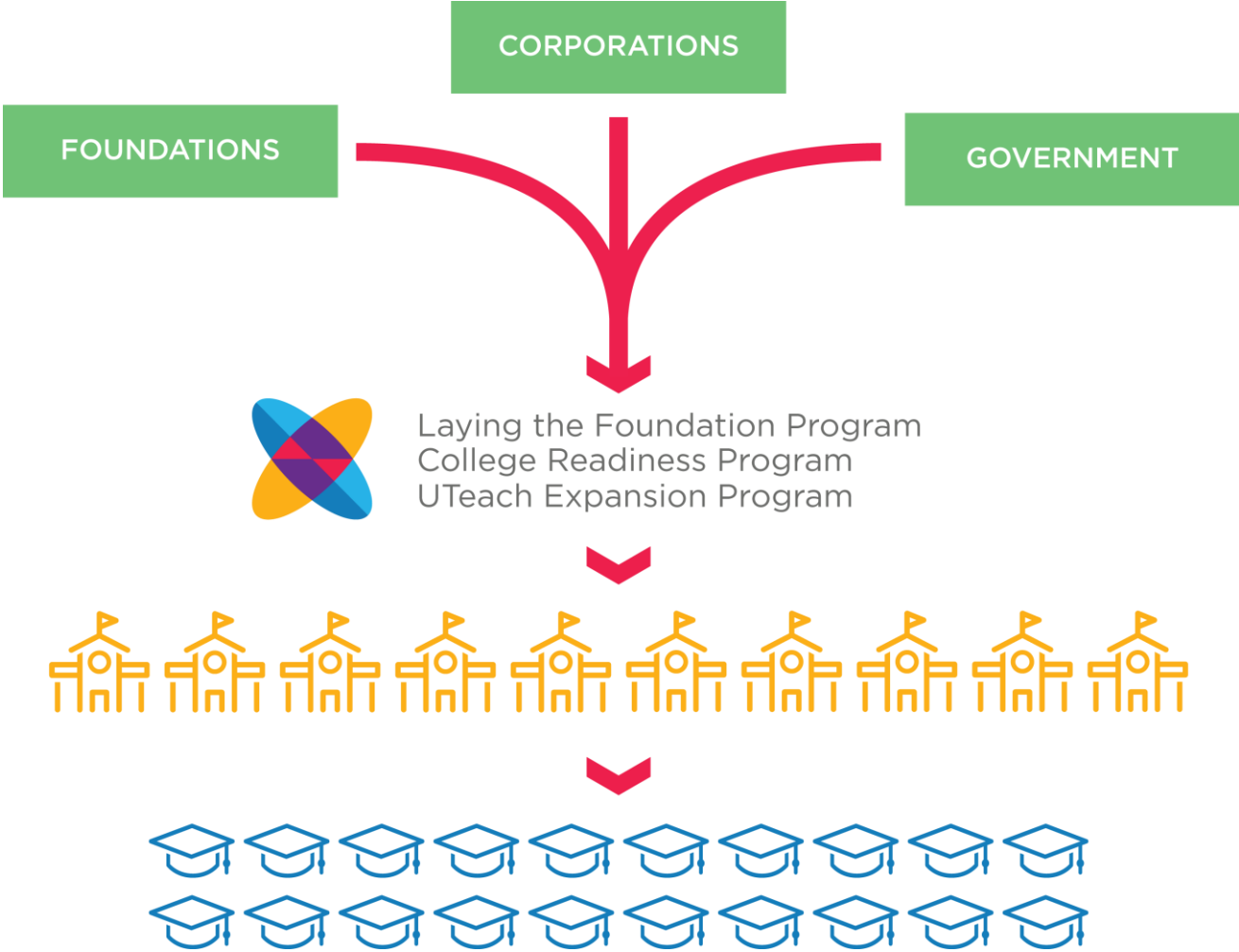
To significantly improve student opportunities and achievement by advancing STEM teaching and learning

APPROACH

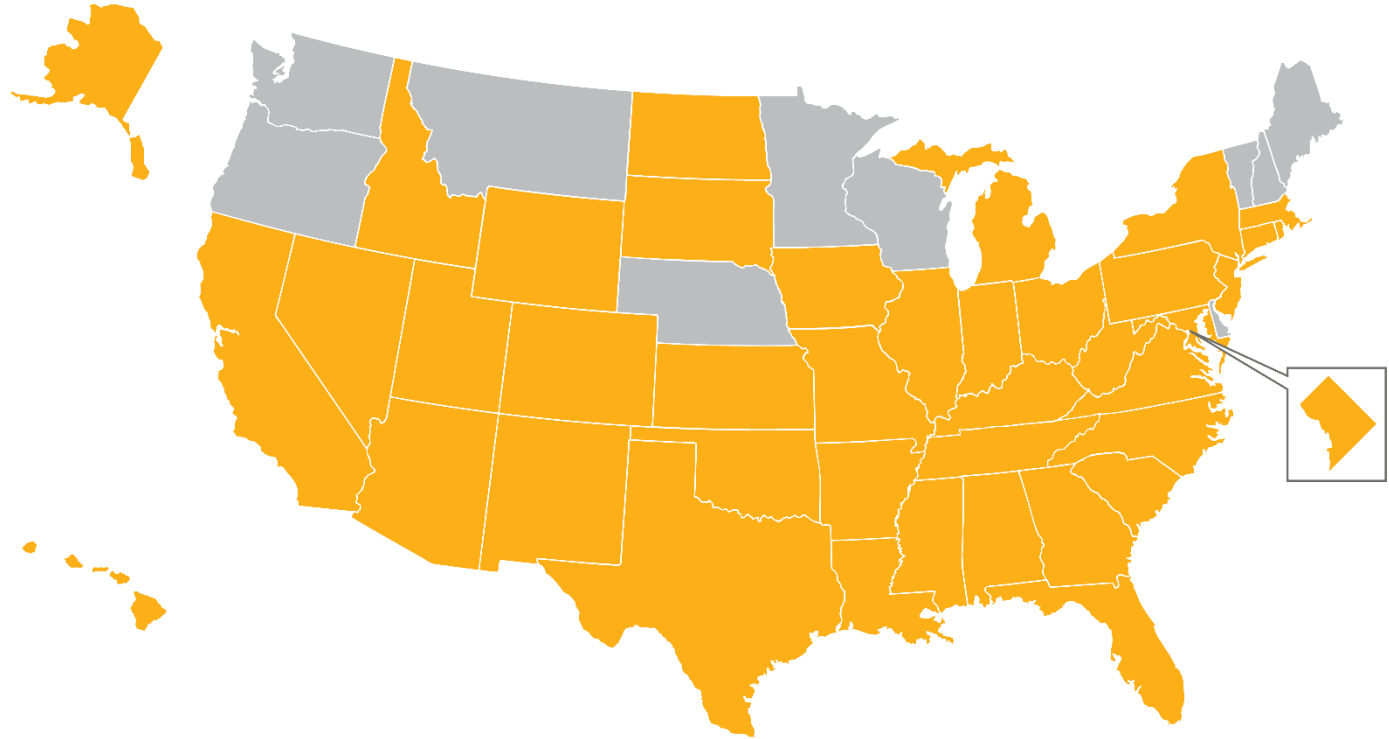
Identify effective, efficient programs; create replication protocols to ensure fidelity; then take them to scale



OUR APPROACH



OUR REACH



50,000+

TEACHERS TRAINED

Laying the Foundation

1,000+

HIGH SCHOOLS

College Readiness Program

45

UNIVERSITIES

UTeach Expansion Program



OUR IMPACT

Increased college preparedness and success

- African-American students 69% more likely to graduate from college
- Hispanic students 83% more likely to graduate from college

AP performance in partner high schools boosted nearly 70% – 10 times the national average

An additional 125,000+ students attracted into rigorous math, science, and English classes

An additional 43,000+ students earning qualifying AP scores including 6,000+ additional minority students and 22,000+ additional female students

More than 50,000 elementary, middle and high school teachers trained





LAYING THE FOUNDATION

Strengthening the STEM pipeline starting in the elementary years

- Hands-on training program for teachers of grades 3-12
- Research-based instructional strategies to increase academic rigor in any curriculum
- Evidence of increased ACT assessment performance for 8th/10th grade math/ELA

IMPACT: More than 50,000 teachers trained across 33 states



COLLEGE READINESS PROGRAM



Transforming high schools into centers of college readiness

- Three-year partnership with high schools
- Dramatically increases number of students taking and earning qualifying scores on AP math, science, and English exams
- Expands access to rigorous coursework to traditionally underrepresented students



CRP COMPONENTS

A Three-Year Partnership bolstered by teacher, student, and school supports proven to increase academic achievement.

Implemented at High Schools with supports extended to feeder Elementary and Middle Schools.

Academic Success Outcomes measured by valid and reliable Advanced Placement (AP) Exam Qualifying Scores.

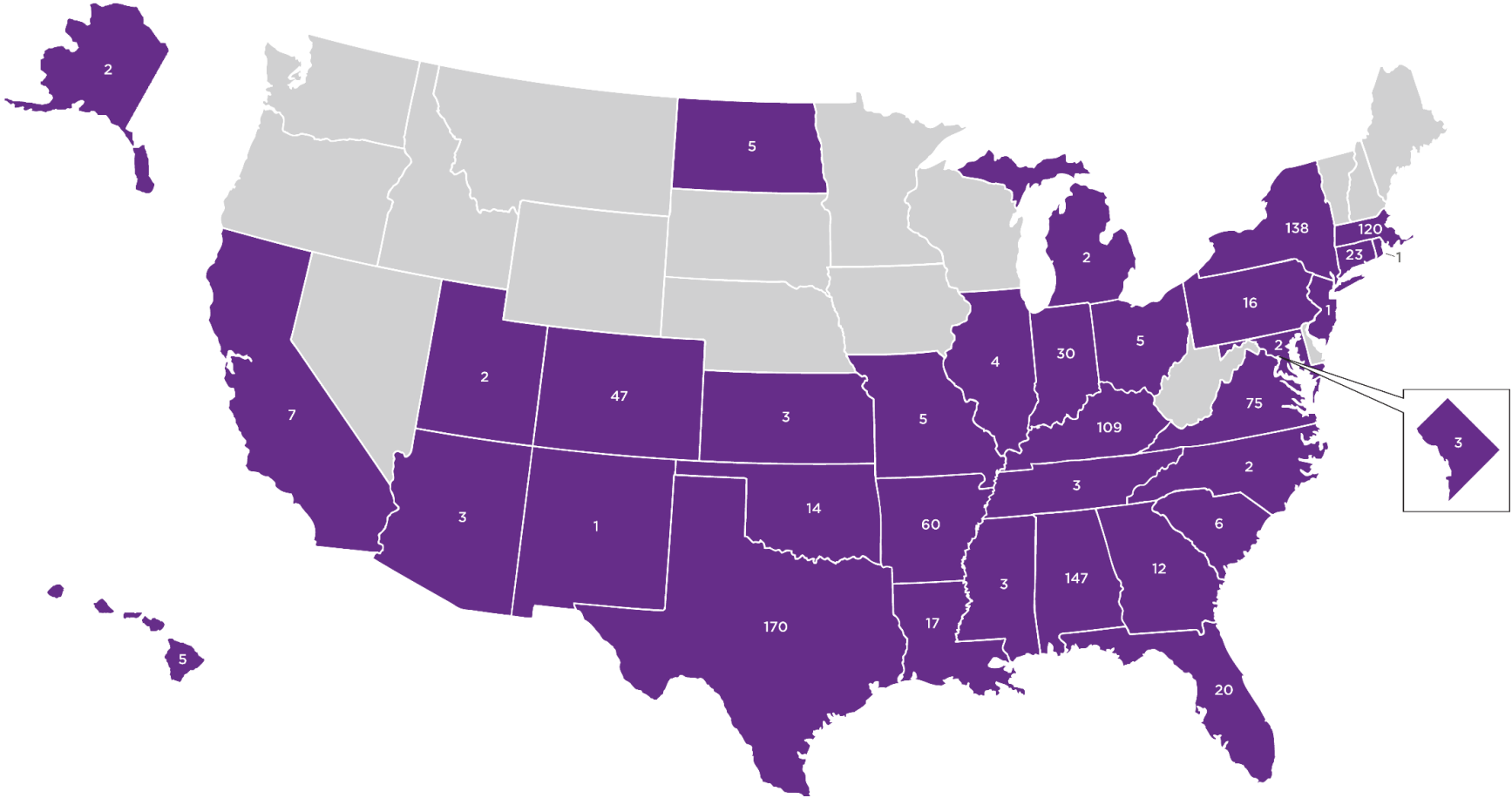


CRP HISTORIC REACH

1,063 High Schools

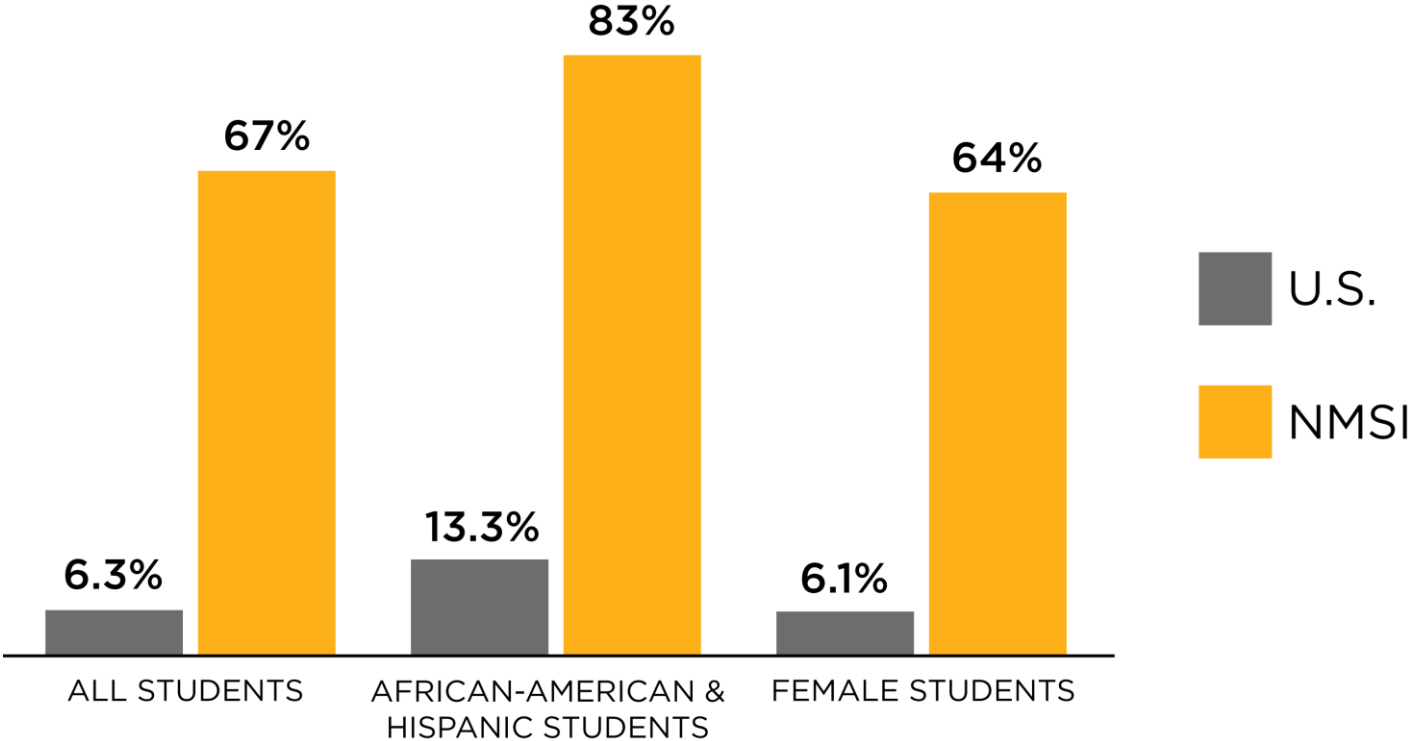


1.5M Students



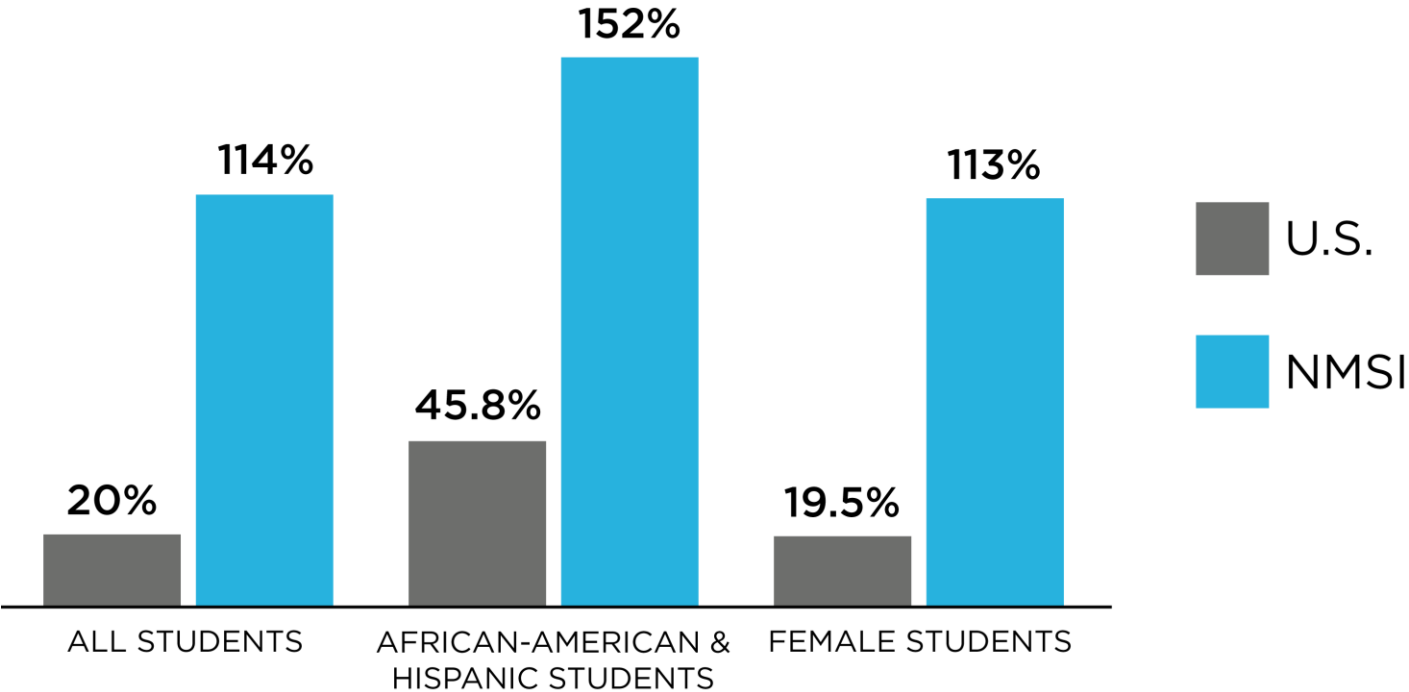
CRP YEAR 1 RESULTS

One-Year Increase in Qualifying AP scores for U.S. and NMSI Schools for Math, Science and English



CRP SUSTAINED IMPROVEMENT

Three-Year Increase in Qualifying AP scores for U.S. and NMSI Schools for Math, Science and English



CRP IMPACT IN ONE YEAR

After partnering with NMSI, Pittsburgh Science & Technology Academy and Brashear High School ranked first and second in the state with respect to percent increase in qualifying scores in math and science (among 289 schools with at least nine qualifying scores in 2012-13).

"All the News That's Fit to Print"

The New York Times

Late Edition
Today, partly sunny, milder, high 46. Tonight, turning mostly cloudy, but not as cold, low 35. Tomorrow, cloudy, showers arriving, high 45. Weather map appears on Page D8.

VOL. CLVII . . No. 54,231 NEW YORK, SUNDAY, MAY 4, 2014 \$1.25

Spreading the A.P. Gospel to Nurture Scientists and Engineers

PITTSBURGH — Even before the first day of class in August, Maura Fritzley had second thoughts about taking Advanced Placement physics. Although she got good grades in a mainstream physics class, Ms. Fritzley, an 18-year-old senior at Brashear High School here, had no intention of becoming a physicist, and A.P. classes, after all, are hard.

She decided she wanted to drop it, then changed her mind and stayed. And she struggled, a lot.

A.P. physics proved far more difficult than the earlier class. "Turns out that I'm not that good," she said in November.

But Ms. Fritzley is exactly the sort of student Brashear administrators want in A.P. math and science classes — not just the brainiest top achievers, but also the average and above average.

Next week, she will take the advanced placement exam in physics, part of an annual two-week ritual for high school students. The goal is to score 3 or higher on the 1 to 5 scale.

The school is in the first year of a three-year push to greatly expand the reach and success of its A.P. classes, collaborating with the National Math and Science Initiative, a nonprofit organization founded in 2007 to help improve education in science, technology, engineering and mathematics, the so-called STEM fields. The backers of NMSI (the acronym is pronounced NIM-zee) include ExxonMobil, the Bill and Melinda Gates Foundation and Lockheed Martin, and the organization won a federal \$15 million grant in 2011 to set up similar efforts in Colorado and Indiana.

Brashear has offered A.P. classes in biology, chemistry, physics, computer science, calculus and statistics, but few among the school's 1,400 students excelled. Last year, of the 159 enrolled in those classes, nearly two-thirds did not even take the tests, which normally cost \$89 each. (Because of subsidies by NMSI and the school, the fee this year is as low as \$9.)

Just 10 students accounted for



Incentives Aid A.P. Science and Math Scores

In May, I wrote about students at Brashear High School in Pittsburgh just as they were about to face the springtime gauntlet of advanced placement tests, which measure whether they had mastered college-level material. I had visited Brashear a couple of times, interested to see close up what was

The National Math and Science Initiative — a nonprofit group that seeks to improve teaching of science, math, technology and engineering — goes into high schools around the country that like Brashear are not high-achieving. The schools are often located in poorer urban or rural areas, and the initiative offers



CRP SUSTAINED IMPROVEMENT

The Dallas Morning News

Friday, December 5, 2014

Editorial: DISD records STEM success with minority students

As a long-time partner with NMSI, Dallas leads all large urban school districts in a benchmark critical to feeding the nation's STEM-starved workforce:

A minority student in DISD is more than twice as likely to earn a qualifying score on a college-level math or science exam as peers in other districts.



INVESTING IN INNOVATION

\$20M Investing in Innovation (i3) 2015 Scale-Up Grant to expand NMSI’s College Readiness Program to eight high-need jurisdictions.

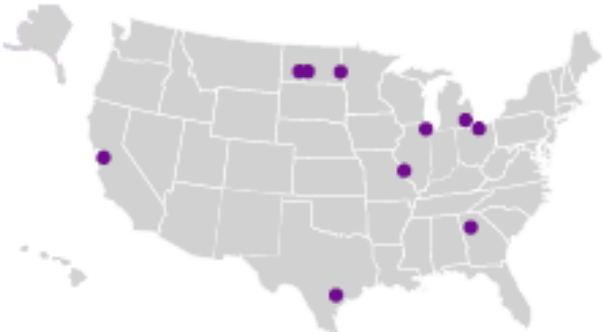


Partnerships to Advance STEM Education: Building College Readiness for All Students

The National Math and Science Initiative is proud to partner with the Department of Education through its Investing in Innovation (i3) Scale-Up grant to bring the College Readiness Program (CRP) to more schools than ever before. NMSI will partner with ten local education agencies (LEAs) in eight states, expanding the program to 40 new high schools, to increase the number of students taking and earning qualifying scores on Advanced Placement® math, science and English exams. As we partner with school districts across the country, we will serve a diverse group of 60,000 students, including students who are identified as high-need, as well as high concentrations of African-American, Hispanic and Native American students.

AT A GLANCE

- CRP EXPANSION to 10 regions with two cohorts of 20 schools implementing the program in 2016-17 and 2017-18.
- LAYING THE FOUNDATION TRAINING offered to all educators in grades 3-12 in each partner district.
- COLLEGE READINESS & STEM PROFICIENCY guidebook for teachers to use as a roadmap for student success.
- CAPSTONE CONVENING to enable broad adoption of effective practices by educators.
- RESEARCH STUDY in partnership with UCLA/CRESST* to estimate the impact of CRP.



- CA Oakland Unified School District
- GA Atlanta Public Schools
- IL Noble Network of Charter Schools
- MI Detroit City School District
- MO St. Louis Public Schools
- ND Bismark Public Schools
Mandan Public School District
West Fargo Public Schools
- OH Cleveland Metropolitan School District
- TX Houston Independent School District



IMPACT + EXPANSION in MO

MISSOURI

Waynesville R-VI School District

Waynesville HS (started 2014-15)

Knob Noster R-VIII School District

Knob Noster HS (started 2016-17)

St. Louis Public Schools

Central Visual & Performing Arts HS (started 2016-17)

Clyde C. Miller Career Academy (started in 2016-17)

Soldan International Studies (started in 2016-17)

Metro HS (starting in 2017-18)

Collegiate School of Medicine & Bioscience (starting 2017-18)

McKinley Classical Leadership Academy (starting 2017-18)



STATE + REGIONAL REPLICATION



Alabama leads nation in raising number of Advanced Placement scores for college credit

August 27, 2014



MONTGOMERY, Alabama --- Alabama led all states in the increase in the number of qualifying scores by high school students on math, science and English Advanced Placement exams over the last six years, officials announced today...

Over the six years, Alabama students showed an increase of 136% in the number of AP exams passed ...The national increase over that time was 49%.



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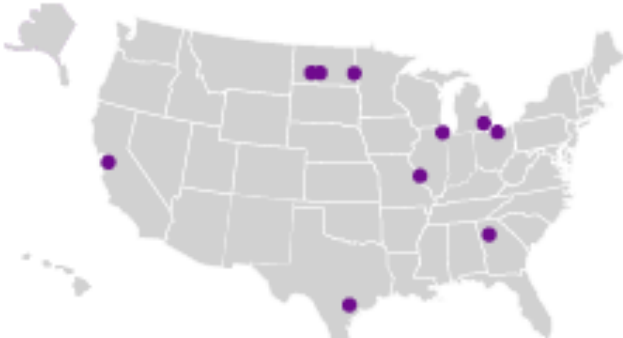


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How can this help us in Missouri?

The percent of graduates who earned a qualifying score or grade on an Advanced Placement (AP), International Baccalaureate (IB), or Technical Skills Attainment (TSA) assessments and/or receive college credit or a qualifying grade through early college, dual enrollment, or approved dual credit courses meets or exceeds the state standard or demonstrates required improvement (From the October 2016 Comprehensive Guide to the Missouri School Improvement Program).

NMSI Training and Incentives for students support this vital MSIP 5 target!

Explanations of Calculations

Scores on the AP, IB, or PLTW exams are used as reported by the testing company. Scores on a department-approved IRC are used as reported in MOSIS. Grades earned in department approved dual credit courses, dual enrollment, early college, AP courses and IB courses are used as reported in MOSIS. The metric contributing the highest score is used for each student.

Examples of Data

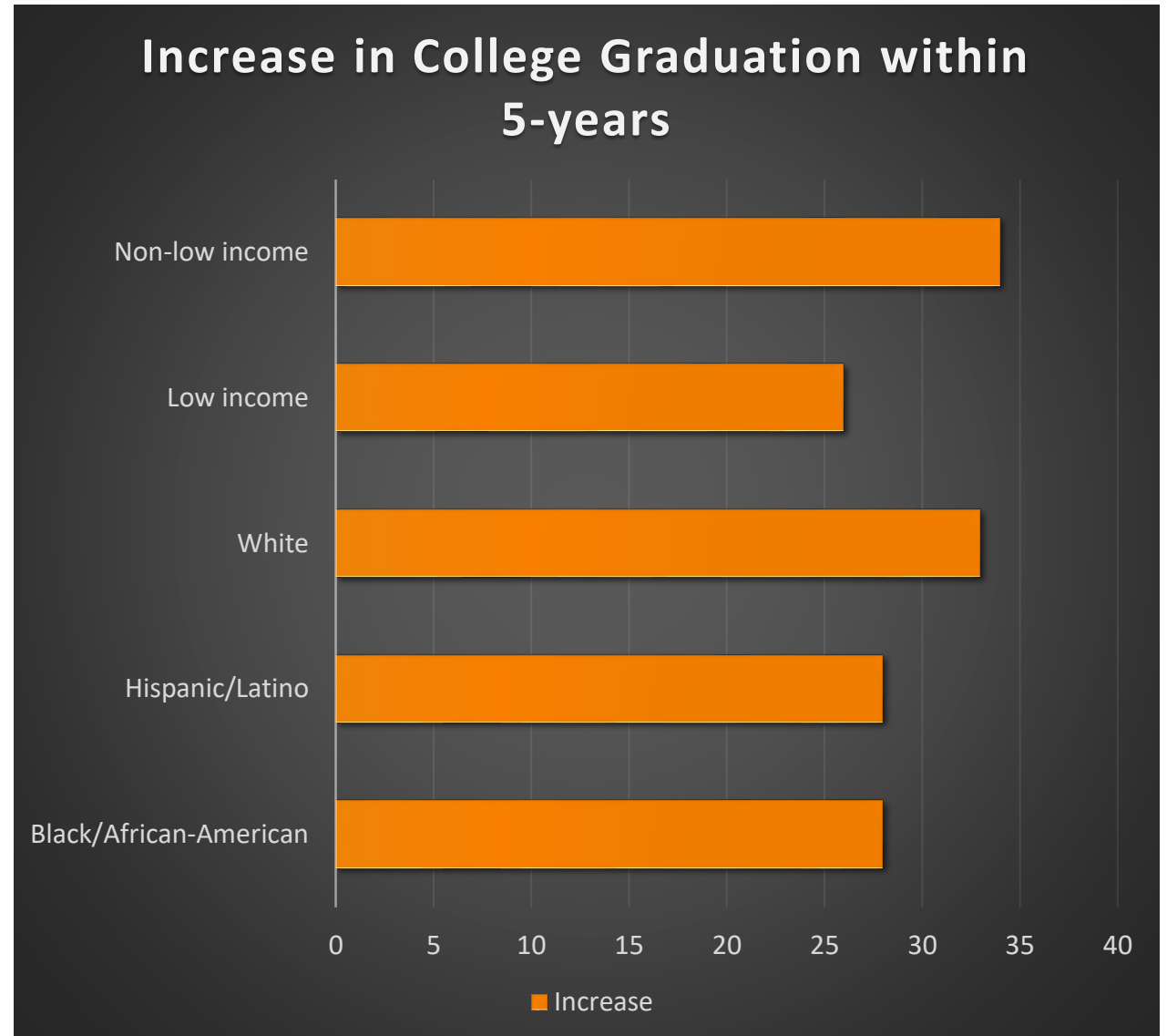
Unduplicated Count

- a) number of graduates who score at or above a three (3) on an AP exam or who score at or above a four (4) on an IB exam multiplied by 1.25
- b) number of graduates who score proficient on a department approved IRC assessment or a scale score of six (6) or higher on a PLTW assessment multiplied by one (1)
- c) number of graduates who earn a “B” or greater in a department-approved dual credit course, dual enrollment course, early college course, AP course, or IB course multiplied by one (1)
- d) number of graduates without a qualifying score or grade on an approved measure multiplied by zero (0)

Number of graduates scoring at or above the state standard

Increase in probability of college graduation within five years or less compared with students not participating in AP, by ethnicity and socioeconomic status:

- Black/African American +28%
 - Hispanic/Latino +28%
 - White +33%
 - Low Income +26%
 - Non-Low Income +34%
-
- Adapted from Dougherty, Mellor, and Jian, 2006 5. Dougherty, C., Mellor, L., and Jian, S. (2006). The Relationship Between Advanced Placement and College Graduation. National Center for Educational Accountability.



Waynesville Story

An officers wife...

Department of Defense Educational Authority- Grant Opportunity

Standard 3.4- Red Alert! Only at 40% in 2013

Compelling data (2013 AP Report to the Nation)

- “AP Students perform well in subsequent college courses in the discipline.”
- “AP Students are more likely to major in their AP subject or a related discipline, particularly in the STEM subjects.”
- “AP students take more – not less – college course work in the discipline.”
- “ AP students are more likely to graduate within four years.”
- “AP provides opportunities for underserved students to succeed.”

Waynesville Standard 3.4 Growth

*4 Advanced Placement						% at or Abv State Standard <u>2014</u>	# at or Abv State Standard	Number of Graduates	% at or Abv State Standard <u>2015</u>	# at or Abv State Standard	Number of Graduates	% at or Abv State Standard <u>2016</u>	# at or Abv State Standard	Number of Graduates
Status	10.0	10.0		49.5 %	2020 Target	46.4%	187.75	405	49.2%	171.75	349	52.9%	207.50	392
Progress	7.5	2.0		3.3%	Approaching	Prior 2 Yr Avg = 47.8%			Current 2 Yr Avg = 51.1%					
CTE Expansion *	0.0	0.0												
Total Points Earned (Status + Progress)	10.0	10.0	100.0 %	For details on progress please reference the MSIP5 Comprehensive Guide to Missouri School Improvement Program.										

Results: Overall

<u>State</u>	<u>Installation</u>	<u># of Sites</u>	<u>Baseline</u>	<u>Last Year</u>	<u>Increase</u>	<u>Notes</u>
MO	Fort Leonard Wood	1	35	125	257.1%	
AZ	Fort Huachuca	1	33	106	221.2%	
KY	Fort Knox	2	27	77	185.2%	
CO	Fort Carson	1	79	202	155.7%	
HI	Schofield Barracks	1	30	73	143.3%	
TN	Fort Campbell	6	231	540	133.8%	Sites on both KY and TN sides
AL	Fort Rucker	2	62	142	129.0%	
GA	Fort Gordon	3	99	207	109.1%	Sites on both GA and SC sides
AL	Redstone Arsenal	13	1132	2273	100.8%	
GA	Fort Stewart/Hunter Army Airfield	2	56	111	98.2%	
MD	Aberdeen Proving Ground	2	229	451	96.9%	
NC	Fort Bragg	2	177	332	87.6%	
OK	Fort Sill	3	187	334	78.6%	
AL	Fort Benning	1	44	78	77.3%	
NJ	JB Maguire-Dix-Lakehurst	1	28	47	67.9%	
AK	JB Elmendorf-Richardson	2	142	215	51.4%	
VA	JEB Little Creek–Fort Story	2	101	151	49.5%	
TX	Fort Hood	5	280	368	31.4%	
VA	Fort Lee	4	557	715	28.4%	
NY	Fort Drum	1	70	81	15.7%	
TX	Fort Bliss	3	144	155	7.6%	
VA	JB Langley-Eustis	1	15	14	-6.7%	

Results: African-American and Hispanic Performance

Waynesville AP math/science/English Qualifying Scores from African American and Hispanic students (n=33) increased at a rate higher **than *ANY high school in the entire state of Kansas***. **As for Missouri, the results in this regard were second only to Park Hill HS (n=47)**.

Knob Noster Story

Laying the Foundation Training

Grades 3-5

Grades 6-12

Hands-on authentic learning activities

Deconstruction of standards and alignment of activities to rigor

Instructional strategies that teachers can bring to their classrooms immediately

Teachers' Comments on LTF

NMSI's LTF training is the best professional development I've ever attended for several reasons. First, the training is specific for the course being taught. I was in a room with other freshman language arts teachers who were facing many of the same difficulties. Second, NMSI hires excellent trainers. My instructor had taught Pre-Ap and AP for many years in a variety of settings. He was a true expert teacher, not just a salesman for the NMSI product. Third, the materials and strategies provided are all aimed at increasing critical thinking skills. The trainer sampled a few of the best strategies with us so we had the tools to take back to our classrooms and tailor for our students. Because NMSI focuses on strategies and not content, I can use the most effective strategies multiple times over the course of the year. Another huge benefit is having access to the digital modules online for a full year after attending the training. Finally, as time goes by I've realized that the biggest benefit is that the materials and training provided are scaffolded for freshmen and vertically aligned to fit within the AP program.

-Kaylan Davis, Waynesville High School

Teachers' Comments on LTF

"The LTF training and materials that I received last summer significantly impacted my Chemistry classes in terms of the depth of knowledge and rigor that is expected of my students when they progress to Advanced Placement Chemistry. It also helped to create and establish a solid pipeline to success!" –Kym Rodriguez, Wayensville High School

Super Saturday Sessions

❖ Expert instructors to support student learning.

Next Steps...

Waynesville

- Continue expansion of AP offerings
- Increase the number of students enrolled in AP courses
- Increase the number of minority and low income students taking AP courses
- Extend Laying the Foundation Training to elementary teachers

Knob Noster