

the sharp edge

Forging future generations of engineering and science professionals



New STEM Partnerships

Creating Urban Academies of Engineering

According to Engineering Workforce Commission data, only 4 percent of today's minority high school graduates have completed the math and science courses required to study engineering in college. So it's not surprising that only 12 percent of college and university engineering program graduates are minorities.

To help better prepare minority students to pursue opportunities available in Science, Technology, Engineering & Math (STEM) fields, Project Lead The Way® (PLTW), the National Academy Foundation (NAF), and the National Action Council for Minorities in Engineering (NACME) have partnered to create a network of urban Academies of Engineering. These small learning

communities will offer PLTW's proven project-based engineering curriculum in a unique model developed specifically for urban high schools.

Says Niel Tebbano, PLTW vice president, "This partnership brings together NACME's tremendous connections and programs to support student success in urban communities, NAF's track record of success in putting



into action models for small learning communities, and PLTW's experience and success in offering a rigorous and relevant engineering curriculum with ongoing professional development for teachers."

The Academies of Engineering program is scheduled to begin at 10 pilot sites

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PLTW IN ACTION

PLTW Premieres New Website and DVD

Accessing up-to-date Project Lead The Way® (PLTW) information and promoting all aspects of the PLTW program to potential partners is now just a "click" away.

The redesigned PLTW website, www.pltw.org, offers a fresh new look and is easier than ever to navigate with quick links immediately connecting users to PLTW news and information, forms, materials, important dates, and contacts.

"I'm excited about the power of information access that the new website provides for both members of the PLTW network and for potential members," says Niel Tebbano, PLTW vice president. "The information is concise and the organization is more efficient, so people can quickly find what they really need. We're very pleased with the results."

A new PLTW DVD will also be available soon. This high-energy DVD is packed with valuable insights from PLTW students, teachers, parents, school administrators, business leaders, engineers, and scientists.

Adds Tebbano, "The DVD is a fantastic tool for schools considering the program, and for current PLTW schools and districts working to build business and community partnerships. It's an engaging way to show who we are, what we do, why we do it, and how we are doing in different secondary school settings."



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Urban Academies

during the 2008-2009 academic year. Selected schools will enter an academy development year, which will include organizing a team, engaging partners, determining how to integrate curriculum, and recruiting students.

Gregg Bethel, NAF vice president of programs, sees the partnership with PLTW as an opportunity for NAF to bring “cutting-edge engineering curriculum to the foundation’s work in school re-design,” particularly in the development of small schools and small learning academies.

While PLTW and NAF will focus on what goes on *inside* the classrooms, NACME will leverage the support of its members—including many of the nation’s STEM-oriented Fortune 500 companies—to provide assistance to academy teachers, students, and parents in activities *outside* class. NACME will offer after-school programs, mentors, role models, and college guidance information, as well as scholarships for students and grants to teachers to support after-school projects.

“Traditionally, we have been focused on supporting students at the college level,” says John Eppolito, NACME’s chief financial officer and vice president of administration. “If we are ever to achieve our mission of increasing the representation of successful African-American, American-Indian, and Latino women and men in engineering and technology, math-based, and science-based careers, however, we must increase the pipeline of high school students who are qualified to gain entry to such programs at the college level.”

Several foundations and corporations are helping to support the Academies of Engineering program. The initial plan calls for 50 new academies to be established over the next four years, with the goal of developing a national network of mostly urban academies whose graduates are prepared for college engineering programs.

Vice President's Corner

By Richard Blais

Forging the Innovation Generation

I am particularly proud of the accomplishments that members of the Project Lead The Way® (PLTW) community will celebrate at the national conference in Albany, but I also believe it’s no time to rest on our laurels. Rather, it’s time to take PLTW to the next level by embracing an even more ambitious and important mission for the next decade.

At the conference, I will unveil new strategic goals summed up in our new theme for PLTW: Forging The Innovation Generation.

As we reflected on all we are doing and hope to do, we realized that PLTW is really about developing America’s next wave of well-educated and creative scientists, technologists, engineers, and mathematicians. That is, The Innovation Generation.

Our core mission remains the same: to create dynamic partnerships with our nation’s schools to prepare an increasing

and more diverse group of students to be successful in science, engineering, and engineering technology. Over the next decade, however, PLTW will also become part of the greater movement to improve science and math education throughout the nation. We are taking the lead in further developing the Science, Technology, Engineering & Mathematics (STEM) cluster for the States’ Career Clusters initiative. In addition, our expansion into biomedical sciences will only reinforce our position as a STEM leader.

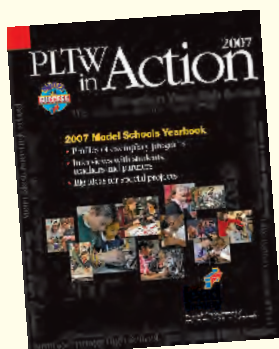
I hope you can attend the conference this year to hear more about why we believe this new mission is so critical. Together, you and I and the rest of the PLTW family can make a real difference in the lives of the next generation of students to assume the mantle of American innovators.



Stacey Lauren

PLTW SPOTLIGHT

Yearbook Celebrates PLTW's



In celebration of its 10th anniversary, Project Lead The Way® (PLTW) has created a 28-page yearbook titled *PLTW in Action*.

The yearbook highlights PLTW’s mission, benefits, and achievements through engaging photos, informative stories, and compelling statistics. *PLTW in Action* also serves as a resource guide for current and potential members of the PLTW network.

Forming the core of the book are profiles of 11 model PLTW programs. While there are hundreds of successful PLTW programs nationwide, these schools or school districts were chosen specifically to demonstrate that PLTW can work for any student anywhere. The model schools featured include middle and high schools, rural and urban settings, low-income and affluent communities, and multicultural and bilingual student populations.

The profiles provide overviews of each model program and include innovative best practices at the schools.

The 2007 model programs featured are:

Data Indicates PLTW Works

Highlights from 2005–06 TrueOutcomes assessment

Since the 2004–05 school year, Outcomes Assessment Solutions has conducted an annual program evaluation of the Project Lead The Way® (PLTW) program entitled TrueOutcomes.

The second assessment, evaluating the 2005–06 year, was published in October 2006, and is available for review and download at www.pltw.org.

Data for the 2005–06 TrueOutcomes is based on responses from 75 PLTW schools, 3,700 PLTW students, and teacher-reported grades for 1,600 PLTW students.

Additionally, college transcripts were received for 45 former PLTW students who graduated from high school in 2005 or before.

The TrueOutcomes assessment was designed to measure how well PLTW is achieving its goals of attracting a diverse population of students, preparing students for college, and increasing the number of students pursuing engineering and technology in college and into their first job. **The 2005–06 results clearly indicate that PLTW is fulfilling its mission to “prepare an increasing and more diverse group of students to be successful in science, engineering, and engineering technology.”**

In particular, the most recent TrueOutcomes assessment found that PLTW is doing a good job of attracting underrepresented groups, and is working to improve the representation of African Americans and girls. Additionally, the data indicates that PLTW students overwhelmingly choose to study engineering and technology in college.



Although there is still work to do, PLTW is clearly on the right track, as evidenced by the results of the most recent TrueOutcomes evaluation.

Fast Facts from TrueOutcomes 2005–06

Gender

- Female student enrollment in PLTW high school courses in 2005–06 was 17 percent, up from 9 percent in 2001.
- The percentage of high school girls enrolled in PLTW courses exceeded the

percentage of females enrolled in bachelor's degree programs in electrical engineering (15%), mechanical engineering (13.7%), and computer engineering (12.1%).



Race

- The PLTW high school population in 2005–06 was more diverse than that of college engineering and technology programs.
- The number of Hispanic and African-American students in PLTW high school courses during 2005–06 was about double the number enrolled in postsecondary engineering programs nationwide.

Affluence and PLTW Grades

- During 2005–06, there was no difference between students in less-affluent schools and more-affluent schools with respect to grades in PLTW high school courses.
- In 2005–06, students in schools of average affluence (20–40 percent subsidized lunches) did as well on the PLTW end-of-course examinations as students in more-affluent schools (less than 20 percent subsidized lunches).



College Success

- Preliminary analysis of college transcripts of PLTW alumni suggests that they pursue engineering and technology at five times the national average rate for typical first-year students, and that they are very successful in college—achieving a GPA of above 3.0 with average grades of B or better in calculus, physics, and chemistry.



First Decade

- ★ **Coronado High School** in Colorado Springs, Colorado
- ★ **Cooley Middle School** in Roseville, California
- ★ **Lafayette Jefferson High School** in Lafayette, Indiana
- ★ **Lake Fenton Middle School** in Lake Fenton, Michigan
- ★ **Milwaukee Public Schools** in Milwaukee, Wisconsin
- ★ **Morton High School** in Morton, Illinois
- ★ **Mountain View High School** in Meridian, Idaho
- ★ **Mountlake Terrace High School** in Mountlake Terrace, Washington
- ★ **Nichols Junior High School** in Arlington, Texas
- ★ **Saratoga Springs High School** in Saratoga Springs, New York
- ★ **The Science Academy of South Texas** in Mercedes, Texas

In addition to the program profiles, *PLTW in Action* includes a PLTW 10-year timeline; overviews of the PLTW middle and high school programs; portraits of PLTW teachers, students, and partners; data on PLTW participation and effectiveness; PLTW contact information; and more.

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Yearbooks will be distributed to attendees at the PLTW National Conference and copies will soon be available at www.pltw.org.

Reinventing Agricultural Education

The National Council for Agricultural Education (NCAE) is partnering with Project Lead The Way® (PLTW) to help reinvent agricultural education in the United States. The goal is to develop a national agricultural science student curriculum and teacher training course materials based on PLTW's proven, project-based model.

"The National Council likes what PLTW is doing, and its members are impressed with the results," says Dick Blais, PLTW vice president. "We're going to help NCAE take steps to upgrade the agricultural education curriculum for the benefit of all agricultural education students and for the nation's future agricultural community."

The joint project begins on July 1, 2007, and expires on June 30, 2013. During that time, the National Council will contract with PLTW for curriculum and teacher training development.

"We see partnering with PLTW as an opportunity for us to build a comparable model in the agricultural sciences," says

National Council member and National FFA Chief Operating Officer Doug Loudenslager. "For our students and for U.S. agriculture to remain competitive in the world, agricultural education needs to



be held up to the same standards as other academic subjects being taught in our schools today."

A PLTW senior curriculum designer will serve as a consultant in the process and mentor NCAE staff. The courses will parallel the PLTW model, while also including the three-part agricultural

education delivery model of rigorous and relevant classroom curriculum, supervised agricultural experience (SAE), and FFA membership for all students in the program.

The first courses to be developed include Principles of Agricultural Science (Plant) and Principles of Agricultural Science (Animal). These two courses, debuting in the fall of 2009, will be followed by Animal and Plant Biotechnology (fall 2010) and Bio Systems Engineering and Technology (fall 2011).

The new curriculum is part of the National Council's overall strategic goal of having 10,000 quality agricultural education programs in operation in U.S. schools by 2015. Currently, there are approximately 7,200 programs nationwide.

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To learn more about the National Council for Agricultural Education, go to www.teamaged.org.



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