

# A New Day Dawning for Houston's East End Students

This article is the first in a two-part series about how Project Lead the Way, HISD's Chavez High School, and the East End Chamber of Commerce are making a difference in students' lives and the engineering profession.

In the United States, the number of college graduates earning engineering degrees each year is rising slowly after a major decrease a decade ago. While this is good news, the number of US engineering professionals retiring in the next ten years is out-pacing the number of new graduates. How did this happen, and what can we do to remedy the situation?

Early engineers were not degreed, they apprenticed with skilled craftsmen instead. In the early 1800s, West Point Military Academy offered the only US engineering degrees, taught in French. At that time, most engineering degrees were earned either in France or Germany. A knowledge revolution occurred in the mid-



PLTW students use Autodesk® Inventor to develop 3D drawings in the Introduction to Engineering Design class before making a working prototype of their product.

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1800s due to the second industrial revolution, and by the start of the 1900s, engineering continued to grow and become more of a scientific field. After World War II, the U.S. began to face a shortage of engineers, and college curriculums did not emphasize science, math, and engineering.

Educators and professionals alike sounded an alarm about our country falling behind others. It wasn't until 1957 and the Soviet's launch of Sputnik that a change occurred. In response to this event, the government opened research agencies, colleges updated curriculums, and students poured into engineering programs. That large group of engineers is currently retiring. Now, at a time when there is a heavy emphasis on new technology,



The East Chamber of Commerce works closely with Chavez High School to provide supplies, materials, mentors to students and their families, and an awards program for successful PLTW students.

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there is a decreasing number of engineering professionals and an increasing need. We are once again facing a shortage.

One response to the shortage is to offer pre-engineering classes in high school so that students are more interested and prepared for college engineering courses. Project Lead the Way (PLTW) was started in 1997 in upstate New York to achieve that goal. Mr. Richard Blais, chairman of that school district's technology department, hoped to expand it to twenty schools. Today, PLTW is in over 2,200 schools across the nation, with over 200,000 students enrolled in PLTW classes and 7,000 teachers and 5,000 counselors trained in the program.

The program offers courses such as Introduction to Engineering Design, Principles of Engineering, and Digital Electronics at the first level. Different high schools then choose specialization courses from Aerospace Engineering, Biotechnical Engineering, Civil Engineering and Architecture, or Computer Integrated Manufacturing. The program concludes with the capstone course, Engineering Design and Development.

In 2006, the East End Chamber of Commerce in Houston studied education challenges in the community. They discovered Project Lead the Way and began to investigate its success in other schools.

Statistics told them that Chavez High School, located in an inner city, low income, largely Hispanic area had a 50% dropout rate and limited parental involvement. The dinners held to introduce students and parents to the program had a good turnout. After the first year, 96 of 100 students continued to the second year and parent involvement had been phenomenal. Not only were the students excited about the program, but their grades improved in other coursework. The University of Houston notes that "studies of PLTW's curriculum prove that participating students become the kind of prepared, competent, high-tech employees U.S. industry needs to stay competitive in the global market."

The East End Chamber is working with the business community to provide supplies, mentors, and other opportunities for the students. In Part II of this article, we'll look at what the Chamber and other partners are doing to continue the program's success and how you can help this and other PLTW programs in your area.

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