

# Talented Girls, Bright Futures

A P A R E N T ' S G U I D E

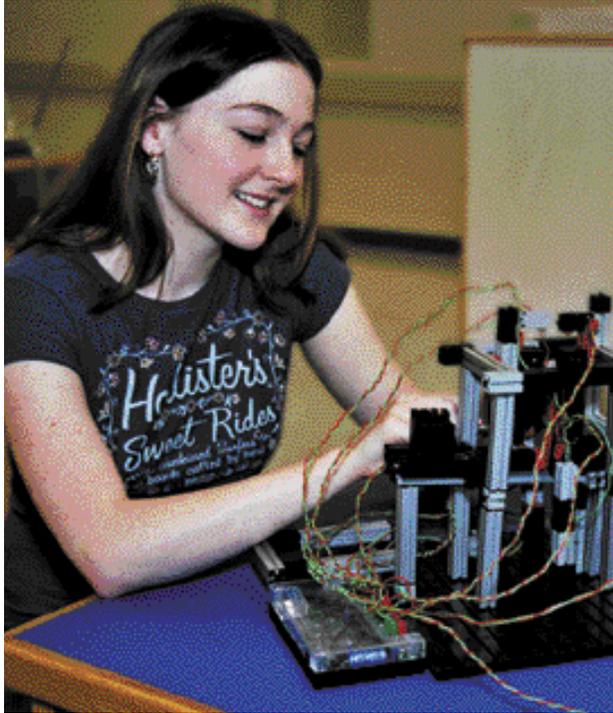
*An introduction to science,  
technology, and engineering  
careers for your daughters*



*Forging new generations of engineers*



## Forging new generations of engineers



*“ In PLTW classes, we girls get the chance to prove ourselves. I’ve learned how to do things I never even considered, like wiring, making elevators, and even building a car. ”*

— **Lexi James**, 14,  
Cleveland High School, Cleveland, Tennessee



After learning about what PLTW has to offer, find out what you can do to help your daughter and other smart girls become successful engineers. Visit **[www.pltw.org](http://www.pltw.org)** or call **518-877-6491** and ask for a copy of the booklet *Forging New Generations of Engineers*.

# You know she is smart

**Y**ou already know your daughter is smart and, if you're like most parents, you just want her to succeed at whatever career she chooses. You might also be unsure about exactly how to guide your daughter in a direction that will give her the best opportunity to use her talents toward a bright future.

This is where Project Lead The Way (PLTW) can help. In fact, PLTW has already helped thousands of smart girls achieve their goals. PLTW's hands-on, project-based curriculum provides students a taste of the variety, creativity, teamwork, and possibilities engineering and technical careers can offer.

PLTW's curriculum is helping students become better prepared for college-level courses. The curriculum gives students the opportunity—while still in middle and high

school—to find out if engineering is the career for them by receiving meaningful, hands-on experience in problem-solving, teamwork, and project-based learning.



*“I enjoyed making a rocket fly.”*

— **Jordan Hughes**, 14,  
Cleveland Middle School, Cleveland, Tennessee

# The PLTW solution

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*“I learned a lot about technology. I enjoyed it so much I plan on taking more classes in the future.”*

— **Katieya Smith**, 14,  
Cleveland Middle School

**P**roject Lead The Way (PLTW) is a national non-profit organization established to help schools give students the knowledge they need to excel in high-tech fields. Studies of PLTW’s curriculum have proven that PLTW students become the kind of prepared, competent, high-tech employees U.S. industry needs to stay competitive in the global market.

With more than half of the country’s engineers and scientists nearing retirement, and with more than half of the students in college engineering programs dropping out before graduation, U.S. technical industries are in need of more than one million engineers and technical workers.

The founders of PLTW have foreseen the damaging effects this shortage could have on our position in the global economy and have developed

partnerships with industries, colleges and universities, government leaders, and communities across the United States.

More than 900 schools are finding that PLTW’s pre-engineering curriculum for both middle and high school students is the simple solution to keeping a competitive edge. And although engineering is still a male-dominated profession, participation of women in the engineering workforce has increased dramatically in the last 25 years.

PLTW’s goal is to increase the number, quality, and diversity of engineers graduating from our educational system. The curriculum, generally one-third theory and two-thirds application, gives students rigorous, relevant, reality-based knowledge to better prepare them for college and the skills to succeed in tomorrow’s engineering and technical careers.

# Finding the right path

**B**rooke Costello had no real direction in her educational path until her academic advisor at John Stark Regional High School in Weare, New Hampshire, recommended she try PLTW courses. “I had no idea what I wanted to do or what engineering classes would actually entail, but I really enjoyed the challenges,” says Costello.

After high school, PLTW helped to define Costello’s college course decisions. She earned a bachelor’s degree in plastic engineering from the University of Massachusetts in Lowell. “PLTW gave me structure, basic engineering concepts, and a passion for design.”

PLTW also gave her an advantage in many college engineering courses by exposing her to the three-dimensional world of design. In plastics classes, for example, “I already understood how the mold was made and found that I spent half the time compared to my classmates,” says Costello.

Costello was just offered a job as an entry-level engineer with Techmer PM, a plastic manufacturing company in Clinton, Tennessee.

“Girls should not miss this opportunity to see if engineering is something they will enjoy,” says Costello.

“Girls should not let anyone else make up their minds for them.”



*“PLTW gave me a head start in calculus, physics, problem solving, designing, molding, and so much more. I learned skills in the program I still use today and I learned a lot about myself and how I could be successful.”*

— **Brooke Costello**, 22,  
PLTW Alumna

# Endless opportunities for girls

**D**o you know about all of the new opportunities available to your daughter in science, technical, and engineering fields?

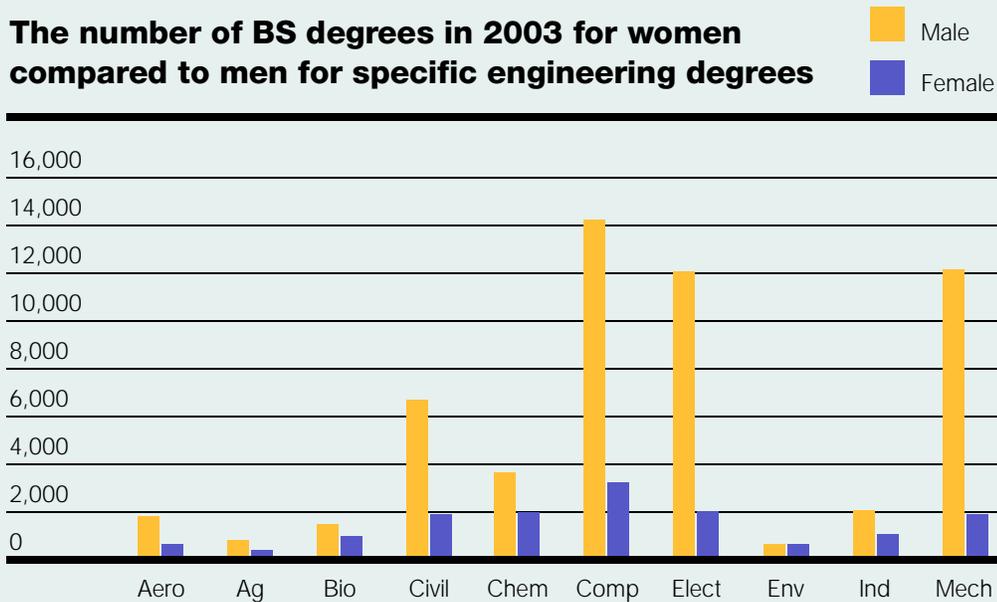
In years past, it was common to see only a handful of female faces in high-tech companies and industries, but times have changed. Women who might once have been discouraged from pursuing technical careers are now not only encouraged to do so, but are also in high demand.

By attracting women into the engineering and technical field, companies can gain a better understanding of their customers' needs, improve product design and development, and compete more effectively in the marketplace.

PLTW works hard to establish strong affiliations with some of the most elite engineering and technical postsecondary schools in the country. Institutions such as Duke University, Purdue University, San Diego State University, Rochester Institute of Technology (RIT), University of Houston, and Penn State University are on the list of universities that offer college credit to high school students who excel in their PLTW courses.



## The number of BS degrees in 2003 for women compared to men for specific engineering degrees



Source: Engineering Workforce Commission 2003

Women have begun to increasingly participate in the engineering workforce in the last 25 years. Women now receive more than 30 percent of the bachelors' of science degrees in the fields of biomedical, environmental, chemical, industrial, and agricultural engineering. They also receive 13.9 percent of the degrees in mechanical engineering, 14 percent in electrical engineering, 16 percent in computer engineering, 18 percent in aerospace engineering, and 22.5 percent in civil engineering.

*Pictured from left to right: Project Lead The Way students at Cleveland Middle School — Jessica Disbrow, 14; Tiffany Johnson, 14; Jordan Davis, 14; DeAnna Strode, 14; Katieya Smith, 14; and Abbey Frazier, 14.*

# Super careers for your daughter

**O**f all the jobs in demand by the U.S. economy right now, engineering is at the top of the list—especially for women.

Unlike the stereotypes we all know—the pocket protectors, calculators, and techie gadgets associated with engineers—today’s engineers may rely more on their people skills than calculus skills for success. In fact, there is a growing variety of jobs in the technical fields that require daily interaction with clients rather than the mechanics and prototypes of products.



— **Jordan Davis**, 14, (left) and **Jessica Disbrow**, 14, Cleveland Middle School

*Employment opportunities in engineering are expected to be good. The Bureau of Labor Statistics predicts that the demand for engineers will increase by almost 20 percent from 1998 to 2008.*

Engineering Discipline	Starting Salary with Bachelor's Degree	Job Growth through 2010*
Computer	\$53,924	Much-faster-than-average
Electrical	\$51,910	Average
Environmental	\$51,167	Faster-than-average
Chemical	\$51,073	Slower-than-average
Mechanical	\$48,426	Average
Industrial	\$48,320	Slower-than-average
Biomedical	\$47,850	Faster-than-average
Aerospace	\$46,918	Average
Agriculture	\$46,065	Faster-than-average
Civil	\$40,616	Average

Source: U.S. Department of Labor 2003

\*Slower-than-average growth is an increase in the number of jobs in the field of less than 10%.

Average growth is an increase of 10–20%.

Faster-than-average growth is an increase of 21–35%.

Much-faster-than-average growth is an increase of more than 35%.

# Making the Connection

**A**my Reavis, a third-year student in the mechanical engineering program at Florida State University, has a favorite quote: “A winner is a dreamer who never quits.”

While Reavis was a student at Lawton Chiles High School in Tallahassee, Florida, she took all three of the engineering courses offered and did so well she was asked to be a teacher’s assistant during her senior year.

“Since I started taking college engineering courses I feel more prepared and I already have a really good idea of what field of mechanical engineering I want to work in,” says Reavis.

Reavis’ parents, Gary and Marilyn Reavis, say they couldn’t be more proud of their daughter and have no doubt it was her exposure to PLTW courses while she was in high school that gave her both the skills and confidence to be successful in college.



“The PLTW program is excellent,” says Gary. “There is so much to these courses. These classes are hands on and kids get to see real results from the theory they study.”

“Amy has always been bright, but it was PLTW that helped her focus her talents into an area that she could see them working,” adds Marilyn.

**Amy Reavis**, 21, a PLTW graduate (left), with her parents, Marilyn and Gary (center) and her sister, Jennifer (right).

## How PLTW Works

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# 1

PROGRAM

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### **Gateway To Technology**

A 4-unit middle school program

*The Gateway To Technology curriculum for sixth, seventh, and eighth grades focuses on showing—not telling—students how engineers use technology to solve everyday problems. The program comprises four units that are taught in conjunction with rigorous academic core courses. Gateway’s primary focus is on developing stronger math, science, and technology inquiry skills.*

- 1.** Design & Modeling
- 2.** The Magic of Electrons
- 3.** The Science of Technology
- 4.** Automation & Robotics

# 2

PROGRAM

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### **Pathway to Engineering**

A 6-course high school program

*The high school program, Pathway to Engineering, comprises six challenging courses. The curriculum uses project-based, hands-on experience to teach students the key elements and skills of engineering and technology-based careers by immersing them in real-world engineering problems.*

- 1.** Principles Of Engineering
- 2.** Introduction to Engineering Design
- 3.** Digital Electronics
- 4.** Computer Integrated Manufacturing
- 5.** Civil Engineering & Architecture
- 6.** Engineering Design & Development

# Talk to your daughter about Project Lead The Way



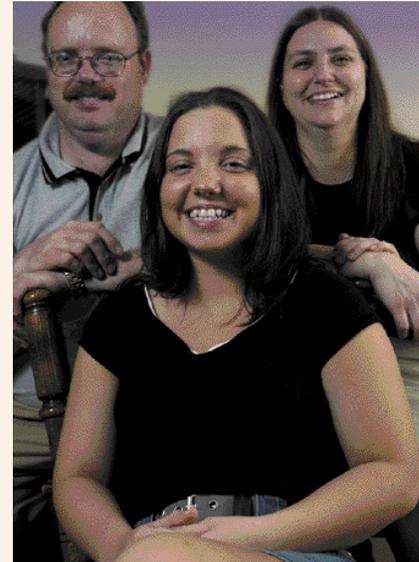
## How do I know whether engineering would be a suitable occupation for my daughter?

A girl who fits two or more of the following characteristics should be encouraged to think about the opportunities in PLTW and engineering.

- **She is a team player.**
- **She enjoys solving problems—particularly those dealing with math or science.**
- **She asks questions.**
- **She can think problems through from start to finish.**

Parents: Break the stereotype that says, “Girls just aren’t good at math and science.”

Expect your daughter to achieve success in both subjects, and encourage them to try new things. Work with your daughter’s guidance counselor to encourage her to sign up for classes in math, science, and technology throughout her school career. You can make a difference—a young girl’s opinion about technology and engineering is often shaped by her interactions with teachers, parents, and other mentors. Surround her with the positive support that can guide her on the path to a bright future.



*“Since our daughter Melissa started the PLTW program at school, we have seen her enthusiasm grow and it really gave her a goal to reach for. Her father and I couldn’t be more proud of her.”*

— **Rosemaria Alvord** (right) with husband, Stephen, and their daughter Melissa, a PLTW graduate of Flint Southwestern Academy High School in Flint, Michigan



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