ASQ *Education Brief*

Education
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Project Lead the Way

Transforming the future through STEM education

By Terri Schulz

Imagine a classroom where students actively engage in high-level learning as they work on real-world challenges involving critical thinking, creativity and teamwork. Imagine the teacher acting as a facilitator, leading the students to deeper and deeper levels of knowledge. This is what you find in a Project Lead the Way (PLTW) classroom.

PLTW is the nation's leading provider of science, technology, engineering and math (STEM) programs. PLTW offers five programs of study to create a K-12 STEM solution:

- PLTW Launch for grades K-5.
- PLTW Gateway for grades 6-8.
- PLTW Engineering, PLTW Biomedical Science and PLTW Computer Science for high school students.

As a 501(c)(3) nonprofit organization, PLTW's mission is to prepare students for the global economy through world-class curriculum, high-quality teacher professional development, and an engaged network of educators, students, universities and professionals. PLTW's rigorous and relevant curriculum

leverages an innovative, project-based approach that builds collaboration and critical thinking skills. PLTW provides students with a foundation and proven path to college and career success.

World-class curriculum

Historically, science and math are taught in isolation. PLTW believes in a different approach and offers integrated activity, project and problem-based learning. The goal of this STEM curricula is to help students understand how to apply skills to solve problems and think critically about the issues in front of them.

The curriculum in a PLTW classroom involves the dynamic transfer of knowledge. The idea of the curriculum is not simply a teacher standing at the front of the room following a script. If we take a look inside a PLTW classroom, the teacher takes on the role of facilitator, students are active agents in their learning, and the classroom is a collaborative space promoting problem solving and problem posing, along with critical thinking and teamwork.

PLTW curriculum aligns with Common Core national and state standards for math, English language arts and Next Generation Science Standards. The curriculum is collaboratively designed, and consistently reviewed and improved by PLTW staff, teachers, university educators, school administrators and industry experts. PLTW makes it easy for teachers to incorporate STEM education by providing everything from daily lesson plans, teacher notes, student versions of the curriculum, alignment to education standards and assessments.

Students love PLTW's programs. As a director of school engagement, I frequently visit schools where PLTW programs are in place. One of the most common remarks I hear from students enrolled in a PLTW courses is that it is "the hardest class I have ever taken, but it is my favorite class."

Alex, a student in the biomedical sciences program at New Prairie High School in New Carlisle, IN, said, "It's one of the harder classes, but it helps a lot with my other classes. By the second year, it turns around your work ethic." Alex is a strong student. When I asked Alex how students who are not typically at the top of the class do in PLTW, he said, "Some of the kids who were not the best students are now the top students in the school."

PLTW is truly transformative. American students tend to score poorly in the STEM subjects in comparison with students from other industrialized countries. When students understand how their education is relevant to their lives and future careers, they get excited. PLTW engages students' minds

while inspiring their interest in STEM subjects through hands-on learning and real-world problem solving. That is why PLTW students are successful.

High quality professional development

PLTW uses a network of nearly 50 affiliate universities to help transform "teachers of content" into "facilitators of learning." Over 3,500 PLTW teachers are trained annually using our rigorous approach. Researcher Dr. Robert Tai from the University of Virginia in Charlottesville said, "A clear strength of PLTW is the intensive teacher professional development. The data indicate that this organized and focused strategy plays an essential role in the success of PLTW students."

Engaged network

Industry is taking notice of PLTW students. For example, Toyota saw a problem on the horizon because of upcoming retirements and not enough skilled workers to fill positions. To solve this problem, Toyota created the Advanced Manufacturing Technician (AMT) program. This is a two-year associate's degree program that combines cutting-edge curriculum and paid work experience. The work experience integrates highly sought-after skills and best practices of world-class manufacturers with their education. Their education expenses are offset by their work. This award-winning program is being rolled out in five of Toyota's U.S. plants. Graduates may also pursue a bachelor's degree in fields such engineering, technology or business.

Filling AMT seats with PLTW students is a priority for Toyota. Dennis Dio Parker, assistant manager at the Toyota North American Production Support Center in Georgetown, KY, said, "PLTW has the best STEM curriculum for schools in the world. We have examined what other countries have to offer, and there is none better within the scope of my experience. PLTW would not be a partner with Toyota if its curriculum was anything less." PLTW has a number of outstanding partnerships with leading corporations, philanthropic organizations, and educational institutions that have seen the impact of PLTW on student outcomes.

The challenge

Students need educators to raise the bar; students want a challenge that is relevant and engaging. PLTW raises the bar, and students meet the challenge. Independent research studies reveal that PLTW students outperform their peers in school, are better prepared for post-secondary studies, and are more likely to consider careers as scientists, technology experts, engineers, mathematicians, healthcare

providers and researchers compared to non-PLTW peers. Students are capable of an extremely high level of learning, and they want the challenge.

The best way to learn about PLTW is to talk to students and teachers in PLTW programs. Step through the classroom door and experience an approach to learning that inspires creative problem solving, imagination, and innovative solutions; the exact skills needed for success in the global economy. For more information on PLTW, visit www.pltw.org.

About the author

Terri Schulz is the senior director for school engagement for Project Lead the Way (PLTW). She has been with PLTW for over five years. Prior to joining PLTW, Schulz was the director of program improvement at the Indiana Department of Workforce Development. Her work included career pathways, school-to-work programs, entrepreneurship, career and technical education, and workforce literacy. Schulz is a doctoral candidate in Indiana University's executive education and leadership program. She received a master's of public administration in policy analysis from Indiana University in Bloomington and a bachelor's degree in economics from the University of Wisconsin-Whitewater.