Project Lead The Way is the nation’s leading provider of science, technology, engineering, and math (STEM) curriculum for elementary, middle and high school students.
Our mission is to prepare students for the global economy.
Engage their minds and their interest early...
Preparing Students For the Global Economy

- World-Class Curriculum
- High-Quality Professional Development
- Engaged Network

- Leadership
- Innovation
- Continuous Improvement
- Accountability
World Class-Curriculum

PLTW Launch

PLTW Gateway

PLTW Engineering,
PLTW Biomedical Sciences,
PLTW Computer Science

College, career, and beyond
World-Class Curriculum

- All PLTW curriculum is activities-, project-, problem-based.
- PLTW curriculum aligns with Common Core State Standards and Next Generation Science Standards.
What makes a PLTW classroom different?

PLTW classrooms:
• Launch critical thinking
• Challenge students to make mistakes
• Integrate technology in the classroom
• Encourage teachers and students to learn together
Collaborative, rigorous, and relevant, PTE students solve open-ended problems; learn and apply the engineering design process; and develop teamwork, communication, and critical thinking skills.
PLTW Engineering Course Structure

Foundation
• Introduction to Engineering Design
• Principles of Engineering

Specialization
• Aerospace Engineering
• Biotechnical Engineering
• Civil Engineering & Architecture
• Computer Integrated Manufacturing
• Digital Electronics

Capstone
Engineering Design & Development
Introduction to Engineering Design

Overview

IED Units

- Design Process
- Technical Sketching and Drawing
- Measurement and Statistics
- Modeling Skills
- Geometry of Design
- Reverse Engineering
- Documentation
- Advanced Computer Modeling
- Design Team
- Design Challenges
Principles of Engineering Overview

POE Units
- Energy and Power
- Materials and Structures
- Control Systems
- Statistics & Ballistics

Projects
- Solar Hydrogen System
- Truss Design
- Pneumatic Brake Design
- Self Propelled Vehicle
PLTW Engineering:
Specialization Courses

• **Aerospace Engineering (AE)**
  – Learn the fundamentals of atmospheric and space flight through projects such as designing an airfoil, propulsion system, rocket and glider

• **Biotechnical Engineering (BE)**
  – Engage in design problems related to biomechanics, cardiovascular engineering, genetic engineering, tissue engineering, biomedical devices, forensics and bioethics

• **Civil Engineering and Architecture (CEA)**
  – Discover the design and construction industry while designing both residential and commercial projects using Autodesk® 3D-architectural design software

• **Computer Integrated Manufacturing (CIM)**
  – Explore designing products for manufacturability, manufacturing processes, CNC machining, factory system modeling, automation, and robotics

• **Digital Electronics (DE)**
  – Learn the fundamentals of combinational and sequential logic circuit design and create fully-functioning digital circuits
PLTW Engineering: Capstone Course

• Engineering Design and Development (EDD)
  – Research, design, and construct solutions to engineering problems

• Components
  – Project Management
  – Researching a Problem
  – Designing a Solution
  – Creating a Prototype and Testing Plan
  – Evaluation and Reflection on the Design Process
  – Presentation of the Design Process
  – Going Beyond Engineering Design and Development
PLTW
COMPUTER
SCIENCE
50 percent of STEM jobs will involve computing by 2020

STEM field has seen a reduction in student participation over last 20 years

98 percent of college Computer Science majors report being exposed to CS prior to college

Source: Bureau of Labor Statistics; NCES; College Board
PLTW Computer Science

A rigorous four-year program of study that engages high school students in computational thinking to solve complex, open-ended problems.
Course Overview

**Introductory Course**
- Introduction to Computer Science (ICS, 0.5 year)

**Foundation Courses**
- Computer Science and Software Engineering (CSE, 1 year)
- Computer Science Applications (CSA, 1 year)

**Specialization Courses**
- Simulation and Modeling (SAM, 0.5 year)
- Artificial Intelligence (AI, 0.5 year)
- Cybersecurity (SEC, 0.5 year)

**Capstone Course**
- Computational Problem Solving (CPS, 1 year)
Computer Science and Software Engineering (CSE)

Aligned to the Computer Science Teachers Association (CSTA) 3B standards
## Course Development Timeline

<table>
<thead>
<tr>
<th>Course</th>
<th>Development</th>
<th>Pilot</th>
<th>Full Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAM</td>
<td>2015-2016</td>
<td>2016-2017</td>
<td>2017-2018</td>
</tr>
<tr>
<td>AI</td>
<td>2015-2016</td>
<td>2016-2017</td>
<td>2017-2018</td>
</tr>
</tbody>
</table>
Students play the roles of biomedical professionals as they investigate and study the concepts of human medicine, physiology, genetics, microbiology, and public health.
Biomedical Sciences Course Sequence

- Principles of the Biomedical Sciences (PBS)
- Human Body Systems (HBS)
- Medical Interventions (MI)
- CAPSTONE: Biomedical Innovation (BI)
Principles of the Biomedical Sciences (PBS)

Units
1. The Mystery
2. Diabetes
3. Sickle Cell Disease
4. Heart Disease
5. Infectious Disease
6. Post Mortem
Human Body Systems (HBS)

Units
1. Identity
2. Communication
3. Power
4. Movement
5. Protection
6. Homeostasis
Medical Interventions (MI)

Units

1. How to Fight Infection
2. How to Screen What is in Your Genes
3. How to Conquer Cancer
4. How to Prevail When Organs Fail
Biomedical Innovation (BI) Capstone

Sample problems include

Designing an effective ER - 24 days
Design of a medical innovation - 16 days
Combat a public health issue - 18 days
Forensic Autopsy - 12 days
Independent project - 23+ days
High-quality professional development prepares teachers to get students engaged in STEM.
High-quality professional development for teachers

- Three phases:
  - Readiness training
  - Core training
  - Ongoing training

- Conducted in partnership with more than 51 colleges and universities across the country.

- More than 3,500 teachers trained in summer 2013.
PLTW partners with a number of leading corporation, philanthropic organizations, and educational institutions.
So, does it work?

YES.

PLTW students achieve significantly higher scores in reading, mathematics, and science, and in some cases, have the opportunity to receive college credit.
So, does it work?

PLTW alumni study engineering and technology in greater numbers than the national average, with a higher retention rate in college engineering, science, and related programs than non-PLTW students.
Let’s continue the conversation.

For more information visit: pltw.org or pltwwi.org

**Greg Quam**
Director of School Engagement, PLTW
Wisconsin

gquam@PLTW.org

Steve Salter
PLTW Affiliate Director, Milwaukee School of Engineering

ssalter@MSOE.edu

**Tania Kilpatrick**
PLTW State Leader, Engineering
CESA 6; Oshkosh

tkilpatrick@cesa6.org