

Project Lead The Way is the nation's leading provider of science, technology, engineering, and math (STEM) programs.



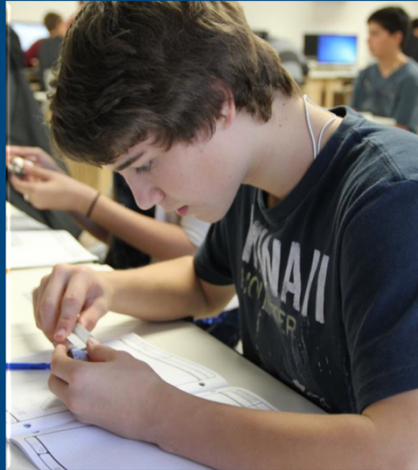
Project Lead The Way (PLTW) is the nation's leading provider of in-school STEM curriculum for middle and high school students. PLTW's world-class, activity-, project-, and problem-based curriculum and high-quality teacher professional development model, combined with an engaged network of educators and corporate partners, helps students develop the skills needed to succeed in our global economy.

When students understand how their education is relevant to their lives and future careers, they get excited. It's what Project Lead The Way does on a regular basis. It engage students' minds while inspiring their interest in STEM subjects through hands-on learning and real-world problem solving. That's why students are successful.

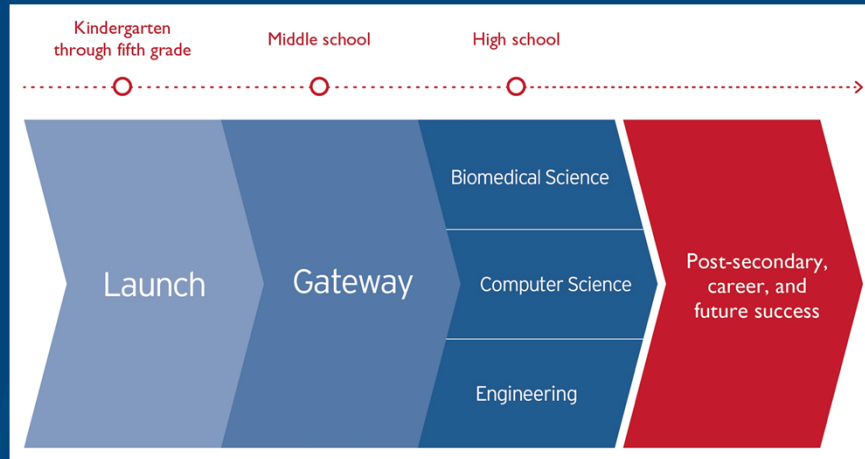
(Show Video by clicking on PLTW logo)

World-Class Curriculum

- All PLTW curriculum is activity-, project-, problem-based.
- PLTW curriculum aligns with Common Core and Next Generation Science Standards.



PLTW offers a K-12 solution through five programs of study.



PLTW in Illinois in 2014-15

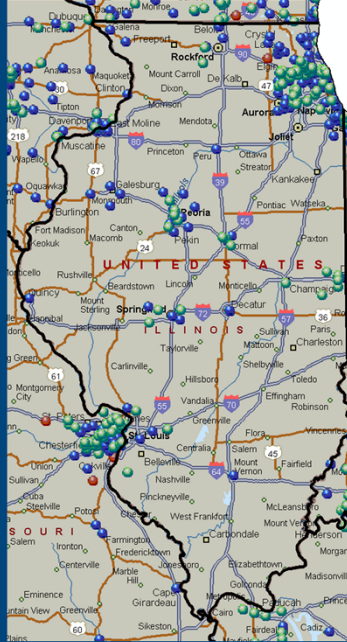
283 schools:

- 138 PTE
- 17 BMS
- 121 MS
- 31 Elem

2012-13
enrollment:

HS Students:
10,274

MS Students:
19,149



PTE – PTE Engineering at the High School
BMS – Biomedical Science at the High School
MS – Middle School
Elem – Elementary

Launch K-5

Topic-based modules engage students in design problems, collaboration, analysis, problem solving, and computational thinking.



With Project Lead the Way there are connections between the modules and the courses in Gateway, Biomedical Science, and Engineering. Makes for a coherent solution and pathway.

2013-14 PLTW Launch Modules

Section	Title	Alignment
K.1	Structure and Function	Kindergarten
K.2	Structure and Function: Pushes and Pulls	Kindergarten
1.1	Light and Sound	1 st grade
1.2	Light: Observing Earth, Sun, Moon, and Stars	1 st grade
2.1	Materials Science: Properties of Matter	2 nd grade
2.2	Materials Science: Form and function	2 nd grade
3.1	Motion and Stability: Science of Flight	3 rd grade
3.2	Motion and Stability: Forces and Interactions	3 rd grade
4.1	Energy: Collisions	4 th grade
4.2	Energy: Conversion	4 th grade
5.1	Robotics and Automation	5 th grade
5.2	Robotics and Automation: Challenge	5 th grade



The following list contains the titles and standards alignment of the modules currently being piloted. There will be a total of 4 modules per grade level.

If you are familiar with our courses at the middle school level and at the high school level, you see the connections between many of these modules and the courses in Gateway To Technology and Pathway To Engineering. This is another example of our deliberate approach to creating STEM pathways.

World-Class Curriculum

- Allows for flexibility and customization
- Designed for Kindergarten to 5th grade
- Four modules per grade
- Each module is ~10 hours
- First module of each grade focuses on the design process



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There are 24 elementary modules, with four (4) modules aligned to each grade level which are mapped to Common Core State Standards (CCSS) for math and English and Next Generation Science Standards (NGSS). Each module provides 10 hours of instruction and is designed for flexibility. These modules can be implemented at the grade level chosen by the school, provided that students have the appropriate background in math and science fundamentals to successfully engage in the program.

Frequent opportunities for student self-reflection on their own learning

Opportunities for individualized teacher feedback to students

Optional formative pretests and summative posttests (Balanced Assessment)

Rubrics and reflective checklists in engineering notebook for engineering design challenges

Examples of classroom assessments and checks for understanding

Essential questions embedded in curriculum to stimulate discussion and reflection

Paintbrush Design Challenge



Aligned to kindergarten standards

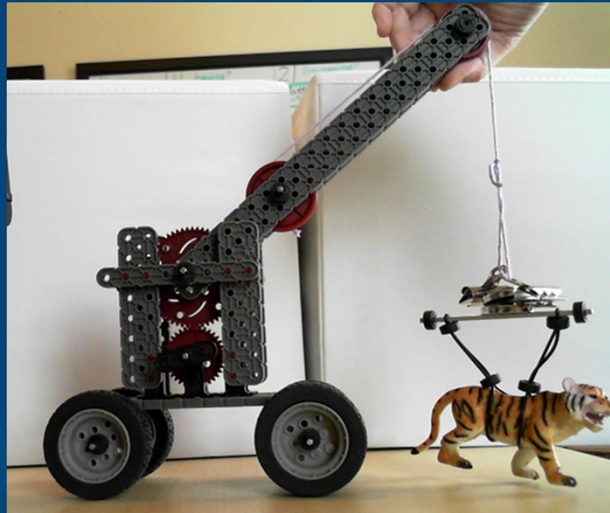


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In the paint brush design challenge in the Structure and Function module, students will address the problem presented at the opening of the module. The students will follow the design process to sketch, build, test, and reflect on a new paintbrush design. With teacher support, students will compare physical models of paintbrush tool designs and describe the differences in material choice, shape, and size. The students will use technology to document their final design solutions and suggest improvements. This is a kindergarten module. In this picture you will notice the different paintbrushes. These are two different brushes designed by two students in a kinder classroom. If you look close enough you can see the student's evaluation and explanation of her paintbrush design. Remember evaluation and explanation are the final two steps in the Elementary design process. The student stated " I liked my paintbrush it worked great. Next time I would add more feathers." This student engaged in the design process assessing what worked? What didn't? And if I was do it again what would I do differently? What changes would I make? This is a kindergarten student, 5 years old, evaluating their product and proposing future improvements.

Animal Rescue Design Problem



Aligned to 3rd grade standards



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The Animal Rescue activity is an example activity from the module called Motion and Stability: Forces and Interactions, which is aligned to third grade standards. In this activity students will explore simple machines including wheel and axles, levers, inclined plane, and more as they continue investigating the effects of balanced and unbalanced forces on the motion of an object.

Gateway To Technology (GTT) Middle School

Challenging, inspiring, and flexible, GTT engages middle school students' natural curiosity and imagination through creative problem solving.

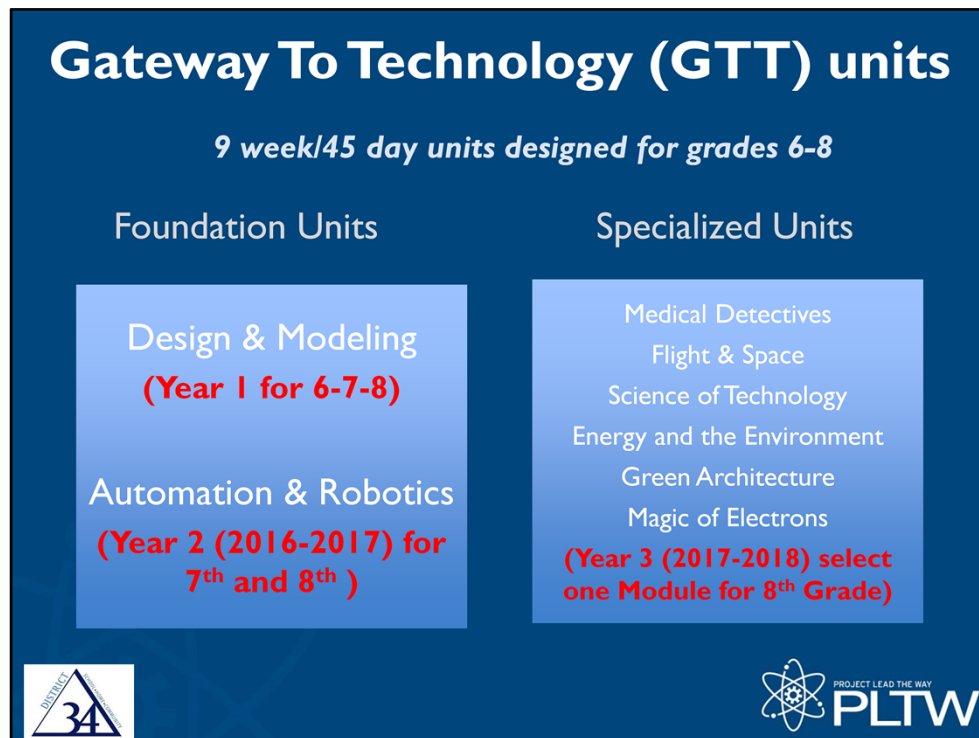


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Gateway To Technology is the Middle School Program

Through topics like robotics, flight and space, and DNA and crime scene analysis, students will find their natural curiosity and imagination engaged in creative problem solving. PLTW's Gateway To Technology (GTT) Program is a strong foundation for further STEM learning in middle school and beyond, challenging students to develop and apply 21st century knowledge and skills to solve real-world challenges like cleaning oil spills and designing sustainable housing solutions. Using the same advanced software and tools used by the world's leading companies, students see the application of math, science, technology, and engineering to their everyday lives.



Design & Modeling (DM)

Students apply the design process to solve problems and understand the influence that creative and innovative design has on their lives. Capturing research and ideas in their engineering notebooks, students work in teams to design a hobby organizer and new playground. They use Autodesk® design software to create a virtual image of their designs and produce a portfolio to showcase their creative solutions.

Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.

Energy and the Environment (EE)

Exploring sustainable solutions to our energy needs challenges middle school students to think big and towards the future. In Energy and the Environment, students investigate the impact of energy on our lives and the world. They design and model alternative energy sources and evaluate options for reducing energy consumption through energy efficiency and sustainability.

Flight and Space (FS)

The exciting world of aerospace comes alive through Flight and Space. Students explore the science behind aeronautics and use their knowledge to design, build, and test an airfoil. Custom-built simulation software allows students to experience space travel.

Science of Technology (ST)

Science impacts the technology of yesterday, today, and the future. Students apply the concepts of physics, chemistry, and nanotechnology to STEM activities and projects including making ice cream, cleaning up an oil spill, discovering the properties of nano-materials, and designing, building, and testing a new product.

Magic of Electrons (ME)*

Through hands-on projects, students explore electricity, the behavior and parts of atoms, and sensing devices. They learn knowledge and skills in basic circuitry design and examine the impact of electricity in the world around them.

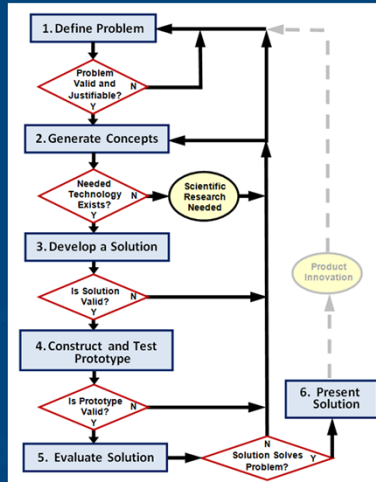
Green Architecture (GA)

Today's students have grown up in an age of "green" choices. In this unit, students learn how to apply this concept to the fields of architecture and construction by exploring dimensioning, measuring, and architectural sustainability as they design affordable housing units using Autodesk's® 3D architectural design software.

Medical Detectives (MD)*

Students play the role of real-life medical detectives as they analyze genetic testing results to diagnose disease and study DNA evidence found at a "crime scene". They solve medical mysteries through hands-on projects and labs, including a sheep brain dissection. Additionally, students investigate how to measure and interpret vital signs, diagnose diseases, and learn how the systems of the human body work together to maintain health.

Students use the design process to research, design, and model a playground



Example of a project from the Design and Modeling Module:

Students are given a Playground Problem where they need to design a New Playground starting with the foundation

During the project

Program Requirements Overview

- NO minimum time required for a module (or completion of module)
- At least one Lead Teacher per building
- Teachers need to be certified for the modules they will teach. PD certifications
- Required equipment (Minimum of 4:1 iPads/iPad minis)
- **PLTW Launch** can be delivered in a non-traditional environment (afterschool, summer, etc.)



Scalable, School-wide Model for PLTW Launch Core Training

Trainers

PLTW



Master Teachers



Lead Teachers



PLTW Teachers



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PLTW Core Training will use a “Learn by Doing” approach. Pedagogy will be taught through activities, projects, problems. For the Launch program it is important to note that Core Training will be for the Program. Teachers will not do Core Training separately for each module. In other words, the face-to-face training is for the program, not for the module. (Core Training for Gateway, Engineering, and Biomedical Science is for each course.) Teachers will have to demonstrate that they have successfully completed training for each module in order to teach the module; in many cases, this will be done through Live online or on-demand training through the LMS.

In Elementary,— there will be one Full Time Certified Project Lead the Way Teacher and Students will rotate through the class on a regular basis – similar to the way they currently attend specials art, music, etc.

PLTW has a training module that allows the district to have a “Master Teacher” who can provide professional development to Lead Teachers.

How much does Launch cost?

Varies widely depending on implementation

Annual Estimates not including IT:

	Launch
1 st year	\$5,000
2 nd year	\$1,000+
3 rd year	\$1,000+



The cost associated with the Elementary Launch program is already budgeted in the 2015-2016 Curriculum budget no new money will be added to support the program.

The technology needed for the Elementary Launch program is a minimum 4 students to 1 iPad and we already have more than this in place at our schools. We will not need to purchase additional technology for the program.

How much does GTT cost?

Item	One-Time	Annual
Participation Fee (PLTW support and all req'd software licenses)		\$750
Computers/laptops	TBD	
Core setup (per classroom)	\$500	
Equipment – DM (per classroom)	\$500	
Equipment – AR	\$6,000	
Consumables – DM/AR (per section)		\$350



We are able to fund PLTW with our current curriculum budget. No new money will need to be added.

DM = Design and Modeling program (implementing in the 2015-2016 school year)
AR = Automation and Robotics program (implementing in the 2016-2017 school year)

The computers and laptops for the Middle school program are already in place at the middle school.

Where are we in the Planning?

- Visit PLTW schools and classrooms
- Identify IT and facility needs
- Develop implementation plan / budget
- Review PLTW Agreement & Requirements
- Register district/school with PLTW
- Identify teacher(s)



Once the 2015-2016 PLTW teachers are hired we will be taking a field trip to area PLTW districts. We have begun identifying the classroom that will be the dedicated PLTW room and making plans for the required equipment. The budget for PLTW has been established in the curriculum budget and all agreements with PLTW have been signed.

March 17th BOE meeting to hire PLTW teachers.

PLTW partners with leading corporations, philanthropic organizations, and educational institutions.



Solving America's STEM challenge will take commitment from the public and private sectors. It is imperative that educators, non-profits, policymakers, and private companies come together to stimulate interest in STEM fields and nurture these competencies. PLTW is the catalyst for this movement.

PLTW is creating outstanding partnerships with leading corporations, philanthropic organizations, and educational institutions. Today, they have alliances with approximately 50 colleges and universities, nearly 100 leading corporations, and several significant philanthropic organizations.

Partnerships can take a variety of forms, including:

School Sponsorship and Financial Support: Corporations and philanthropies provide capital resources that can be directed to start-up grants for schools, or help to sustain programs for schools in need.

Employee Engagement: Corporations and philanthropies donate the time of their expert employees to interact with students and share their expertise and passion for STEM-related fields. There are a number of opportunities for individual and company-wide initiatives including advocating for PLTW programs, joining a PLTW School Partnership Team, bringing teachers and students to the company, or taking the company into the classroom.

Examples of PLTW's corporate partnerships include Chevron, Kern Family Foundation, Autodesk, IndyCar, 3M, Bemis Company, Cargill, General Motors, John Deere & Company, Lockheed Martin, National Instruments, Rockwell Automation, SAIC, Toyota, Vernier, and VEX Robotics.

Antioch District 34 is working with College of Lake County (CLC) to build a "Project Lead the Way" science initiative next year. Initial conversations have been started with *Rory Klick, Associate Professor of Horticulture/Department Chair and she* is involving the associate dean from Biological and Health Science (BHS), Maureen Robinson, and the associate dean in Engineering, Math and Physical Science (EMPS), Janice Edwards.

Thank you!



We are excited to bring this exciting, 21st century curriculum, Project Lead the Way, into District 34. We thank the Board of Education for supporting this initiative and are confident it will better prepare our students to meet the next generation science standards in our journey of continuous improvement. Are there any questions?