WELCOME TO

PROJECT LEAD THE WAY

COMING TO CATHEDRAL OF ST. PETER SCHOOL CLASSROOMS IN 2017-18

Project Lead The Way is a nonprofit organization that provides a transformative learning experience for K-12 students and teachers. PLTW creates an engaging environment and empowers students to develop in-demand knowledge and skills necessary to thrive in an evolving world. Through pathways in computer science, engineering, and biomedical science, K-12 students learn problem-solving strategies, critical and creative thinking, and how to communicate and collaborate. Students apply knowledge from a variety of disciplines as they engage in hands-on activities, projects, and problems reflective of real-world scenarios and careers. PLTW is shaping the innovators, creators, and designers of today and tomorrow.

Project Launch: Inspiring. Engaging. Empowering.

K-5 students already have the qualities of great designers and innovators. What PLTW Launch does is tap into their exploratory nature, engage them in learning that feels like play, and encourage them to keep discovering – now and for years to come. PLTW Launch's interdisciplinary modules bring learning to life. The program empowers students to adopt a design-thinking mindset through compelling activities, projects, and problems that build upon each other and relate to the world around them. And as students engage in hands-on activities in computer science, engineering, and biomedical science, they become creative, collaborative problem solvers ready to take on any challenge.

Kindergarten: Structure and Function: Exploring Design

Students discover the design process and how engineers influence their lives. They explore the elements of structure and function by identifying products around them designed by engineers and asking questions engineers might ask. They are introduced to a design problem through a story in which Angelina wants to design a paintbrush. Students apply their knowledge from the module to design their own paintbrushes.

First Grade: Light and Sound

Students investigate the properties of light and sound, including vibration from sound waves and the effect of different materials on the path of a beam of light. After students develop an understanding of light and sound, they are challenged to solve a design problem Mylo, Suzi, and Angelina face. In the story, the characters are lost and must use only the materials in their

backpack to communicate over a distance by using light and/or sound. Students use the design process to sketch, build, test, and reflect on a device that solves this design problem.

Second Grade: Materials Science: Form and Function

Students research the variety of ways animals disperse seeds and pollinate plants. They expand their understanding of properties of matter as they consider the form and function involved in seed dispersal and pollination. Students are introduced to the design problem when Angelina, Mylo, and Suzi are tasked with starting a wildflower garden on an expansive plot outside of their school. To solve the design problem, students apply their knowledge and skills to design, build, test, and reflect on a device that mimics a way in which animals disperse seeds or pollinate plants.

Third Grade: Stability and Motion: Science of Flight

In this module, students learn about the forces involved in flight as well as Newton's Laws of Motion. They design, build, and test an experimental model glider to find out how air and other forces affect its flight. Students discover aeronautics alongside Angelina, Mylo, and Suzi and are inspired by the characters' desire to use their skills to help those in need. Students apply the design process to the problem of delivering aid to an area where supplies must be airlifted in and dropped to the ground from an aircraft.

Fourth Grade: Energy: Collisions

Students explore the properties of mechanisms and how they change energy by transferring direction, speed, type of movement, and force. Students discover a variety of ways potential energy can be stored and released as kinetic energy. They explain the relationship between the speed of an object and the energy of that object, as well as predict the transfer of energy as a

result of a collision between two objects. The design problem is introduced by Angelina, Mylo, and Suzi watching amusement park bumper cars collide. As students solve the problem for this module, they apply their knowledge and skills to develop a vehicle restraint system.

Fifth Grade: Robotics and Automation

Students explore the ways robots are used in today's world and their impact on society and the environment. Students learn about a variety of robotic components as they build and test mobile robots that may be controlled remotely. Angelina, Mylo, and Suzi are tasked with designing a mobile robot that can remove hazardous materials from a disaster site. Students are then challenged to design, model, and test a mobile robot that solves this design problem.

Project Gateway: Encouraging and Developing Students' Love of Learning

Through explorations of coding, robotics, and flight and space, PLTW Gateway fuels middle school level students' passion for discovery. As they engage in hands-on, collaborative problem solving focused on real-world challenges, students in grades 6-8 use and stretch their imaginations in brand-new ways and connect their learning to life. All the while, students step into roles spanning the career landscape – a crucial experience during this transitional time in their lives.

Design and Modeling

Students discover the design process and develop an understanding of the influence of creativity and innovation in their lives. They are then challenged and empowered to use and apply what they've learned throughout the unit to design a therapeutic toy for a child who has cerebral palsy.

Automation and Robotics

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.

Flight and Space

The exciting world of aerospace comes alive through Flight and Space. During this unit, students delve into the history of flight and space, discover the science behind aeronautics, and explore traveling and living in space. Students are then challenged to use their knowledge to design, build, and test an airfoil.

Magic of Electrons

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 on the world around them.