

At the start of the 2015-2016 school year, OLG adopted the Project Lead the Way (PLTW) Launch curriculum to be used in our Kindergarten through 5th grade classes. This complements our PLTW Gateway program that we have been using in the Middle School.

PLTW Launch is designed for kindergarten through fifth grade students in which they will use unstructured approaches, like the engineering design process, to become problem solvers. They apply STEM knowledge, skills and habits of mind, and discover that trying different approaches and solutions is an essential part of the learning process. As teachers and students learn and discover together, education becomes more engaging and meaningful for everyone.

Each grade will incorporate two modules in their science class. The modules were designed to offer maximum flexibility and work in a variety of settings and scenarios. The modules in each grade are:

Kindergarten

Structure and Function: Human Body

Students explore the relationship between structure and function in the human body. They examine major structures or organs within the body and investigate how the structure of each organ is related to its function. Once students establish an understanding of basic structure and function in the body, they take a deeper look at the functions of bone. Students assemble a skeleton and create a model X-ray of a hand. They act as scientists to perform an inquiry investigation to understand why fingers are made up of more than one bone. Finally, each student works through an engineering design process to design and build a cast to aid healing of a broken bone.

Structure and Function: Pushes and Pulls

Students investigate different pushes and pulls on the motion of an object and develop knowledge and skills related to forces of differing strengths and directions. Their explorations include pushes and pulls found in their everyday world such as pushing a friend on a swing or pulling a wagon. Students are challenged to refine a design and successfully solve a problem, and they reflect on the effect of modifying the strength or direction of a force.

1st Grade

Light and Sound

Students investigate 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 understandings of light and sound, they are challenged to design a model to solve a design problem. Students use the design process to sketch, build, test, and reflect on a device that uses light or sound to communicate over a distance.

Light: Observing the Sun, Moon and Stars

After observing the sun, moon, and stars, students identify and describe patterns in their recorded data. Students build upon their knowledge of light to design, build, test and assess a device designed to solve a problem related to the patterns of the sun. After evaluating their design, students share their findings and ideas for ways to improve the device based on the testing data.

2nd Grade

Material Science: Form and Function

Students research the variety of ways animals disperse seeds and pollinate plants. Students expand their understanding of properties of matter as they consider the form and function involved in seed dispersal and pollination. Students gain understanding of form and function and how each concept informs design. The design problem requires students to apply their knowledge and skills to design, build, and test a device that mimics one of the ways animals either disperse seeds or pollinate plants. Students reflect on the efficiency of their designs and how they were informed by nature.

The Changing Earth

Students explore how the surface of the Earth is always changing. They are introduced to different kind of maps and explore how these maps convey different kinds of information about the world in which we live, including where water is found on Earth. Students investigate the different forces that shape the surface of the Earth and design solutions to limit the impact of erosion on a fictional community.

3rd Grade

Variation of Traits

Students investigate the differences between inherited genetic traits and traits that are learned or influenced by the environment. Students explore the phenomena that offspring may express different traits than parents as they learn about dominant and recessive genes. Students use what they learn to predict inheritance patterns of plants through multiple generations and investigate how predicted outcomes compare to experimental results.

Stability and Motion: Forces and Interactions

Students explore simple machines such as wheel and axles, levers, the inclined plane, and more as they investigate the effects of balanced and unbalanced forces on the motion of an object. Additionally, students explore magnetic interactions between two objects not in contact with each other through a hands-on project. Finally, students apply their knowledge of mechanisms and magnetic interactions as part of a solution to a design problem.

4th Grade

Energy: Collisions

As students learn about forms of energy, they identify the conversion of energy between forms and the energy transfer required to move energy from place to place. Students identify and explain how energy can be converted to meet a human need or want. After exploring energy conversion and transfer, students apply scientific ideas about the conversion of energy to solve a simple design problem. The problem requires students to design a system that is able to store energy and then convert the energy to a usable form as it is released.

Input/Output: Human Brain

Students discover how signals passing from cell to cell allow us to receive stimuli from the outside world, get this information to the brain for processing, and then send out a signal to generate a response. Students investigate how we take in information through the senses and where the information is processed in the brain. Students work as part of a team to design, plan, and create a video or podcast to raise awareness about concussions and educate children as to how concussions can either be identified early or prevented altogether.

5th Grade

Infection: Detection

Students explore transmission of infection, agents of disease, and mechanisms the body uses to stay healthy. Students design and run an experiment related to limiting the spread of germs and apply results to propose appropriate prevention methods. When presented with a fictional disease outbreak scenario, students examine evidence to deduce the agent of infection, the likely source of the outbreak, and the path of transmission through a fictional school.

Robotics and Automation

Student exploration of robotics includes ways that robots are used in today's world and the impact of their use 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. The design problem provides an opportunity for students to apply their robotic skills and knowledge to solve a real-world problem related to environmental disaster cleanup.