

Milton Public Schools Grade 4 STEM

- ❖ The Grade 4 STEM experience is **Project Lead the Way (PLTW)**. **Project Lead the Way** has an elementary curriculum called **Launch**. This curriculum promotes:
 - **Engineering, Biomedical, and Computer Science** skills and content knowledge
 - **Collaboration** skills
 - Hands-on **engaging** activities
 - Multiple solutions to **real world problems** presented at an appropriate level
 - A natural **desire to expand** beyond the scope of the modules
 - A **cross curricular** unit of study covering many learning objectives
 - Teaching a **love of learning**
 - **Integration** of science with English language Arts and mathematics
- ❖ The four modules fourth graders in the English Innovation Pathway will engage in include:

Energy: Collisions

Student exploration of mechanisms includes investigations of how mechanisms 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. Citing evidence, students explain the relationship between the speed of an object and the energy of that object. They also predict the transfer of energy as a result of a collision between two objects. As students solve the problem for this module, they apply their knowledge and skills related to energy transfer in collisions to develop a vehicle restraint system.

Energy: Conversion

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: Computer Systems

In this exploration of how computers work, students are encouraged to make analogies between the parts of the human body and parts that make up a computer. Students develop a notion of the computer as a machine that takes input, processes information using defined instructions, and produces output. With strong connections to the fourth-grade Human Brain module, students investigate reaction time as a measure of nervous system function. Students apply the knowledge and skills gained throughout the activities to build their own reaction time measurement devices on tablets.

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.