

PLTW Gateway

Automation and Robotics | Unit Outline

Learn how creative thinking and problem solving can change your world!

Build, program, and exercise creative problem solving to innovate and design automated solution prototypes for various users.

Students explore robotics and automation as they take on the role of interns, and work in teams to create prototypes to meet the needs of clients. They build and analyze mechanical systems and automate them with programmed input and output devices.

Automation and Robotics Lesson Summary

Lesson 1	Automating Mechanisms
Lesson 2	Sensors and Systems
Lesson 3	Create and Automate

Lesson 1: Automating Mechanisms

Students explore how gear trains and other mechanisms transfer movement in mechanical systems and design, build, and program automated systems to meet the needs of clients. In the end-of-lesson project, students can choose to design an interactive device to keep pets physically and mentally active, a spinning street sign to warn drivers to slow down and stop, or a high-speed dragster.

Lesson 2: Sensors and Systems

Students investigate the versatility of an optical sensor as a programmed input device. Students extend their knowledge of mechanisms as they design increasingly complex prototypes to serve the needs of users. In the end-of-lesson project, students connect inputs to outputs through programming to create effective solutions that help their communities.

Lesson 3: Create and Automate

Students design solutions using an automated mechanical system and the programming necessary for communication between the sensors, motors, and building components. Students pick their own problems or select problems that highlight their creativity and are of service to others. Throughout the unit students reflect on their growing skills and interests and explore careers in the field.