Milton Public Schools
English Innovation Pathway
Grade 5 STEM

Engineering is Elementary

The Engineering is Elementary (EiE) curriculum has been expressly designed to increase children's STEM literacy. Inquiry-based and standards-driven, EiE teaches engineering content and skills, links engineering to the science and math students are already learning, and helps children develop positive associations with engineering and science—to see them as being integral to modern life, and also potential career paths.

The Engineering is Elementary project is based at the Museum of Science, Boston—the nation's only science museum with a comprehensive strategy and infrastructure to foster engineering and technological literacy in both science museums and schools. Launched in 2003 with support from the National Science Foundation, EiE is also supported by numerous foundations and corporations.

Besides promoting STEM literacy, EiE units also connect with literacy and social studies. Units are organized around illustrated storybooks that feature children from a variety of countries and backgrounds—so students learn about different cultures and world geography while they build their vocabulary. The child protagonist in each storybook faces—and solves— real-world engineering challenges . . . with a little help from an adult engineer who serves as a role model and guide.

The EiE units English Innovation Pathway classes will implement in grade 5 are:

- **Lighten Up: Designing Lighting Systems** - Optical engineers design all kinds of devices that use light to do something useful—from lasers and telescopes to fiber-optic communication systems. In the storybook that introduces this unit, an Egyptian boy uses what he learns from optical engineers working inside ancient tombs to develop an ingenious system for lighting the dancers in a school performance. This unit gets students thinking like optical engineers as they explore how light interacts with different materials. They'll use what they've learned about the properties of light as they design a system to illuminate hieroglyphics in a model tomb.

- **Marvelous Machines: Making Work Easier** - Machines make work easier—as students learn when they read about a visit to a potato-chip factory in the storybook *Aisha Makes Work Easier*. This unit guides students to think like industrial engineers as they explore the surprising variety of simple machines people use every day. Students also explore the pros and cons of assembly lines compared to making things by hand, then measure the force it takes to complete a task with and without a simple machine to help. Finally, they put their data to the test, combining a series of simple machines to create an assembly-line subsystem for a model potato chip factory.

- **Sounds Like Fun: Seeing Animal Sounds -** This unit brings new excitement to the study of sound. The storybook *Kwame's Sound* introduces a young drummer from Ghana who is blind; his father, an acoustical engineer, shows Kwame that sound is vibration and can be represented with both visual symbols (such as musical notation and spectrograms) and tactile symbols. Hands-on activities in this unit lead students to explore the properties of volume and pitch, investigate ways to damp sound, and develop their own novel way to represent the key elements of sound.