A World In Motion (AWIM)

OUR K-8 STEM EDUCATION SOLUTION

AWIM is a teacher-administered, industry volunteer assisted program that brings science, technology, engineering and math (STEM) education to life in the classroom for students in Kindergarten through Grade 8. Benchmarked to the national standards, the AWIM program incorporates integrated STEM learning experiences through hands-on activities that reinforce classroom STEM learning:

PROGRAM HIGHLIGHTS & BENEFITS

- It's interdisciplinary in nature, which helps students learn to make meaningful connections among disciplines
- All activities correlate with the Next Generation Science standards and the Common Core standards
- It builds bridges between corporations and classrooms by giving teachers, volunteers, and students the opportunity to work together and learn from each other
- More than 72,000 curriculum/challenge kits have been provided; over 4.5 million students participate; more than 30,000 volunteers

New Program!

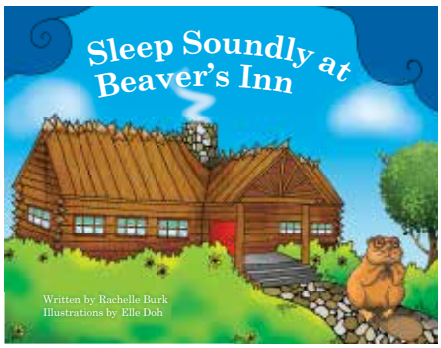
MAKING MUSIC CHALLENGE

Primary Grades (K-3)

In this exciting new STEM Challenge, students explore how, what and why of sound and vibration through interactive lessons.

Students learn how the human eardrum works and explore concepts such as pitch and longitudinal and transverse waves. Working in teams, they collect information through hands-on investigation and observation, and engineer a musical instrument according to specific criteria. In this activity, students:

- explore sound and sound waves
- build a model eardrum and observe how it reacts to sound
- examine a variety of musical instruments and discover why they make different sounds
- investigate how string length, width and tightness affects a note's pitch
- use knowledge gained in previous lessons to build a prototype musical instrument
- test and demonstrate their instrument



The accompanying book *Sleep Soundly at Beaver's Inn* brings the concept of sound and vibration to life through animals and sounds in nature.

www.awim.org

Funded by GM FOUNDATION

A World In Motion Challenges

Primary (grades K-3)

New! Making Music Challenge

Students explore sound and vibrations, learn how the eardrum works and explore the concepts of pitch, longitudinal and transverse waves. They collect information and engineer a musical instrument according to specific criteria. The book component, *Sleep Soundly at Beaver's Inn* brings the concepts to life for the students through a fictional story about animals and sounds within nature.

Rolling Things Challenge

Students explore the story, *The Three Little Pigs Sledding Adventure*. Based on the scientific concepts presented in the story, students explore toy cars and car performance. Students launch the cars from ramps and investigate the effects that different ramp heights and car weights have on distance traveled. Students make adjustments for performance through variable testing.

Pinball Designers Challenge

Students explore the concept of optimizing a design by designing and building a pinball game. The story of *Malarkey & the Big Trap* introduces students to the concept of improving a design through experimentation and data analysis. Students test the launch ramp to explore how launch position affects the behavior of the pinball. Students make their games more challenging by adding targets, walls, and bumpers to the game board.

Engineering Inspired By Nature

Students investigate methods in which seeds are dispersed in nature through the story, *Once Upon a Time in the Woods*. The story leads the students to further explore seeds dispersed by the wind. Students use the designs of nature to develop paper helicopters and parachutes and perform variable testing to improve performance.

Straw Rockets Challenge

Students explore the early life of Dr. Robert Goddard through the age appropriate biography, *The Rocket Age Takes Off*. Investigating Goddard's early trials and tribulations to create the first liquid fueled rocket engine, students begin to uncover the work necessary to optimize a design. Students use a design process to build and perform variable testing on straw rockets. Design goals include farthest and highest flight.

Elementary (grades 4-6)

Skimmer Challenge

Students construct paper sailboats and test the effects of different sail shapes, sizes, and construction methods to meet specific performance criteria. Friction, forces, the effect of surface area and design are some of the physical phenomena students encounter in this challenge.

JetToy Challenge

Students make balloon-powered toy cars that meet specific performance criteria: distance traveled, weight carried, accurate performance, and speed. Jet propulsion, friction, air resistance, and design are the core scientific concepts students explore in this challenge.

Gravity Cruiser Challenge

Students focus on understanding the relationships between the "sweep" of the lever arm, the number of winds the string makes around the axle, and the distance the gravity cruiser travels. They also investigate how the diameter of the wheels, the diameter of the axles, and the amount of weight placed on the lever affect the gravity cruiser's speed and distance. This challenge introduces a rich activity in critical thinking and learning how to use the experimental method to test hypotheses and solve an engineering problem.

Middle School (grades 6-8)

Gravity Cruiser Challenge

Students focus on understanding the relationships between the "sweep" of the lever arm, the number of winds the string makes around the axle, and the distance the gravity cruiser travels. They also investigate how the diameter of the wheels, the diameter of the axles, and the amount of weight placed on the lever affect the gravity cruiser's speed and distance. This challenge introduces a rich activity in critical thinking and learning how to use the experimental method to test hypotheses and solve an engineering problem.

Motorized Toy Car Challenge

Students develop new designs for electric gear driven toys. To meet a specific set of design requirements, students must write proposals, draw sketches, and work with models to develop a plan. Force and friction, simple machines, levers and gears, torque and design are core concepts covered.

Glider Challenge

Students explore the relationship between force and motion and the effects of weight and lift on a glider. The glider activity culminates in a book-signing event where each design team presents its prototype and the class presents its manuscript of Glider designs. Students learn the importance of understanding consumer demands and the relationships between data analysis and variable manipulations.

Fuel Cell Challenge

Student teams design a toy car that uses a PEM (Proton Exchange Membrane) fuel cell to power the electric motor. Elements of electrical currents, Green Design, and transformations of energy are explored as the teams develop their product.