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Ronnie Ho's 4th grade classroom
Josiah Quincy School

TRANSPORTATION Unit

During our classroom time this fall, we plan to run a curriculum based on the different methods of transportation, specifically exploring the construction and motion of bicycles, cars, and trains. For this curriculum we will use selected lessons from the activity data base that we will adapt to fit the curriculum's theme and the age level of our classroom, and we will also design some lessons for the weeks talking about trains and the final project. This curriculum will explore sturdy structures, simple machines, gears, wheels and axles, simple motors, and the varying forces and environmental impact required for the three different modes of transportation to work effectively. We will be using non-lego materials and NXT lego kits to teach the class the outlined engineering topics.

Lesson 1: Non-Lego Bike Unit - Materials Testing/ Introduction to Transportation Unit

Building Activity: Construct a device that can move and can with stand a small drop with the tested materials in the lesson

Lesson 2: Bike Unit: Engineering the Wheel

Challenge: Build a vehicle with wheels that can travel over varying terrain (ie. rocks, sand, water, etc.)

Lesson 3: Gears

Competition: Who can construct a gear to lift the most batteries

Lesson 4: Cars Unit - Wheel and Axle Curriculum (Kinetic and Potential Energy)

Lesson 5: Introduction to Motors/ Construction of a sturdy vehicle

Lesson 6: Train Unit: Tension, How varying weights of cargo or varying items being pulled behind a vehicle can affect the speed of the vehicle

Lesson 7/8/9: Final Project - Building a Bicycle, Car, or Train

Students will use the skills they have acquired about constructing a sturdy structure, motion, wheels, gears, tension, and kinetic and potential energy to construct a means of transportation. The project will be developed during the course of the semester to ensure that it incorporates all that was discussed, along with extension activities like the vehicles needing to carry certain weights, withstand a drop, and travel a certain distance.