

FUEL OUR FUTURE NOW

K-2

MODULE OVERVIEW – Vroom! Vroom! What Makes Cars Go?

MODULE OVERVIEW

Module Description: Students explore gravity, friction, and energy using objects and model cars. They investigate and define the concepts of motion, force, and energy, using simple hands-on activities with vehicles as well as online interactives and videos. At the end of the module, students apply the knowledge they have acquired about force, motion, energy and friction to design a functioning model car. Then, students share the cars with their classmates in a model car show.

Module Project: Students develop a model and/or diagram of a car and explain what causes the car to move, ways to keep it moving, and what makes it speed up or slow down.

Module Objectives:

- Explain what causes a vehicle to move and keep moving.
- Name things that can cause a vehicle to speed up or slow down.
- Design a model car.

Relevant STEM Topics:

- Motion
- Energy
- Forces
- Engineering Design
- Planning a Project

Please see *Standards Addressed in GK-2* for a list of the applicable science, technology, engineering, and math standards, as well as the 21st Century Skills.

Total Time: 1–2 weeks

Note: This module has been designed for the wide range of abilities found among Kindergarten, Grade 1, and Grade 2 students. Kindergarten teachers can use the first lessons, and can judge how far they wish to take their students. Similarly, Grade 2 teachers may wish to disregard the first lessons if they feel

they are redundant to what children already know and instead spend more time on the design and build phase of the module.

LESSON PLANS

Lesson 1 – How Things Move: Roll, Slide, and Bounce

Students begin thinking about engineering a vehicle by taking a closer look at movement through exploring and comparing different ways that things move.

Lesson 2 – Motion and Force: Pushes and Pulls

Students investigate forces, such as pushes and pulls, to find out what is needed to cause the motion of an object and, ultimately, a vehicle.

Lesson 3 – The Force of Gravity

Using ramps and model cars, students discover how gravity acts as a force that pulls objects toward the Earth and what its effect is on vehicles.

Lesson 4 – What Makes Things Stop?

Students continue to use model cars to explore how rough and smooth surfaces and friction affect motion. Students apply their thinking to determine the factors that reduce vehicle friction.

Lesson 5 – Keep it Moving!

Students begin to test out ideas for making their own vehicles. They will explore with wheels and axles and consider solutions to make them move more smoothly.

Lesson 6 – Creating Model Cars

Students use the engineering design process to apply their knowledge from the previous five lessons to design a working model car.

Lesson 7 – Model Car Show

Students use the designs that they created in the previous lesson to build their cars. Afterward, they have a car show to allow their classmates to give positive feedback.

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