

2. Movement – Building Cars

Classroom Activity:

To build simple cars and investigate their characteristics (e.g. on different surfaces).

Grade: 2

Strand: Understanding Structure and Mechanisms

This task addresses the following overall expectations:

- investigate mechanisms that include simple machines and enable movement;
- demonstrate an understanding of movement and ways in which simple machines help to move objects.

and the following specific expectations:

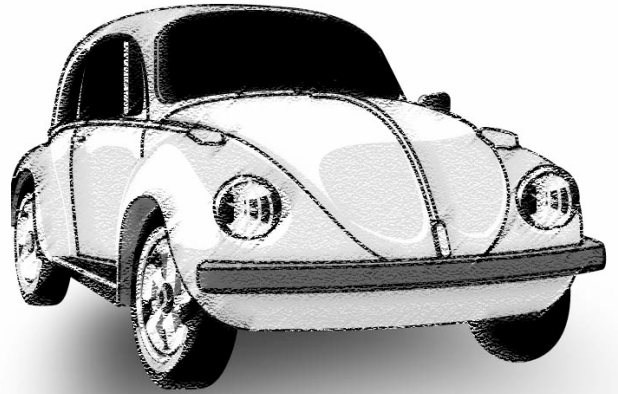
- investigate the structure and function of simple machines;
- use technological problem-solving skills, and knowledge and skills acquired from previous investigations, to design, build, and test a mechanism that includes one or more simple machines;
- use appropriate science and technology vocabulary, including push, pull, beside, above, wheel, axle, and inclined plane, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes;
- describe different ways in which objects move;
- identify simple machines used in devices that move people.

Assessment Categories:

- Thinking and Investigation
- Communication

Cross-discipline connections:

Language



Type of Activity: Classroom

Preparation: (approx. 60 minutes) Pre-cut all parts for the cars which consist of a flat balsa sheet rimmed with strips of wood with gaps that allow for the passage of the axles. Cardboard and balsa pieces can be cut from large sheets and items to serve as wooden wheels and axels can be purchased at any hardware store. Time needed to complete the task: 90 minutes

Materials/Resources for teachers:

carpenter's glue
popsicle sticks
containers
cardboard and wooden wheels
wood axles
wood strips and balsa sheets
straws
cardboard or bristleboard
scissors
handsaw
x-acto knife
wood cutting fixture and vice/clamp
plastic ramp or wooden plank
carpeted surface
cardboard surface
tile surface

2. Movement – Building Cars (continued)

Materials/Resources for students:

pre-cut car parts
cardboard or bristleboard
carpenter's glue
scissors
popsicle sticks
plastic ramp or wooden plank
containers
carpeted surface
cardboard and wooden wheels
cardboard surface
wood axles
tile surface
straws

Activity Description:

Discuss as a whole class:

"What would make the cars move faster? (slower?)"

"Which of the surfaces will slow the cars down and why?"

Predictions should be summarized on the blackboard. Divide the students into groups of 3 or 4 to assemble their cars from the parts provided. To prevent lateral movement of the wheels, place a piece of cardboard on the axle close to the body of the car, followed by a straw, then the wheel on the outer end. Then test the effects of friction by releasing the vehicles from a ramp onto 3 different surfaces: tile, carpet and cardboard.

Tips:

The project can be modified by using toy cars of different sizes.

Grade Extensions:

By introducing calculations, this task can be modified and used for: Grades 11-12 Physics