Gears/Simple Machines Lesson Plan

Summary

Content Area Science/STEM

Grade Level Grade 3-5

Topic / Unit of Study Mechanical functions, how gears and simple machines can work.

Objective Students will be able to:

- Recognize that interaction between objects causes objects to speed up, slow down, or change direction.
- Investigate ways gears modify the speed and direction of, and the force exerted on, moving objects.
- Explain what a gear is and how it makes work easier.

Duration 60 Minutes

Implementation

Materials

- Playground Gears Panel
- KWL Sheet

Instruction

1. Ask students to fill out “know” and “want to know” sections of a KWL chart.
2. Gather children around the playground gear panel.
3. Ask students to explain a gear and how it moves. Discuss uses for gears in everyday life.
4. Explain the concept of a simple machine in physics. Discuss other simple machines and their uses.
5. Have students verbalize predictions about the relationship between gear size and speed.
6. Demonstrate moving a gear and ask for observations.
7. Allow students to experiment with moving different gears at different speeds and making observations.
8. Ask one student to spin the largest gear one time and have another student count the revolutions of the smallest gear.
9. Discuss the relationship between gear size and the number of rotations and use this information to explain why gears may be used in different contexts (bicycles, analog clocks, etc).
10. Return to the classroom and fill out “learned” section of KWL chart.

Assessment

1. Students will be able to identify how gears interact with each other by creating and applying a set of rules.
2. Demonstrate an understanding of a simple machine and describe uses for simple machines in everyday life.
3. Demonstrate understanding that machines allow a small amount of input force to generate a larger output force.