

Exploring Energy?

Electricity is energy used to power items all around us. Energy itself comes in different forms and for this lesson there will be a focus on kinetic energy. The movement of objects and how their motion can be used to ignite energy that is used to power household items. Students will learn to identify and make connections to the rotations of the wheel and the ability of the microcycle to power various items.

Grade: 1st Grade

Lesson Length: 45 minutes

Standards

K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
 K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Objectives

- Students will be able to describe what energy and kinetic energy is with 80% accuracy.
- Students will be able to identify 3 items they can power with kinetic energy with 80% accuracy.

Materials/Technology/Equipment

- ✓ One Green Microcycle
- ✓ One pinwheel
- ✓ Chart Paper
- ✓ Vocabulary definitions
- ✓ Printed copies of:
 - Journal Entry Page

Activity Structure

Opening Discussion/Introduction
minutes

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The Instructor begins the lesson by gathering the students and begins a whole group discussion:

- The instructor will then take out a sheet of chart paper that has a KWL chart largely printed.
- To begin the students are given the topic: Energy.

- They are then asked to give examples of pieces of information that speaks about what they already know about energy for the K column on the chart. As the students give examples the teacher will write the responses on the chart. (Teacher will probe the students by asking: What in the classroom uses energy? If items do not move are they making energy?)
- Secondly, the students will be asked what they want to learn about the topic of Energy?

***The students will be using this time during the introduction to be able to brainstorm about energy and begin sharing ideas and different concepts.**

**Lesson
minutes**

30

Once the classroom has had a classroom discussion about energy and what they know about it the lesson will begin with a demonstration.

1. The teacher will take out the pinwheel and show the students. The students will then be asked: How do you make the pinwheel move?
2. The teacher will then ask a volunteer to come to the front of the class to move it. (The students will either turn it by hand or have them blow on it/maybe have a student perform both).
3. The teacher will then ask the students what is happening? Have the students explain how the student is using their fingers to rotate the pinwheel or using their mouths to blow air in order to rotate the wheel. (Teacher will guide this discussion with questions such as: Where is the air coming from? What is telling you to move your finger?)
4. Once this is discussed, you introduce the idea of energy and the different forms energy comes in. On the board or on a place in which to display material the students will learn the terms:

Energy- the ability to do work.

Potential energy- when an object depends on another object to move.

Kinetic energy- energy that is moving

Once the students are introduced to the terminology they are then taken to the microcycles.

1. The teacher will ask for a volunteer who can ride the microcycle. The teacher will then ask the student to begin pedaling.
2. The teacher will ask if they see anything that reminds them of the pinwheel?
3. The wheel will be pointed out and ask if they can identify which type of energy is being used? (Looking for the response: Kinetic energy)

THE GREEN MICRO CYCLE

4. The student will then be asked to stop. The teacher will ask, what does the wheel need to rotate? (Looking for the students to say the pedals? Then ask the students to explain what the pedals need to move?)
5. Students will then attempt to identify which type of energy is being used when the pedals are not moving?
6. Then the discussion will lead to how energy can come as electricity. Electricity can therefore be used to power items all around us. The teacher will ask the students what can be powered by this energy?

Once the students have discussed the way in which the bike can create kinetic energy the students will be asked to draw a picture of both the pinwheel and the bike and with a partner discuss:

1. What they have in common and what makes them different?
2. What can they power if they were to produce electricity?

The class will then come together and discuss their answers.

**Wrap-up
minutes**

10

Exit Ticket: The students will take what they learned and complete an illustrated Journal page.

- The journal page will require an illustration of the bike and something that they can power with electricity.
- The journal page will also require them to write in complete sentences what they learned and what type of energy the drawing is depicting.

After the Lesson

Homework

Students will have a scavenger hunt to complete at home. They will be required to look for 3 items that they use, that can be powered by electricity and 1 item that illustrates potential energy and 1 item that illustrates kinetic energy.

1. They will be required to draw pictures of each of the items. (Students can be given a blank sheet of paper that is folded into 6 squares that they can use or there can be a pre-printed homework sheet with 6 spaces to write or draw the items)

**Extension
Activities**

Now that students have learned what electricity is and what it can be used for students can progress to learning the following:

1. Students can learn about the different types of energy by discussing vocabulary and doing word sorts with stations.
2. Students can learn about generators and how they can be used to make electricity.

THE GREEN MICRO CYCLE

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| | <ol style="list-style-type: none">3. Students can learn about the different parts of the microcycle and do a labeling of the parts.4. Students can do a lesson about circuits and work with lighting light bulbs and comparing it to the microcycle.5. Students can learn about other items they can use to power with a microcycle. |
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