Lesson Plan

How Does Wind Power Work?

Book: *Using Wind Turbines to Fight Climate Change*
Series: Fighting Climate Change with Science
Level: Navigator

Objective
To help students determine the main ideas of a text related to wind power and renewable energy.

Supplies
- Several copies of the *Using Wind Turbines to Fight Climate Change* book
- How Does Wind Power Work? worksheet (attached)
- Pencils

Before the Activity
Read the *Using Wind Turbines to Fight Climate Change* book, or assign it to students to read on their own. Print a copy of the How Does Wind Power Work? worksheet for each student.

Activity
Using Wind Turbines to Fight Climate Change describes the many ways wind power can be used to produce electricity and fight climate change. The book discusses details related to the technical aspects of wind turbines, as well as how they are used in real-world scenarios.

Pass out the How Does Wind Power Work? worksheet. Students should refer to the book to write short answers to the worksheet questions. Remind students to look at the photos, captions, infographics, and sidebars in addition to the main text.

Evaluation
Collect the worksheets at the end of class. Use the attached answer key to award each student up to 12 points.

Standards
This lesson may be used to address the Common Core State Standards' reading standards for informational text, grade 4 (RI 4.6).

How Does Wind Power Work?

1. What did William Kamkwamba power with his wind turbines?

2. What is a generator?

3. During what time period did scientists learn to create and control electricity?

4. What areas were responsible for half of all CO_2 emissions between 1750 and 2020?

5. How does a turbine change the kinetic energy of wind into electricity?

6. How is electricity sent from wind turbines to houses?

7. What are three advantages of Alpha 311's new wind turbines?

How Does Wind Power Work? ANSWER KEY

1. What did William Kamkwamba power with his wind turbines?

He used them to send electricity to a light bulb and to power a water pump that was connected to a well. (1 point)

2. What is a generator?

A generator is a machine that turns the energy of motion into electricity. (1 point)

3. During what time period did scientists learn to create and control electricity?

The Industrial Revolution (1 point)

4. What areas were responsible for half of all CO_2 emissions between 1750 and 2020?

The United States and Europe (1 point)

5. How does a turbine change the kinetic energy of wind into electricity?
A wind turbine's twisted and curved blades help create lift from the wind. The lift causes a torque that rotates the blades. The spinning blades, called a rotor, spin a generator, and the generator produces electricity. (3 points)

6. How is electricity sent from wind turbines to houses?
Power lines carry electricity from a turbine (or group of turbines) to the electrical grid. The electrical grid is a network that sends electricity to houses and other places it's needed. (2 points)

7. What are three advantages of Alpha 311's new wind turbines?
They are very quiet. They are made from recycled plastic. They are much smaller than regular turbines, which means they can be placed anywhere and are easier to repair. (3 points)