

I have— who has?

LESSON OVERVIEW

THIS LESSON IS DESIGNED TO HELP STUDENTS DEVELOP A STRONGER UNDERSTANDING OF THE CONCEPTS AND TERMS RELATED TO ENERGY, AWARENESS, CONSERVATION, THE FUTURE OF ENERGY, AND SAFETY.

THE ACTIVITY AT THE HEART OF THIS LESSON CENTERS ON I HAVE-WHO HAS? CARDS THAT EACH CONTAIN A DIFFERENT "I HAVE" ENERGY TERM OR PHRASE ALONG WITH AN UNRELATED DEFINITION (IN THE FORM OF A "WHO HAS?" QUESTION). COLLECTIVELY AMONG THE GROUP OF CARDS, EACH TERM/PHRASE HAS A CORRESPONDING DEFINITION.

THE GOAL IS FOR STUDENTS TO LISTEN CAREFULLY FOR THE QUESTION TO BE READ FOR WHICH THEY HAVE THE CORRESPONDING ANSWER. THIS FUN ACTIVITY BUILDS LISTENING SKILLS, CONCEPT COMPREHENSION AND TEAMWORK.



Standards addressed

This lesson plan helps you address multiple Iowa Core standards and Wisconsin Academic Standards. This section identifies the science standards for each state that apply to this lesson plan.

Iowa Core

S.3–5.PS.4

Essential Concept and/or Skill: Understand and apply knowledge of sound, light, electricity, magnetism, and heat.

S.3–5.SI.7

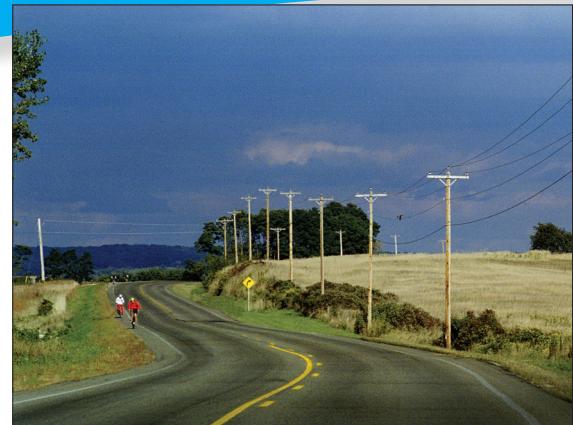
Essential Concept and/or Skill: Communicate scientific procedures and explanations.

S.3–5.ES.1

Essential Concept and/or Skill: Understand and apply knowledge of properties and uses of earth materials.

RI.4.IA.1

Employ the full range of research-based comprehension strategies, including making connections, determining importance, questioning, visualizing, making inferences, summarizing, and monitoring for comprehension.



RI.4.3

Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

RI.4.4

Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

RI.4.5

Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

SL.4.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

RI.5.IA.1

Employ the full range of research-based comprehension strategies, including making connections, determining importance, questioning, visualizing, making inferences, summarizing, and monitoring for comprehension.

• RI.5.3

Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.4

Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

RI.5.5

Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.

SL.5.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Wisconsin Academic Standards

C.8.2 Identify data and locate sources of information including their own records to answer the questions being investigated

D.8.8 Describe and investigate the properties of light, heat, gravity, radio waves, magnetic fields, electrical fields, and sound waves as they interact with material objects in common situations

D.8.9 Explain the behaviors of various forms of energy by using the models of energy transmission, both in the laboratory and in real-life situations in the outside world

This lesson addresses the following Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects:

Reading Standards for Informational Text K–5

- 4.RSIT.4 and 5.RSIT.4 Craft and Structure: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 4/5 topic or subject area
- 4.RSIT.7 Integration of Knowledge and Ideas: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears.
- 5.RSIT.7 Integration of Knowledge and Ideas: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Desired outcomes

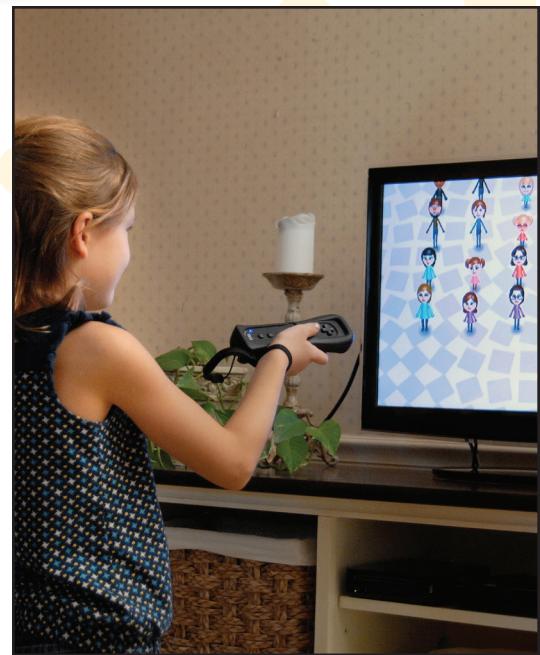
By completing this lesson, students will be able to:

- Demonstrate their understanding of energy-related concepts and terminology
- Engage with other students in a cooperative effort

Background

Understanding energy can be complicated. *The Energy Zone* magazine will go a long way in helping your students make sense of the many concepts and terms associated with energy topics. This lesson can be used as a way to test students' comprehension skills after having read and discussed the topics presented in *The Energy Zone*. It can also serve as an effective assessment activity that culminates the end of a comprehensive unit on energy.

The flexible nature of the activity opens up the possibility of having students create content for a new set of cards. The process of identifying terms and then coming up with an appropriate definition expands the skills students must exhibit while also adding to the collection of cards for the activity. If you choose to have students create content for a new set of cards, you will need to put together the new cards in a specific way so as to ensure that a continuous chain will occur when they are used.



Time required

25 - 45 minutes, plus 10 minutes prep time

Materials needed

- *The Energy Zone* magazine
- *I Have-Who Has?* cards [pages 9–12]
- *I Have-Who Has?* answer key [page 13]
- Stop watch or clock to record time

Important terms

Refer to the *I Have-Who Has?* answer key on the last page for a list of key words and phrases and their corresponding definitions.

Lesson steps

1. To prepare students for this activity you may wish to review key terms and concepts that are presented in *The Energy Zone*. Decide how best to do this depending on your student's familiarity with the concepts presented. You may choose to reference the entire magazine and/or specific articles within the magazine, asking students to recall an article's main idea. Use the answer key for clues, if needed.
2. Announce to the class that they are going to play a game called, *I Have-Who Has?* using game cards you will distribute. Explain that the object of the game is for each student to match the "I have" term on his/her card to a "Who has?" definition from another person's card. Students must listen closely for the definition to be read that matches the term on their cards. Each definition begins with the question, "Who has ... ?" When a student believes he/she has the correct corresponding term on his/her card, he/she stands up and reads the term aloud. If correct, the game continues when that student then reads the "Who has?" question on his/her card, thus continuing the chain.
3. Before beginning, discuss with your students the importance of listening carefully to each other and being quiet so that each phrase can be heard.
4. Shuffle the cards and distribute one to each student. If there are more cards than students, give some students multiple cards. Students should place the cards on their desks or hold them so that they can read the printed side.
5. Randomly select where to begin the chain or use any type of fun method to decide who gets to start (a guessing game, pull a name out of a hat, etc.). It does not matter who begins, the cards are designed so that if played correctly, the chain will continue until all the matches have been made.



6. If you are timing the round, start your stopwatch and say "Begin!" The student you've picked to start the chain stands up and reads his/her "Who has?" question aloud. Everyone else should listen carefully to see if the word on their card answers the question that was just read. The student with the correct answer should stand up and say his/her "I have" term and then read his/her "Who has?" question next. For example, a student will read the question, "Who has a resource that is not replaceable once it has been used?" Another student will have the correct answer on their card and will say, "I have non-renewable resource. Who has...?" and the chain continues.

Note: Remind the student who starts the chain that he/she still needs to listen for when their "I have" term comes up. If you worry that students will stop paying attention once they have read their cards, remind them that it is important to listen carefully to all of the terms and definitions, as they will be playing the game again in an attempt to improve their time and/or competitively against another team.

7. A practice round with a few questions may be necessary. Consult your answer key to make sure students are making the correct matches. The chain will continue unbroken only when the correct answer is given to each question.
8. Stop the timer when the game is complete (the student who first started will have the answer to the last question read). Shuffle the cards and repeat the game as many times as you wish. Make it competitive and see if the class can beat their best time.



Academic extensions and modifications

- To differentiate the lesson for more advanced students, create small groups that can play the game with each other or timed against other groups. In this scenario, students may get more than one card and may even have their own matches.
- Once you have played one round, repeat the activity in teams such as boys vs. girls to see who can complete the chain in the least amount of time. Enforce a time penalty (e.g.+5 seconds) whenever anyone gives a wrong answer.
- Once students understand how to play the game, challenge the class to create a new set of terms and matching definitions. Using the new terms, you will need to make the actual cards to ensure that a continuous chain is created.
- Have students work in pairs to create a picture/visual representation of a term(s). These could be used for a class bulletin board or a class book of the terms that were learned during this lesson.
- For students who may need additional support, use the Glossary section of the magazine to review key concepts and terms prior to the activity. You may also wish to post the answer key on an interactive whiteboard for the review.

I Have-Who Has? Cards

Use this reproducible to make a copy of the cards. Then cut out each card and distribute to the players. You may wish to laminate the cards for durability.

I have... biomass Who has: electricity created using energy that comes from moving water?	I have... hydropower Who has: the ability to organize or change matter (to do work)?
I have... energy Who has: fuels such as coal, oil and natural gas that formed from the remains of ancient plants and animals buried underground?	I have... fossil fuels Who has: the substance that utility companies add to natural gas to give it a bad smell, like rotten eggs?
I have... mercaptan Who has: a resource that is not replaceable once it has been used?	I have... non-renewable resource Who has: the energy of motion?
I have... kinetic energy Who has: a program where an energy expert inspects your home and suggests ways you can save energy?	I have... energy audit Who has: heat, hot water or steam from within the Earth that is used to create electricity and for heating and cooling?

<p>I have...</p> <p>geothermal energy</p> <p>Who has: a material, such as metal or water, that electricity can easily flow through?</p>	<p>I have...</p> <p>conductor</p> <p>Who has: stored energy, such as the kind in food, coal and natural gas?</p>
<p>I have...</p> <p>potential energy</p> <p>Who has: the process of converting materials that are no longer needed into new products?</p>	<p>I have...</p> <p>recycling</p> <p>Who has: the reason why you should never stick anything other than a plug into an outlet?</p>
<p>I have...</p> <p>electric shock</p> <p>Who has: a black rock formed from the remains of dead plants hundreds of millions of years ago?</p>	<p>I have...</p> <p>coal</p> <p>Who has: energy sources that can be replaced naturally, such as the sun, wind and water?</p>
<p>I have...</p> <p>renewable resources</p> <p>Who has: the number you should call if there has been an electrical or natural gas accident?</p>	<p>I have...</p> <p>911</p> <p>Who has: energy that comes from the sun's rays that reach the Earth?</p>

<p>I have...</p> <p>solar energy</p> <p>Who has: a fossil fuel that means “rock oil” ?</p>	<p>I have...</p> <p>petroleum</p> <p>Who has: what is created by the flow of electrons from one atom to another?</p>
<p>I have...</p> <p>electricity</p> <p>Who has: poles and power lines that provide a path for electrical energy to flow across the country to homes everywhere?</p>	<p>I have...</p> <p>power grid</p> <p>Who has: a fossil fuel that is a type of gas that forms in underground pockets near petroleum?</p>
<p>I have...</p> <p>natural gas</p> <p>Who has: energy that comes from the power of moving air?</p>	<p>I have...</p> <p>wind energy</p> <p>Who has: a label given to a product or appliance that shows it meets tough government standards for energy efficiency?</p>
<p>I have...</p> <p>ENERGY STAR</p> <p>Who has: what happens when appliances and electronics constantly draw electricity, even when they’re not being used?</p>	<p>I have...</p> <p>phantom energy loss</p> <p>Who has: something that can be used in the shower to help you know when it is time to get out?</p>

<p>I have...</p> <p>shower timer</p> <p>Who has: the act of using less energy or saving energy?</p>	<p>I have...</p> <p>energy conservation</p> <p>Who has: an object used to cover an electrical outlet that is not in use?</p>
<p>I have...</p> <p>safety cap</p> <p>Who has: a type of light bulb that uses up to 75% less energy than a traditional bulb?</p>	<p>I have...</p> <p>CFL</p> <p>Who has: the number your parents or guardians should call before digging in the yard?</p>
<p>I have...</p> <p>811</p> <p>Who has: the term used to describe something that is friendly to the environment?</p>	<p>I have...</p> <p>green</p> <p>Who has: a renewable energy source that comes from material made from plants and animals, such as wood, crops and even garbage?</p>

I Have-Who Has? Answer key

The terms below are listed in alphabetical order for reference only.
They will not follow this order during the game.

- 811: the number your parents or guardians should call before digging in the yard
- 911: the number you should call if there has been an electrical or natural gas accident
- biomass: a renewable energy source that comes from material made from plants and animals, such as wood, crops and even garbage
- coal: a black rock formed from the remains of dead plants hundreds of millions of years ago
- compact fluorescent light (CFL): a type of light bulb that uses up to 75% less energy than a traditional bulb
- conductor: a material, such as metal or water, that electricity can easily flow through
- electricity: what is created by the flow of electrons from one atom to another
- electric shock: the reason why you should never stick anything other than a plug into an outlet
- energy: the ability to organize or change matter (to do work)
- energy audit: a program where an energy expert inspects your home and suggests ways you can save energy
- energy conservation: the act of using less energy or saving energy
- ENERGY STAR: a label given to a product or appliance that shows it meets tough government standards for energy efficiency
- fossil fuels: fuels such as coal, oil and natural gas that formed from the remains of ancient plants and animals buried underground
- geothermal energy: heat, hot water or steam from within the earth that is used to create electricity and for heating and cooling
- green: the term used to describe something that is friendly to the environment
- hydropower: electricity created using energy that comes from moving water
- kinetic energy: the energy of motion
- mercaptan: the substance that utility companies add to natural gas to give it a bad smell, like rotten eggs
- natural gas: a fossil fuel that is a type of gas that forms in underground pockets near petroleum
- non-renewable resource: a resource that is not replaceable once it has been used
- petroleum: a fossil fuel that means "rock oil"
- phantom energy loss: what happens when appliances and electronics constantly draw electricity, even when they're not being used
- potential energy: stored energy, such as the kind in food, coal and natural gas
- power grid: poles and power lines that provide a path for electrical energy to flow across the country to homes everywhere
- recycling: the process of converting materials that are no longer needed into new products
- renewable resources: energy sources that can be replaced naturally, such as the sun, wind and water
- safety cap: an object used to cover an electrical outlet that is not in use
- shower timer: something that can be used in the shower to help you know when it is time to get out
- solar energy: energy that comes from the sun's rays that reach the earth
- wind energy: energy that comes from the power of moving air