

Energy Play: Harry Potter and the Chamber of Windy Myths

Teacher Guide

Goal

To understand misconceptions about using wind energy for generating electricity.

Background

This Energy Play uses a familiar story and characters to convey energy information about wind. It can be used at all grade levels, and can be performed as a reader theater or as a more elaborate performance with props and costumes.

Concepts

- Wind turbines are not very noisy.
- Properly sited wind turbines can avoid harm to bats and birds.
- Wind energy can be reliable and predictable.
- Appropriate siting of a wind turbine is critical to its success.

Time

The play can take as little as ten minutes to read through in class or one class period to practice and organize props with additional time the next day to perform.

Materials

- One copy of the script for each participant.
- Simple costumes and props, if desired.

Procedure

- Assign parts to students. There is a choral reading part included if using as a reader theater in class.
- Allow students time to rehearse parts and plan props if performing the play.
- Review enriched vocabulary as needed.

Anemometer	Menagerie	Siting (a wind farm)
Bickering	Migration	Sustained
Efficiently	Reliability	
Idling	Rhythmical	
- Assess student comprehension with the following questions:
 1. Why did Professor Dieseldore invite Professor Huggdatreaz to teach the Windseekers class at Hogwatts?
 2. What makes a location a good site for a wind turbine?
 3. What makes a location a poor site for a wind turbine?
 4. What is one myth most people believe about wind turbines? How would you convince them this is not true?

Extensions

1. The principal of your school is thinking about adding a wind turbine to the property to generate electricity. Your class is responsible for deciding if this is a good idea, and where the turbine should be located. Write a persuasive speech convincing your principal why she should, or should not, add a wind turbine.
2. Research wind energy and wind turbine technology. Prepare informative expo boards to use to teach other students about wind energy after performing the play for them. The expo boards should cover the following topics:
 - Wind, a renewable energy resource.
 - Parts of a wind turbine.
 - Siting a wind farm.
 - Wind turbines generate electricity.
 - Wind energy myths.

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Cast of Characters

RONI – a girl

HERMAN – a boy

HARRY SPOTTER – a boy

PROFESSOR HUGGDATREAZ – a science teacher

CLOUDIA – a girl

BREEZUS – a boy

CLASS – chorus

Scene One: Classroom at Hogwatts School

RONI: I'm so excited about this new class. This professor is really supposed to be energetic!

HERMAN: I just hope I pass this one.

HARRY: We'd better hurry or we're going to be late.

(They enter the classroom and find seats.)

PROFESSOR HUGGDATREAZ: Welcome to Windseekers Class. This is a new class at Hogwatts. Your first project will impact the entire school. Due to increased enrollment, our current electrical capacity is no longer meeting our needs.

RONI: *(Waving hand excitedly.)* Is that why the lights went off in our dorm last night? I couldn't finish reading ahead for my classes.

PROFESSOR HUGGDATREAZ: Yes, Roni. Professor Dieseldore invited me to teach this class since I'm an expert in siting wind farms. You are going to assist me in picking the perfect location for a turbine.

CLOUDIA: Cool.

HERMAN: *(quietly to Harry)* Do you know what he's talking about?

RONI: Shhhhh...

PROFESSOR HUGGDATREAZ: Can anyone tell me what wind energy is?

(Roni waves her hand wildly.)

PROFESSOR HUGGDATREAZ: Harry?

HARRY: The stuff that blew out the candle last night.

PROFESSOR HUGGDATREAZ: One point for Harry. But, wind is much more. Breezus?

BREEZUS: Wind is magic. It helps our broomsticks fly and fills dragons' wings.

RONI: *(shouts)* Wind is moving air.

PROFESSOR HUGGDATREAZ: One point for Breezus. Yes, wind does seem like magic. Roni, you would receive points too, if you'd waited to be called on. Yes, wind is moving air that we can harness to do work. Class, repeat after me: wind is moving air - energy is there.

CLASS: Wind is moving air - energy is there.

PROFESSOR HUGGDATREAZ: For homework tonight, everyone needs to find the perfect location for us to build a wind turbine here at Hogwatts. Class dismissed.

HERMAN: A wind what?

HARRY: Turbine. It's a modern windmill. The blades catch the wind and turn it into electricity.

RONI: It turns nature's mechanical energy into electrical energy for Hogwatts.

HERMAN: Thank you, HARRY. Roni, how far ahead did you read?

HARRY: Stop bickering, let's get this homework done.

CLASS: *(exiting the classroom)* Wind is moving air - energy is there. Wind is moving air - energy is there.

Scene Two: The Next Day in Windseekers Class

PROFESSOR HUGGDATREAZ: It's time to share your ideas. Where should we build the wind turbine?

(Roni waves her hand wildly.)

PROFESSOR HUGGDATREAZ: Breezus?

BREEZUS: At the Frightening Forest, so we don't have to see an ugly tower. It'll blend right in with the hideous trees.

CLOUDIA: I think wind turbines look cool.

PROFESSOR HUGGDATREAZ: Although some people don't like the look of turbines, that shouldn't be our first consideration.

RONI: And the forest would block the wind, so it would defeat the purpose.

HERMAN: *(Sighs loudly.)* So I guess that means my idea of a turbine on the side of the science building wouldn't work either?

PROFESSOR HUGGDATREAZ: That's right, Herman. Any other suggested site locations? Remember what wind is?

CLASS: Wind is moving air - energy is there.

CLOUDIA: How about near Zagrid's house, or even on his roof?

HARRY: The noise will keep him and his menagerie up at night.

PROFESSOR HUGGDATREAZ: Actually, the sound from a turbine isn't as loud as some people believe. It is a very rhythmical whooshing that is quieter than an automobile's engine idling. Who can see why building on the roof wouldn't work?

BREEZUS: Same reason as the woods, because the wind could be blocked. There can't be anything near it that would block the wind before it gets to the blades. His house is so tiny, even some of the trees are taller.

RONI: How about the roof of the school? It is the tallest building at Hogwatts, so nothing will block the wind's path.

PROFESSOR HUGGDATREAZ: Good suggestion, Roni, however it won't work.

HERMAN: Roni's wrong?

PROFESSOR HUGGDATREAZ: Sure Hogwatts' roof is tall, but does anything else use that airspace?

CLOUDIA: The owls – they would be toast!

BREEZUS: Good thing I don't have an owl.

PROFESSOR HUGGDATREAZ: Bird flight paths are a major consideration in siting a wind project. We've learned from past mistakes that wind turbines can't be built near migration routes. By avoiding these areas, there is a much smaller chance of wildlife being injured.

HARRY: This shouldn't be that hard. It's just wind – you can't even see it!

CLASS: Wind is moving air - energy is there.

HERMAN: Does this mean that if we find a perfect location, we'll only have power when there is a storm and it's really windy out?

RONI: No, Herman. Current technology allows a large wind turbine to run efficiently on winds as low as 13 miles per hour.

CLOUDIA: So we just need to find a location away from tall structures that might block the wind, with a wind speed of at least 13 miles per hour, and in a place that won't disturb wildlife.

BREEZUS: Maybe there's a windseeker spell to help figure this out!

PROFESSOR HUGGDATREAZ: Five points to Cloudia for summing up the discussion so nicely. For homework tonight, you can take anemometers out to check wind speed at various locations. Remember, the tower will be about 100 meters high, so you will have to find a way to get to that height to accurately check the speed.

HARRY: Woo...flying time!

Scene Three: The Next Day in Windseekers Class

PROFESSOR HUGGDATREAZ: Good morning class.

CLASS: Wind is moving air - energy is there.

PROFESSOR HUGGDATREAZ: Did you have fun using the anemometers last night?

BREEZUS: It was great, until I fell off my broomstick trying to get a reading.

CLASS: (*Laughs.*)

BREEZUS: The edge of the cliff had sustained gusts up to 80 miles per hour. We'd get tons of energy from that!

RONI: Actually, that's too much wind. Those gusts would shut the turbine down.

CLOUDIA: The field where the gardens are planted got between 15 and 25 mile per hour winds the whole time we were there.

HERMAN: But would we have to move all those plants? Some of them take years to bloom.

PROFESSOR HUGGDATREAZ: Many wind farms use the land under the towers for farming or grazing. We could continue to use the area around the turbine for plants. There is plenty of room for both.

HARRY: I know from flying that the wind changes depending on the weather and the season.

PROFESSOR HUGGDATREAZ: Ten points to Cloudia for finding a good site and a point to Harry for noticing that the wind isn't always constant.

BREEZUS: If wind isn't reliable, why use it?

PROFESSOR HUGGDATREAZ: Wind experts just finished a long-term study proving that winds in the garden Cloudia suggested are very reliable. The average wind speed there is 15 miles per hour. What other benefits does this location have?

CLOUDIA: It isn't near the owls or any other normal bird route.

BREEZUS: There are no tall buildings or trees near it.

HERMAN: We probably won't even hear the sound from the turbines when we're inside mixing potions.

RONI: By using wind power, we are using a renewable energy source. We'll never run out of wind energy, and we're taking care of the environment.

PROFESSOR HUGGDATREAZ: I'm proud of all of you for putting the facts together and deciding on the same site the experts did. We know we will need reliable energy to meet the electrical needs of our growing population of students. Now, for our next assignment...

(*Lights go out.*)

HARRY: I guess Professor Dieseldore was right. We need to use wind energy at Hogwatts.

CLASS: Wind is moving air - energy is there, and that's why we should care!