



4-H Grab and Go:

Discovery, Invention, Big Ideas and Wind

Concept:

Harnessing wind power for energy solutions is a recurring societal issue

Age Level:

Middle School: Grades 6-8

Education Standard:

NSES—Science in Personal and Social Perspectives

SET Ability:

Communicate, observe, interpret/analyze/reason

Life Skill:

Acquiring and evaluating information, Wise Use of Resources, Communication

Success Indicator: Youth will work together as a group to research and discuss harnessing wind power for energy solutions and its prominence in presidencies over time.

4-H Curriculum:

The Power of the Wind
(www.4-H.org/curriculum/wind)

Background Information:

In the 1850's before he ran for President, Abraham Lincoln wrote and delivered a lecture called "[Discoveries and Inventions](#)". He delivered this lecture across Illinois in cities including, Bloomington, Jacksonville, Decatur, Springfield and Pontiac. In this lecture, Lincoln said that discoveries and inventions were the result of "observation, reflections and experiment."

In Lincoln's lecture, he also addressed wind power. In another of President Barack Obama's speeches delivered on [January 16, 2009 to workers at Cardinal Fastener](#) in Ohio, he also addressed wind power. He chose this location to deliver his speech because Cardinal Fastener is a company that produces wind turbine parts.

When Barack Obama became president he gave a speech to the [Joint Session of Congress on Feb. 24, 2009](#), that mentioned some of America's "big ideas".

Directions:

1. Ask a youth to read the Lincoln speech, Parts I and II, followed by Obama's Speech.
2. Then lead youth through a discussion using the questions on the following page.





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PREPARATION

Time: 10 minutes

Space: meeting room

Materials:

- Access to internet and/or research materials
- Local news articles related to windpower
- Local zoning information

YOUTH DEVELOPMENT TIP:

Provide opportunities for youth to practice communication and social skills in small groups.

ADDITIONAL RESOURCES

Encourage youth to contact their county Extension office for additional resources on developing effective speeches.

www.csrees.usda.gov/Extension

1. How do Abraham Lincoln's thoughts about "Discoveries and Inventions" and Barack Obama's comments on "bold actions and big ideas" relate to the engineering design process?
2. How are the ideas of Lincoln and Obama alike? How are they different?
3. What changes have occurred in wind power industries since Abraham Lincoln's lecture?
4. List changes and ideas you feel still need to be made in the wind industry.
5. Prepare and deliver a five to ten minute speech that could be used to explain your ideas for the wind industry of the future. Describe your vision for discovery, invention, big ideas and wind.
6. Work with your group and develop a plan to more effectively utilize renewable energy in your community.





"Discoveries and Inventions"

A lecture by President Abraham Lincoln



Part I: "Of all the forces of nature, I should think the wind contains the largest amount of motive power -- that is, power to move things. Take any given space of the earth's surface -- for instance, Illinois --; and all the power exerted by all the men, and beasts, and running-water, and steam, over and upon it, shall not equal the one hundredth part of what is exerted by the blowing of the wind over and upon the same space. And yet it has not, so far in the world's history, become proportionally valuable as a motive power. It is applied extensively, and advantageously, to sail-vessels in navigation. Add to this a few wind-mills, and pumps, and you have about all. That, as yet, no very successful mode of controlling, and directing the wind, has been discovered; and that, naturally, it moves by fits and starts -- now so gently as

to scarcely stir a leaf, and now so roughly as to level a forest -- doubtless have been the insurmountable difficulties. As yet, the wind is an untamed and unharnessed force; and quite possibly one of the greatest discoveries hereafter to be made, will be the taming, and harnessing of the wind. That the difficulties of controlling this power are very great is quite evident by the fact that they have already been perceived, and struggled with more than three thousand years; for that power was applied to sail-vessels, at least as early as the time of the prophet Isaiah."

<http://teachingamericanhistory.org/library/index.asp?document=2507>

Part II: "...The great difference between Young America and Old Fogy, is the result of Discoveries, Inventions, and Improvements. These, in turn, are the result of observation, reflection and experiment. For instance, it is quite certain that ever since water has been boiled in covered vessels, men have seen the lids of the vessels rise and fall a little, with a sort of fluttering motion, by force of the steam; but so long as this was not specially observed, and reflected and experimented upon, it came to nothing. At length however, after many thousand years, some man observes this long-known effect of hot water lifting a pot-lid, and begins a train of reflection upon it. He says "Why, to be sure, the force that lifts the pot-lid, will lift any thing else, which is no heavier than the pot-lid." "And, as man has much hard lifting to do, can not this hot-water power be made to help him?" He has become a little excited on the subject, and he fancies he hears a voice answering "Try me" He does try it; and the observation, reflection, and trial gives to the world the control of that tremendous, and now well known agent, called steam-power. This is not the actual history in detail, but the general principle...."

<http://teachingamericanhistory.org/library/index.asp?document=2508>



President Obama Energy Speeches

Speeches by President Barack Obama



Speech to the Joint Session of Congress – February 24, 2009:

“...History reminds us that at every moment of economic upheaval and transformation, this nation has responded with bold action and big ideas. In the midst of civil war, we laid railroad tracks from one coast to another that spurred commerce and industry. From the turmoil of the Industrial Revolution came a system of public high schools that prepared our citizens for a new age. In the wake of war and depression, the GI Bill sent a generation to college and created the largest middle class in history. And a twilight struggle for freedom led to a nation of highways, an American on the moon, and an explosion of technology that still shapes our world.

In each case, government didn't supplant private enterprise; it catalyzed private enterprise. It created the conditions for thousands of entrepreneurs and new businesses to adapt and to thrive....”

[Address to the Joint Session of Congress, February 24, 2009](#)

Speech at Cardinal Fastener – January 16, 2009: “Of all the forces of nature, I should think the wind contains the largest amount of motive power -- that is, power to move things. Take any given space of the earth's surface -- for instance, Illinois --; and all the power exerted by all the men, and beasts, and running-water, and steam, over and upon it, shall not equal the one hundredth part of what is exerted by the blowing of the wind over and upon the same space. And yet it has not, so far in the world's history, become proportionally valuable as a motive power. It is applied extensively, and advantageously, to sail-vessels in navigation. Add to this a few wind-mills, and pumps, and you have about all. That, as yet, no very successful mode of controlling, and directing the wind, has been discovered; and that, naturally, it moves by fits and starts -- now so gently as to scarcely stir a leaf, and now so roughly as to level a forest -- doubtless have been the insurmountable difficulties. As yet, the wind is an untamed and unharnessed force; and quite possibly one of the greatest discoveries hereafter to be made, will be the taming, and harnessing of the wind. That the difficulties of controlling this power are very great is quite evident by the fact that they have already been perceived, and struggled with more than three thousand years; for that power was applied to sail-vessels, at least as early as the time of the prophet Isaiah.”

[Speech at Cardinal Fastener, January 16, 2009](#)