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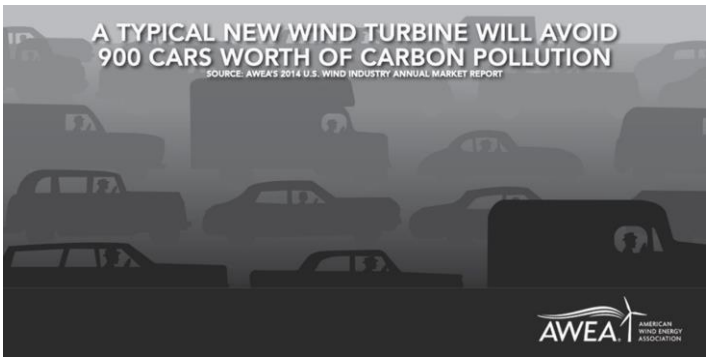
Examining Statistics: Oklahoma's Wind Energy



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Examining Statistics: Oklahoma's Wind Energy

Grade Level: 6th, 7th or HS

Purpose/Overview:
The purpose of this lesson is for students to examine statistics and understand that as a society and as individuals we can make choices that help reduce the climatic impact of electricity generation. Students will understand that generating power with the wind is a choice we can make that will reduce environmental problems.

National Geography Standards from *Geography for Life* Geographic Elements & Standards:
Environment and Society

Oklahoma Academic Standards for the Social Studies:

OAS 2012	OAS 2019
Grade 6: World Geography Western Hemisphere	
Content Standard 5: The students will examine the interactions of humans and their environment in the western hemisphere.	**6.4** The student will analyze the interactions of humans and their environment in the Western Hemisphere.
5. Summarize the role of citizens as responsible stewards of natural resources and the environment including: D. support of alternative and sustainable energy sources.	**6.4.6** Describe the role of citizens as responsible stewards of natural resources and the environment.
Grade 7: World Geography Eastern Hemisphere	
Content Standard 5: The students will examine the interactions of humans and their environment in the eastern hemisphere.	**7.4** The student will analyze the interactions of humans and their environment in the Eastern Hemisphere.
1. Cite specific textual and visual evidence to describe the relationship	**7.3.6** Describe the distribution of resources and evaluate how the three

between the distribution of major renewable and nonrenewable resources and evaluate how the three levels of economic activities contribute to the development of a country or region.	levels of economic activities (primary, secondary, tertiary) contribute to the development of a country or region.
HS: Oklahoma History and Government	
Content Standard 5: The student will investigate how post-war social, political, and economic events continued to transform the state of Oklahoma during the 1950's through the present.	**OKH.6** The student will investigate how post-war social, political, and economic events continued to transform the state of Oklahoma from the 1950s through the present.

Geographic Themes:
Human-Environmental Interaction and Region.

Objectives:

1. Students will recognize wind energy as an alternative and sustainable energy source.
2. Students will …
    - identify the windiest region of Oklahoma
    - know where Oklahoma's wind farms are located.
    - be able to identify the various levels of wind power usages
    - have knowledge of the evolution of wind power
    - identify the world's leaders in wind power
    - be able to identify the main parts of a wind turbine
    - learn about our carbon footprint and the reduction of our carbon footprint due to the installation and use of wind energy
    - will learn about offshore wind farms
    - will learn wind energy statistics that pertain to Oklahoma's wind turbine usage
3. Students will identify interesting statistics and create a wind pinwheel.

Materials:

- PowerPoint, "Examining Statistics: Oklahoma's Wind Energy"
- Computer
- Smart Board or Projector
- Copies of the pinwheel patterns

- Tape
- Scissors
- Straws or skewers
- Fine point markers
- Pushpins or brads

Time Frame: One 45-minute class period

Procedures:

1. Teacher passes out pinwheel pattern. Ask the following questions:
    - Who has seen a pinwheel?
    - What causes it to spin?
    - Can wind be used up?

    Explain that there are many advantages to using the wind's energy to create electricity.
2. Tell the students that they are going to cut out the pinwheel pattern and listen to a PowerPoint called "Examining Statistics: Oklahoma's Wind Energy." Discuss what statistics and demographics are.

    Demographics are the structural co`mponents of a population, or group of people. The statistical data of a population, especially those showing an average age, income, education, etc.

    Statistics are numerical data related to groups of people. Every demographic has a statistic that can be measured.

    Tell the students that as you are teaching them wind energy statistics and information, you would like them to write at least four interesting facts or statistics on their pinwheel blades that you will discuss after the presentation.
3. After the Power Point, allow students time to finish assembling their pinwheels.
4. Hold a discussion allowing student input based on the interesting facts and statistics they wrote on their pinwheels.
5. As an extension, students could use the statistics to create a poster showing how wind energy is a source of energy conservation and efficiency.

Assessment Options:

- Application assessment-student pinwheels can be assessed for completion, accuracy and problem solving in crafting a working pinwheel.

- Performance-based assessment might include creating a poster highlighting wind energy as an alternative and sustainable energy source.
- Authentic assessment might include a visit to a wind farm or a visit from a wind farm operator or a wind energy expert from a local university.

Extension and Enrichment/Simplification:

- To adapt this lesson to a lower grade, students could chart statistics instead of creating a pinwheel.
- A special needs student could be partnered with a high achieving student for help with creating the pinwheel or documenting statistics.
- As an enrichment, students could visit a wind farm or invite a wind farm operator or specialist from the State Energy Department or local university to visit the class.
- Students could use the statistics to create a poster showing how wind energy is a source of energy conservation and efficiency.

Connections (optional): This lesson incorporates OAS standards for English/language arts, history, science, art and mathematics.

Resources:

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