

Alternative Energy Sources

WebQuest Description: This WebQuests requires students to break into groups and research one type of alternative energy. Each group will have ten minutes to present why EnergyRUS should fund research for their form of energy. Groups are required to have a visual aid. Each group will have two minutes to answer questions from the other groups.

Grade Level: 9-12

Curriculum: Science

Keywords: Energy, Alternative Energy, Fossil Fuels, Solar Energy, Nuclear Energy, Wind Energy, Fossil Fuels

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Introduction

EnergyRUS is giving a \$500,000 grant to fund energy development and awareness projects. Each student has been assigned to a group who is lobbying for the money for their fuel source. Each group will produce a public awareness campaign piece such as a brochure, poster or video and will present orally why the money should go for developing their energy sources projects. Both traditon sources of power (fossil fuels) and alternative energy sources will be explored.

Tasks

You will be assigned to one group: Natural Gas executives, Solar Energy Advocates, BioFuel Advocates, or Wind Energy Advocates, Nuclear Power Advocates, Geothermal Advocates, hydroelectric advocates or hydrogen and fuel cells advocates. Each group will develop a public service campaign for their form of energy. You can make a poster, a brochure or a video. Your group will make a 5- 10 minute presentation (no longer) regarding why your group should be funded by a \$500,000 grant from EnergyRUS. Your presentation must include a visual aid. It must be relevant to your topic. You must describe your type of energy, give at least four reasons you think your energy source is the superior to others and the costs involved with your source. You will have to be prepared to answer questions from the other groups.

Process

You will be placed in a group of eight students on Day 1. Each student will be assigned to one of eight groups: Natural Gas Advocates, Solar Advocates, BioFuel Advocates, Wind Energy Advocates, Nuclear Advocates, Geothermal Advocates, Hydroelectric Advocates, and Hydrogen and Fuel Cell Advocates. your type of energy. Each group member will share this information with the other members of the group. A master list will be compiled. (This component should be shown to the teacher prior to end of Day 1). On Day 2 & 3, the groups will be reorganized so the members of each group work together (all the solar advocates, etc...). The group will make a public service announcement. This can take the form of a brochure, a poster or a video (other options like a Prezies must be approved by the teacher prior to beginning work). The public service announcement must contain a catchy slogan. It must have a description of how the fuel source works (example: how a solar cell works). It should include 4 advantages of this power source over traditional fossil fuels. It should also include 4 piece of statistical data to back up your facts. It should also include four sources (you may count the Introduction to Energy source and your specific energy source listed below as two of the four). The public service announcement should also include an illustration that is relevant to your topic. You will also be preparing for your oral presentation. On Day 4, your group will present to the fictitious company to EnergyRUS, why they should give a \$500,000 grant to study and further the use of your type of energy. This will be a 10 minute presentation. You will need a visual aid that should be in addition to your public service announcement. Your presentation should included why your form of energy is the best. It should briefly describe the technology (this is where your visual aid would be handy). In addition to collaborating with your peers, content, your visual aid and comprehension; you will also be graded on your presentation skills including preparedness, enthusiasm, speaking clearly, and posture and eye contact. After your presentation, you should be prepared to answer questions for 2 minutes from the other groups.

Evaluation

Students will be graded based on two rubrics. The first will be used to assess their public service campaign document (rubric, poster, or video). For this part, each student in the group will be awarded the same grade. The Oral Presentation rubric will be used to evaluate students individually. Both rubrics are below and were developed using Rubistar free rubric maker.

Category and Score					Score
				Total Score	

Conclusion

By now you should be familiar with one fossil fuel and 7 alternative energy sources. Write a short paragraph on which energy source(s) (not necessarily the one you presented) you think should receive the most funding for development and implementation. Give at least three reasons why you think research should be prioritized for this area and list at least two hurdles that still need to be addressed to make wide spread use a reality. If you are interested in learning more about energy sources check out energy.gov.

Teacher Page

This webquest answers my student's favorite question, "How does this topic relate to my life?" This webquest was written as a part of a lesson plan on Energy and Heat. As fossil fuels become more scarce and energy prices increase, research and development of alternative fuels will continue to increase. Students should have a basic understanding of the major categories of these fuels.

Standards

SCSh6. Students will communicate scientific investigations and information clearly.

- Write clear, coherent accounts of current scientific issues, including possible alternative interpretations of the data
- Use data as evidence to support scientific arguments and claims in written or oral presentations.
- Participate in group discussions of scientific investigation and current scientific issues.

field is changed. (HS-PS3-5)

Next Generation Science Standards: PS3.D: Energy in Chemical Processes

- Although energy cannot be destroyed, it can be converted to less useful forms—for example, to thermal energy in the surrounding environment.

Credits

Welcome Picture from <http://www.iaireview.org/2011/01/serbian-renewable-energy-potentials-analysis/>

Introduction Picture from <http://cleanet.org/details/images/26944.html>

Task Picture From www.21gtcentech.com

Process Picture from www.usgbcnc.org

Assessment Picture from ederlyan.wordpress.com

Conclusion Picture from <http://africagreenmedia.co.za/us-most-attractive-renewable-energy-market/>

Other

This project was written as part of a lesson plan on Energy and Heat. The complete lesson plan can be viewed in the attached word document. It was done as part of the GIFT program through association with CEISMIC and GoStem. I am grateful to Dr. Peralta-Yahya and her graduate student Stephen Sarria for their help and guidance in this project.