# Energy Resources Project Lesson Plans

<table>
<thead>
<tr>
<th>Teacher:</th>
<th>Theresa Doud</th>
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<tbody>
<tr>
<td>Time Frame:</td>
<td>Students will be given 2 - 50 minute periods to conduct research, 1-50 minute period to create and prepare a presentation and powerpoint, and 1-50 minute period to present their findings. This is a total of at least 4 - 50 minute periods to complete this lesson.</td>
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<tr>
<td>Grade:</td>
<td>10-12</td>
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<td>School:</td>
<td>South Putnam High School</td>
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<tr>
<td>Subject:</td>
<td>Integrated Chemistry-Physics</td>
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## Instructional Objective: (IDOE standards)
- ICP.8.1 Describe how energy needs have changed throughout history and how energy needs are met in modern society.
- ICP.8.2 Describe the benefits and risks of the development of non-renewable forms of energy such as coal, oil, natural gas and uranium fission sources.
- ICP.8.3 Describe the benefits and risks of the development of renewable forms of energy such as solar energy, wind-energy, geothermal energy, fusion energy and biofuels.
- ICP.8.4 Describe how efficient use of renewable and non-renewable energy sources is essential to maintaining an acceptable environment.

## Asking questions and defining problems:
Each group will research an energy resource in order to answer the following question:

What is the future of their specific energy resource?

## Obtaining and evaluating information:
Students must research their energy resource using the internet and their book (if applicable) to put together a presentation that overall answers the question: What is the future of their resource? Energy resources that the students will be researching include nonrenewable and renewable resources. The nonrenewable resources will include solar, wind, water, biomass, and geothermal. The renewable resources will include nuclear, coal, petroleum oil, and natural gas.
## Use of technology and software:

Computers will access to the internet and presentation software.

## Collaboration:

Students will be working in groups of two or three to research and create a 4-5 minute presentation.

## Critical thinking:

Once completing the research on their specific energy resource, each group needs to collaborate and come to a consensus of what the future of their resource is and communicate their thoughts to the rest of the class during their presentation.

## Communication:

Students must work together and communicate into order to create a 4-5 minute PowerPoint or Google presentation that will be shown to the class which will include their research on the energy resource and their consensus of what the future of it is.

## Analyzing and interpreting data:

Students will analyzing and interpreting data (such as percent efficiency, costs, and environmental impact (CO2 load)) as they listen and take notes over the other students presentations.

## Assessment Plan:

Students will be graded using the presentation rubric from the following website:

http://www.ncsu.edu/midlink/rub.pres.html*

The presentation rubric will be filled out by the teacher during the presentation worth 90 points.

Students will fill out one of the peer and self evaluation from the following website: The teacher may choose the rubric they wish to use.

http://www.lapresenter.com/CoopEvalPacket.pdf **

The self and peer evaluation sheet will be filled out prior to the presentation by each student worth 10 points. The project and presentation are worth 100 points total.


## Implementation plan with resources (supplies and estimated cost) needed:

This project will cost $0 and be implemented after students gain a basic knowledge of the types of energy resources through teacher lecture. The supplies needed for this project are computers (or a device with internet connection), a
Now that you have a basic understanding of the different types of renewable and nonrenewable resources you will be researching in depth one of these types of resources. You will be placed in groups of 3 and given a resource to research. You will be given 2-50 minute periods to do your research, 1-50 minute period to prepare your presentation including a PowerPoint or Google Presentation that will last 4-5 minutes, and the next day will be presentation day. The order in which presentations will be presented will be random and drawn the day of presentations.

Energy Resources:
- Solar Energy
- Wind Energy
- Biomass
- Geothermal
- Water Energy
- Petroleum Oil
- Natural Gas
- Nuclear Energy
- Coal

Overall Question: What is the future of your resource?
Areas to be covered during the presentation:
- How it’s obtained.
- Areas of use (mined or where it is primarily used)
- Cost (is there federal support or subsidies)
- % energy in the U.S. or World (if found)
- How is it converted into electricity
- Federal Regulations
- Environmental Impact

You will be graded on the rubric below. The presentation and research participation is worth 90 points. You will be completing a self and peer evaluation before the presentations worth 10 points. Be honest on these evaluations!

Use your time wisely. You only have 2 days for research and 1 day to complete your presentation. Presentations must be 4-5 minutes and points will be deducted for not reaching the minimum time or exceeding the maximum time. Every source or graphic you use must be cited correctly in the presentation (PowerPoint or Google Presentation). Every member of your group must actively participate in the presentation. Points will be deducted from the group for a non-equal presentation.

Below are a list of reliable resources for information for your project. Do NOT use Wikipedia as a source!! You must obtain data from a reliable source. If you are not sure, check with your teacher! There are a lot of unreliable sites that will tell you incorrect data. Use the newest data you can find.

Department of Energy
http://energy.gov/science-innovation/energy-sources

U.S. Energy Information Administration
http://www.eia.gov/

National Energy Education Development Project (NEED Project)
http://www.need.org/student

Natural Resources Defense Council
http://www.nrdc.org/energy/renewables/