Introduction to Alternative energy

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Course: Electronics & Computer Technology
School: Heartland Career Center

Objective: The purpose of this lesson is to introduce alternative energy through discussion, a hands-on activity and group research. Students will research municipal recycling to determine the relationship between alternative energy and recycling. They will also develop strategies to improve recycling at school.

Electronics and Computer Technology Standards
ECT-1.2 Recognize and explain the convergence of technologies.
ECT-1.3 Investigate various careers associated with electronics and computer technology.
ECTII-7.7 Understand basic performance characteristics.

Common Core Literacy Standards for Technical Subjects
9-10.WT.9 Draw evidence from informational texts to support analysis, reflection, and research.

Resources:
Horizon Alternative Energy Kit, Amazon.com, $249.00.

Intro/Discussion questions: (Day 1)

What is alternative energy?

What are three major sources of alternative energy?

Use the Horizon alternative energy kit and divide the class into three groups. Assign each group to one of the three energy source models. Each group will answer the questions below. The group will present their answers to the class.

1. Explain the operating principle of your energy source.
2. What are the limitations of your energy source?
3. What are the advantages of your energy source?

Discuss:

What is the purpose of using alternative energy sources?

Summarize: review major points and introduce the topic for Day 2.
**Environmental issues and recycling: (Day 2)**

Review previous Day

Recycling Power Point

Recycling Worksheet

**Discussion questions/Intro:** Divide class into groups and have each group answer/discuss the following questions:

Can recycling be considered an alternative energy source? Why or Why not?

Are there usable by-products from a landfill?

How does recycling affect a landfill? Make a diagram/chart that explains the effects.

What is the affect of recycling on our economy?

Does recycling save energy? Explain your answer.

**Group presentations:** Each group is to share the results of their group discussion.

**Summarize:**

*The effects of recycling in Wabash County and what more needs to be done: (Day 3)*

Introduce the Guest Speaker: Director of Wabash County Solid Waste

Speaker follow-up: Group students in groups of three. Have them develop a plan to improve recycling in our school or your home school. It must include a way to implement the plan.

**Discussion of recycling plans. (Day 4)**

Each group will present their plan and implementation method.

The class will pick at least two ideas to implement. A student will be selected to direct the project. Time needed will vary according to the requirements.
References/Sources:
epa.gov/waste/nonhaz/municipal
http://science.howstuffworks.com/fuel-cell-info.htm
http://science.howstuffworks.com/environmental/energy/solar-cell.htm
http://science.howstuffworks.com/environmental/green-science/wind-power.htm
https://en.wikipedia.org/?title=Wind_turbine
http://energy.gov/
http://energy.gov/maps
The recycling power point and worksheet are proprietary and can not be posted.

Assessment:

Quiz with participation points from the group projects. The Quiz is worth 30% and the participation points 70%. The quiz questions will be from the discussions and presentations.

Presentation Assessment:

Excellent Participation  10 points
Good Participation       7 points
Little Participation     4 points
No participation         0 points