Life After Vermont Yankee

Grade Cluster – 6-8

NETS-S – 1 - Creativity and Innovation

Quick Look:

Vermonters will be faced with a difficult choice in the next few years. If the Vermont Yankee nuclear power plant is not relicensed, Vermonters will need to find a replacement to produce its amount of electricity. This could be done through alternative energy sources and/or through the reduction of energy consumption. Following a unit on electricity, middle school students (Grades 6-8) investigate alternative energy solutions, energy conservation, and efficiency strategies for their communities, in order to develop a sustainable solution.

Scenario:

Student teams research current electricity resources in their community and determine positive and negative factors of such, including cost, efficiency, environmental impact, sustainability, and practicality. Students also investigate whether VT Yankee should be allowed to continue to operate, and they discuss the pros and cons of continued operation. The class consensus is that Vermont Yankee should not be relicensed, that alternative energy resources should be found, and that Vermonters need to reduce energy consumption. Students decide to not only investigate energy consumption, in order to educate the public in ways to conserve energy, but to also examine alternative energy sources to potentially replace Vermont Yankee power.

Students form teams to gather information and data from interviews with experts in the field, local electric power companies, and through Internet research with use of *RSS feeds*. Teams compile and analyze electricity resource data using a spreadsheet tool such as *Microsoft Excel* or *Google Forms* (6a, 6b, 6c, 6d).

Next, each team chooses to research household, school, or community electricity consumption, in order to determine specifics, such as amount used, cost, and efficiency. Students work with local electric companies to get devices for monitoring electric usage. They also use *Google Forms* or *Survey Monkey* to collect electricity consumption data from other students and staff members (1d, 6a, 6b). Students analyze the collected data, via spreadsheets, to build energy consumption models for their homes, school, or the community, and identify areas that are consuming excessive power and predict future trends (1c, 1d).

Students work in teams to research alternative electricity sources and strategies for increasing efficiency through Internet research and through interviews with field experts such as Efficiency Vermont. Each team focuses on finding an alternative energy solution for their household, school, or community. Students use the data they collect and their models to support their proposals for an alternative energy solution (1a, 1b, 1c). Student teams collaborate using a *wiki* such as *PBWorks* or the *wiki* feature in *Moodle* to develop

solutions and present a persuasive argument to support recommendations for alternatives, conservation, and efficiency (1a, 1b, 6a, 6b).

Student teams showcase their work by creating *podcasts* or videos using digital tools such as *digital voice recorders* and *Flip cameras* to present their sustainable solutions (1a, 1b, 6b, 6c). The products are presented to the appropriate audience through public service announcements, school board presentations, or presentations to the legislature. Students share their projects with a greater audience by uploading videos and/or *podcasts* to *YouTube* or *iTunes*, or by contributing to a national student competition like http://www.ignitingcreativeenergy.org/ (6b, 6c).

Resources

Central Vermont Public Service: http://www.cvps.com/
Efficiency Vermont: http://www.efficiencyvermont.com
Green Mountain Power: http://www.greenmountainpower.com/
Treehugger energy efficiency alternatives:
http://www.treehugger.com/files/2005/12/smart_power_str.php
Vermont Electric Cooperative: http://www.vermontelectric.coop/
VELCO Vermont Electric Power Company: http://www.velco.com/Pages/Default.aspx
Vermont Yankee: http://www.safecleanreliable.com

Student Standards – The following NETS-S are noted in the Scenario:

1. Creativity and Innovation—A, B, C
6. Technology Operations and Concepts—A, B, C, D

Teacher Standards –Teachers who teach this unit address the following NETS-T:

1. Facilitate and Inspire Student Learning and Creativity—A, B, D
2. Design and Develop Digital-Age Learning Experiences and Assessments—A, B, C, D
3. Model Digital-Age Work and Learning—A, B, D
4. Promote and Model Digital Citizenship and Responsibility—B
5. Engage in Professional Growth and Leadership—C

Content Grade Expectations

The scenario writer has identified the following content grade expectations that s/he felt might be assessed in this scenario. In most of these scenarios, there may well be opportunities to assess other or additional content grade expectations across a variety of disciplines. If you are interested in developing a unit or lessons based on the following scenario, and you don't see any grade expectations in your content area, we encourage you to capture the ideas presented in the scenario and make it your own by adding components that address the grade expectations you are most interested in assessing.

S7-8:4 Students demonstrate their ability to conduct experiments by…

- Accurately quantifying observations using appropriate measurement tools.
- Using technology to collect, quantify, organize, and store observations

S7-8:5 Students demonstrate their ability to present data by…

- Using technology to enhance a representation.

S7-8:7 Students demonstrate their ability to explain data by…

- Using scientific concepts, models, and terminology to report results, discuss relationships, and propose new explanations.
- Generating alternative explanations.
- Sharing conclusion/summary with appropriate audience beyond the research group.
- Using mathematical analysis as an integral component of the conclusion.

S7-8:8 Students demonstrate their ability to apply results by…

- Explaining relevance of findings to local environment
- Devising recommendations for further investigation and making decisions based on evidence.

H&SS7-8:6 Students make connections to research by…

- Formulating recommendations and/or making decisions based on evidence.
- Using their research results to support or refute the original research statement.
- Proposing solutions to problems based on their findings, and asking additional questions.

H&SS7-8:7 Students communicate their findings by…

- Developing and giving oral, written, or visual presentations for various audiences.