
**Performance
Task**
(con't.)

Description

The students will be assigned one of the following research topics: (a) Oil/Petroleum, (b) Coal, (c) Natural Gas, (d) nuclear energy, (e) hydroelectric power, (f) wind power, (g) **biomass fuels**, (h) **hydrogen fuel cells**, (i) **geothermal energy**, (j) **solar energy**.

Each team will use a variety of reference materials including textbooks, newspaper articles, and online resources to gather the following information:

1. Brief description of the energy resource and how energy (kinetic) is created in this situation, as per the first law of thermodynamics. Include at least two simple illustrations to help your audience's comprehension of this description.
2. What percentage of our national energy needs is being met by this particular resource today?
3. **If this energy is a renewable resource, what is the goal for the new energy plan?**
4. What is the potential for growth of this resource? Present a line graph that shows a projection of the future use of this resource over the next 50 years.
5. What are the advantages and disadvantages of using this resource? This may include factors such as pollution potential, availability, cost of production, and existing infrastructure.
6. In your opinion, do the benefits outweigh the environmental costs of using this particular energy source? Support your argument with two specific examples pertaining to the topic.

** All of the information will be properly referenced.

Members of the team will complete a data summary sheet. Students will use the data sheet to complete PowerPoint presentation (**with a sales, motivational format**) that they will present to the class as part of a role-playing exercise. The presenting team will assume the role of a sales team from a large energy company that is competing for the energy contract to supply electricity to the local municipality. The sales team will create a name and logo for their company, as well as designate a team leader to run the presentation. The audience will assume the role of the town board, which will evaluate each energy resource for use in its town.

The audience is encouraged to ask questions during the presentation. The sales team therefore will need to designate an "expert" in their group to respond to specific questions. This is easily done by each person on the team taking responsibility for one or two of the questions above that formed the presentation. The team leader will take questions from the audience and defer to the team "expert" in the area corresponding to the question for the response.

Copies of the presentation will be made available to all other class members at the time of the presentation. Teacher will allow time after each presentation for a Q & A session if necessary.

A teacher-made test with multiple-choice questions generated directly from student presentations will be administered at the completion of the unit. This test will also include the following free-response activity:

You as the information director for the town are in charge of creating a report that evaluates all six energy resources by ranking them in order from 1 (the most desirable) to 6 (least desirable). You need to identify one advantage and one disadvantage for each energy source and present a brief analysis of your number

1 selection to support your assessment of rank.

Students should be made aware of this free response question before the exam so as to have time to construct an articulate response.

Assisting English Language Learners

After students conduct their research, take a break to check for comprehension. Have the groups do a brief roundtable “pass-and-share” activity. Students pass around a blank sheet of paper, and each student writes or draws one thing he or she learned from the research. They should pass the paper two or three times to capture as many concepts as possible.

Essential Skills

- E1 Apply writing rules and conventions (grammar, usage, punctuation, sentence structure, and spelling).
 - E9 Organize supporting detail in logical and convincing patterns that focus on audience and purpose.
 - E7 Research information from a variety of sources and draft a well-organized, accurate, and informative report or essay that engages an audience and addresses its needs.
 - E10 Participate in (sometimes leading) one-on-one or group discussions by asking questions, asking for clarification, taking turns speaking, agreeing and/or disagreeing courteously, making informed judgments, and working toward a common goal.
 - S7 Examine how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature. Critique ways to improve environmental protection through education, research, laws, and conservation and judge the effectiveness of conservation practices and preservation techniques on environmental quality.
 - S52 Understand and compare energy transformations in living systems, geological systems, and artificial systems constructed by humans.
 - S21A Compare and investigate various types of energy (e.g., heat, light, electromagnetic, nuclear, internal, wave, potential vs. kinetic) and energy transfer and know how to apply measurements of energy.
 - M30 Know and apply the components and properties of the rectangular coordinate system: x–y axis, origin, quadrants, abscissa (x-coordinate) and ordinate (y-coordinate), and general representation of a point (x,y).
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Scoring Guide

Written report: 25 points	Score ____/25
20–25 points: All six informational points are addressed completely and clearly. Graphs and illustrations are present and of high quality and accuracy. Student shows sound reasoning and support for point #6.	
10–20 points: Student addresses all six points, but some points are incomplete and/or unclear. Graphs do not show a high degree of accuracy and illustrations are of poor quality. Student shows good reasoning skills for point #6 but only offers one example for support.	
0–10 points: Student does not address all six informational points. Graphs and illustrations are missing, or of poor quality. Student shows poor reasoning skills and no supporting examples for info point #6.	
Power Point Organization, Quality, Individual Contribution: 25 points	Score ____/25
20–25 points: Presentation moves smoothly and efficiently through the information. High degree of organization with clearly produced slide frames that contain zero spelling or grammatical errors. Individual was an active participant.	
10–20 points: Presentation contains slides that lack of clarity and do not move smoothly through the information. Some spelling or grammatical errors are present. Individual had a somewhat limited role in the creation of the presentation.	
0–10 points: Presentation is highly disorganized with several spelling and grammatical errors. Individual had no role in creating the presentation.	
Sales Team Participation and Quality of Oral Responses: 25 points	Score ____/25
20–25 points: Actively participates in presentation and gives well-prepared, clear responses to questions. Demonstrates “expert” knowledge of information that he/she is responsible for.	
10–20 points: Limited participation. Responses are somewhat incomplete and not completely clear. Demonstrates moderate working knowledge of information.	
0–10 points: Very limited to no participation. Responses are confused and very incomplete. Demonstrates minimal knowledge of information.	
Unit Test: 25 points	Score ____/25
15 multiple-choice questions worth 1 point = ____/15 pts Extended response question worth 10 points: ____/10 2 points ranking 1–6 2 points for correct advantage 2 points for correct disadvantage 2 points for analysis 2 points for spelling and grammar	
Total Score	____/100