

## GED 2002 Teachers' Handbook of Lesson Plans

Area/Skill - Science	Cognitive Skill Level - Analysis/Evaluation	Correlation to Framework - 03.01/03.04/03.05/03.06	Lesson - 25
<p><b>Activity Title - Nuclear Waste</b></p> <p><b>Goal/Objective</b></p> <p>To analyze the problems surrounding nuclear waste and how to make decisions regarding its disposal.</p> <p><b>Lesson Outline</b></p> <p><b>Introduction</b></p> <p>Begin the lesson by discussing how electricity is produced around the world. Discuss the relative expense and dependability of certain methods, i.e. wind/solar. Share basic background on nuclear power with the students.</p> <p><b>Activity</b></p> <p>Divide students into small groups. Provide students with the <b>Handout - Nuclear Energy - Pros and Cons</b>. Have the students research the advantages and disadvantages of nuclear energy, including the need for safe removal of nuclear waste. Have the students report their findings to the class.</p> <p><b>Debriefing/Evaluation Activity</b></p> <p>Have the students identify the pros and cons of nuclear power. Write their findings on the board in two columns - Pro/Con. After the different reasons are documented, have the students divide into two groups. One of the groups will be pro nuclear power; one of the groups will be against nuclear power. Have them debate the major issues. To end the debate, discuss how in real-life few things are either all positive or all negative.</p>			<p><b>Materials/Texts/Realia/Handouts</b></p> <ul style="list-style-type: none"> <li>• <b>Handout - Nuclear Energy - Pros and Cons</b></li> <li>• Chart paper/board and markers</li> <li>• Paper and pencils</li> <li>• Computers with Internet access</li> <li>• Maps of state and U. S.</li> </ul>
			<p><b>Extension Activity</b></p> <p>Have students contact local hospitals and inquire as to where the hospitals' radioactive waste is sent for disposal.</p>
<p><b>Real-Life Connection</b></p> <p>Ask students to decide whether or not the area or state in which they live is suitable for the disposal of low-level nuclear waste and why. Have a map of the state and a map of the United States available. Discuss physical and cultural features of the landscape that might support a decision to locate a nuclear waste plant in a specific area of the state or country.</p>			<p><b>ESE/ESOL Accommodations</b></p> <p>Have students work in small groups where research can be read orally.</p> <p>Develop a graphic organizer that identifies basic pros and cons to get students started in their research.</p> <p>Provide students websites to research that provide definitive pros and cons on the topic.</p>

## GED 2002 Teachers' Handbook of Lesson Plans - Script

Area/Skill - Science	Cognitive Skill Level - Analysis/Evaluation	Correlation to Framework - 03.01/03.04/03.05/03.06	Lesson Number - 25
<p data-bbox="58 215 491 245"><b>Activity Title - Nuclear Waste</b></p> <p data-bbox="58 280 233 310"><b>Introduction</b></p> <p data-bbox="58 345 1270 375"><i>Say:</i> Think about what life would be like without electricity. <i>Ask:</i> How is electricity produced?</p> <p data-bbox="58 410 2032 540">Write the students' answers on the board. <i>Ask:</i> How expensive is this type of power to produce? Is this type of power dependable? <i>Say:</i> Today, we are going to talk about nuclear power and its use in the United States. Nuclear power provides the United States with about 2 percent of its electricity. Within the United States, there are more than 100 nuclear power plants in operation. Although it is a clean source of power, nuclear energy generates both high – and low– level radioactive waste that must be safely stored.</p> <p data-bbox="58 576 243 605"><b>Main Activity</b></p> <p data-bbox="58 641 1990 703"><i>Ask:</i> What are other pros and the cons of nuclear energy? Will we ever lose our ability to produce other types of energy and need to depend on nuclear power only?</p> <p data-bbox="58 738 2011 868"><i>Say:</i> Your scientific research for today will be to answer those very questions. Divide yourselves into small groups of about four people. Using the <b>Handout - Nuclear Energy - Pros and Cons</b>, research the advantages and disadvantages of nuclear energy, including the need for safe removal of nuclear waste. You may wish to use the World Wide Web as your current source of information. Make sure that you document your research so that you can use it to defend both of the two positions - pro and con.</p> <p data-bbox="58 904 2024 966">Allow the groups adequate time to research the topic and answer the questions on the handout. Assist them in searching the Internet for the information requested.</p> <p data-bbox="58 1002 338 1031"><b>Closure/Conclusion</b></p> <p data-bbox="58 1066 1986 1196"><i>Say:</i> Now we will divide the class into two sides. One side will debate the advantages of nuclear power; the other side will debate the disadvantages of nuclear power. While you are debating this important topic, remember to include facts to support your statements. I will be writing your ideas on the board so that we can later compare and contrast the two viewpoints. You may begin. The question is: what are the advantages/disadvantages of nuclear power and why is each an advantage or disadvantage?</p> <p data-bbox="58 1232 2011 1323">Allow each team adequate time to present their side of the argument. Debrief the debate by discussing that like most issues, the use of nuclear power is not clear-cut. There are indeed advantages as well as disadvantages. The role of the consumer, the government, and business is to determine whether or not the advantages outweigh the disadvantages.</p> <p data-bbox="58 1359 468 1388"><b>Follow-Up Lessons/Activities</b></p> <p data-bbox="58 1424 2003 1521">Based on their research, have students assess what areas of their state and of the United States would be suitable for the disposal of low-level nuclear waste and why. Have a map of the state and a map of the United States available. Have students identify physical and cultural features of the landscape that might support a decision to locate a nuclear waste plant in a specific area of the state or country.</p>			

**GED 2002 Teachers' Handbook of Lesson Plans  
Science Lesson 25 Handout**

**Nuclear Energy – Pros and Cons**

1. What is the per-person demand for energy in the United States today?
2. Do Americans use more electricity per person than in other industrial countries:  
Why or why not?
3. Are there alternatives to nuclear power that are as effective at generating  
electricity?
4. How does the cost of nuclear power compare with that of other energy sources?
5. What is low-level waste?
6. Where does low-level waste come from?
7. How hazardous is low-level waste?
8. How can low-level waste be stored safely?
9. What is the difference between low-level and high-level radioactive waste?