

Hands-On Lab  Small groups  45 minutes

Wisely Using Natural Resources

SEP Constructing Explanations and Designing Solutions

Students research natural resources, select a resource to use that will maximize the gain for their town while minimizing negative consequences, and decide on practices for harvesting that resource.

Setup

- Divide the class into teams or sets of teams. Each team will research one of the resources: fish, oil, or trees.
- Decide whether students will use handouts or the Internet to do their research.
- Download online handouts. Print enough copies of each resource handout so that every member of the tree, oil, and fish teams has a corresponding handout. Provide each team with one or more copies of the decision matrix.
- Have students assign roles in their groups so each group member contributes and they accomplish their goals in the allotted time.
- Draw a large decision matrix (see handout) on the board or a large sheet of paper so all students can see it.

Strategies

- Consider appointing a student facilitator so you can act as a coach. Emphasize that there is not one correct answer and encourage students to build on each other's ideas.
- After the research period, have the teams meet for five minutes to share how each resource could be used so that negative consequences are minimized. Organize the students in a circle so they can talk directly with each other during the discussion.

Collaborate

As an optional extension, have students research what natural resources there are in their own community or a nearby community. How are those resources being used and should they be harvested differently to ensure availability in the future?



Student Lab Worksheet available online

Name _____

Date _____



HANDS-ON LAB

Wisely Using Natural Resources

Our small town was severely damaged by flooding. Our town council decided to sell some of our natural resources to raise money to rebuild our school. Please help us decide which of these three resources we should sell.

Fish: We live on the coast, and most of our residents make a living by fishing in small boats. We could rent a large fishing boat and work together to catch more fish to sell.

Oil: Oil has been discovered just off shore. We could work with an oil company to build an oil drilling platform and share some of the profits from the sale of oil.

Trees: Nearly 50% of the area near our town is forested. We could work with a lumber company to cut and sell some of our trees.



MATERIALS

- handouts
- paper
- pen or pencil

STEP 1 Learn as much as you can about the resource assigned to your team. Your team will be the expert on this resource when you rejoin your classmates to discuss the best option for the town. Be prepared to answer questions.

STEP 2 Which resource did you study? What positive and negative consequences might the use of this resource have?

Answers will depend on the resource studied. All of the resources can provide the income required to rebuild the school. Large-scale fishing could negatively impact local fish populations, oil drilling might cause pollution, and harvesting trees can cause soil erosion and destroy habitat.

STEP 3 List some rules that should be followed for using your resource so that it will still be available for future generations.

Answers will depend on the resource studied. Limits could be set on fishing to protect fish populations, leaders could work with an oil company with a good safety record to decrease the possibility of oil spills, or trees could be harvested by a selective cut method instead of a clear cut method.

STEP 4 Work with the other teams to compare what you learned about trees, oil, and fish. Which resource(s) should be used to provide the funds to rebuild the school? Use a decision matrix to guide your analysis.



Students should use the decision matrix to help prioritize criteria and consider tradeoffs for their solution.

STEP 5 Use your research and analysis to construct a scientific explanation that supports your recommendation for the use of the town's resources.

Students should include: 1) a clear recommendation for how to use the town's resources; 2) an explanation for why this is the best way to use the resources; and 3) data from research or the handouts to support their explanation.



Social Awareness Provide support for students to share and listen to different opinions or claims as they discuss natural resources (e.g., have students paraphrase the last person's statements before giving their own opinions, use sentence stems).

Hands-On Lab Scoring Rubric

Points	Criteria
	Participates in discussions: listens carefully and respectfully to others, stays on task during discussion, shares ideas, supports own point of view with reasons or evidence
	Supports conclusions and explanations with valid and reliable evidence
	Presents work in well-organized format that is logical, easy to understand, interesting, and informative