

Lesson Plan

Research Tools

Book: *Exploring Ocean Depths*

Series: Science for the Future

Level: Voyager

Objective

To help students work in groups to create presentations explaining methods and tools that scientists use to explore the depths of the ocean.

Supplies

- *Exploring Ocean Depths* book
- “Exploration Tools” web page on the NOAA website:
<https://oceanexplorer.noaa.gov/technology/technology.html>
- A computer with internet access for each student

Before the Activity

Have students read the *Exploring Ocean Depths* book. Divide the class into four groups.

Activity

To start, ask students to list some of the tools or methods scientists use to study the ocean floor. Answers should include ships, onshore labs, submersibles, satellites, and diving.

Explain that students will be taking a closer look at some of these tools. Divide students into groups, and assign the following topics:

- Group 1: Vessels
- Group 2: Submersibles
- Group 3: Systems and Sensors
- Group 4: Communication Technologies and Diving Technologies

Students should use the links on the NOAA’s “Exploration Tools” web page to research their group’s topic. First, students should click the link for their topic. Then, each student in the group should choose one vessel, submersible, or technology to research in detail. (Note: Most topics provide 8 to 10 links for further research. Communication Technologies and Diving Technologies include fewer links, so they’re combined into one group to give students plenty of options.)

Students should conduct their research independently. They should take notes to record the key details about their vehicle or technology. Then, members of each group should come back together and use their research to create a presentation to share their research with the rest of the class. First, they should choose one student to give a short, 1-minute summary introducing the group's topic and explaining what all the vehicles or technologies have in common. Then, all the students in the group will take turns presenting their research. Each student should talk for approximately 2 minutes, making sure to mention the following details:

- what the vehicle or technology is and how it works
- how it helps scientists study the ocean
- any other details that seem especially important or interesting

Finally, the group should choose a student to give a short, 1-minute conclusion. Each group should also create a slideshow that uses pictures or other visuals to add interest or clarify potentially confusing points.

Evaluation

Use the following system to score each group's presentation:

- 2 points for including an introduction and conclusion
- 2 points for including a slideshow with relevant images
- 3 points for each presenter who addresses all three details listed above
- 3 points for each presenter who speaks clearly and organizes information well

(Note: If groups are uneven sizes, these last two scores will need to be adjusted slightly.)

Standards

This lesson may be used to address the Common Core State Standards' speaking and listening standards, grade 6 (SL 6.4, 6.5), and the National Science Education Standards' Content Standard E, grades 4–8.