



Day Two Full Lesson Plan

Student Presentations and Introduction to the Trident (ROV)

SUMMARY

Students will share the results of their research activity with the class via PowerPoint presentations. Students will be introduced to the Trident, a remotely operated vehicle.

LEARNING OBJECTIVES

I can convey information I have gathered with others in a comprehensible way.
I can summarize information that was shared with me.
I can explain how an underwater ROV operates.

LESSON CONCEPTS

The Great Lakes are dynamic bodies of water whose physical properties have influenced, and continue to influence, local and regional weather, commercial shipping and human culture. Available technology influences what can be accomplished at a particular moment in history.

ACADEMIC VOCABULARY

ROV: Remotely operated vehicle

PRIOR KNOWLEDGE

What students need to know and be able to do prior to this lesson:

Students will need to know the expectations for delivering presentations (e.g., volume, eye contact with audience, speed of talking, etc.).
Students will need basic skills in the use of PowerPoint or similar presentation software.

Student preferences and interests to consider in preparation for this lesson:

Middle and high school students tend to work differently in groups. Watch for equal participation and contribution to the final product.

Misconceptions and/or misunderstandings that students might have related to this lesson:

Underwater remotely operated vehicles (ROVs) can be controlled like a drone or remote-controlled toy (i.e., without a tether).

CLASSROOM NEEDS

Computer and LCD projector
Trident

TEACHER PREPARATION

Queue up student presentations. Test the link to [Trident video](#). Assign each group one or two data points from the Trident Data Points Log list and have the list of assigned groups available for tomorrow. Practice operating the Trident and prepare for tomorrow's deployment by having it fully charged and ready to move in its case.

DOCUMENTS

For students

- File 6 [Research Activity Rubrics](#)
- File 10 [Note-taking Handout](#)
- File 11 [Trident Controller Diagram](#) (file includes answer key and student worksheet)
- File 14 [Sketch of Ship](#) (file includes student worksheet [8.5x11] and answer key [11x17])
- File 15 [Trident Data Points Log](#) (file includes answer key and student worksheet)
- File 16 [Trident Behavior Expectations Form](#)

For educator

- File 12 [Trident Quick Start Guide](#)
- File 11 [Trident Controller Diagram Answer Key](#) (file includes answer key and student worksheet)
- File 15 [Trident Data Points Log Answer Key](#) (file includes answer key and student worksheet)

Extension

- File 9 [Reflective Dictionary](#)

LESSON PLAN

GUIDED PRACTICE (20 MIN.)

Optional extension activity

If the Reflective Dictionary extension activity was completed, have students pair share their Reflective Dictionary (10 vocabulary words each; there may be overlap). Share select definitions from the Moonrise Fictional Narrative Vocabulary List. Have students compare their Reflective Dictionary list to the vocabulary list. Ask students if there are any words in their Reflective Dictionary that they feel should be added to the common word list “for next year’s class.”

1) Review presentation and note-taking requirements with the class.

INDEPENDENT PRACTICE (30 MIN.)

1) Student presentations

Students share their presentation with the class while other students take notes using the Note-Taking Handout. Teacher will complete the Research Activity Rubric as presentations are being given.

2) Self-reflection

Once all presentations are complete, have the students self-reflect and rate their own presentation using the Research Activity Rubric.

GUIDED PRACTICE (10 MIN.)

1) Discussion: What do you know about remotely operated vehicles?

Ask the students what they already know about remotely operated vehicles (ROVs) and record students’ responses. Share the following with the class: “The ROV you will be using tomorrow is called the Trident. I am going to share a brief video of the Trident in action to give you an idea of how it operates and what it is capable of doing.”

2) Introduction to the Trident video (2:14)

3) Show the Trident’s Controller, camera, propellers, battery and Tether.

Provide the students with a brief overview of how the Trident operates by showing them the different parts of the Trident (e.g., propellers, Tether, camera, etc.). Explain what functions the keys/buttons on the controller operate and have the students label their Trident Controller Diagram accordingly.

GUIDED PRACTICE (10 MIN.)

1) Introduce the usage of the Trident to relate to the fictional story of the Moonrise.

Share with the class: "Tomorrow is the day we will go poolside to deploy the Trident ROV on the fictional shipwreck in Lake Michigan. Nobody knows for sure what happened to the Moonrise and Erich, Arletta, Mary, Mitch, Captain Joe and her crew. Your mission is to use the Trident to explore what has been found and to decide if and how those objects relate to the Moonrise story."

2) Explain the process of exploring the banner with the Trident.

Explain to the students that a banner has been hung in the pool with numbered illustrations that may help them determine whether the ship is the Moonrise and if so, establish a claim about what happened to the ship and her passengers. Each team of students will be charged with locating a number (a data point) next to an illustration. Once a team has located and identified their data point, they will announce what they have found to the class and go to the easel to reveal to everyone a close-up illustration of the item. The class will then write the number on the Sketch of Ship in the location it was found, if possible. The entire class will record the data point on their Trident Data Points Log sheet and discuss and record the possible meaning of the clue.

Emphasize that students will have to pace themselves to keep up. (Some groups may find their data point quickly.)

Students should acknowledge information presented by each other and respond to others' questions and comments with respect. For example: "That's interesting Jane, but I think finding the shoes could indicate that Mary took them off quickly to try to swim away from the sinking ship."

3) Make the behavior expectations at the pool clear; have students sign the pledge.

Listen carefully. It is difficult to hear in the pool area!

Always remain 2 feet away from the pool edge. There will be a taped line or safety cones that designate the boundary.

The class will be positioned along the deck on the same side of the pool from which the banner is hung.

Two students will serve as "1st mates." They stand at the adjacent corner to the class and share verbal cues, IF and only IF, ROV operators struggle to locate the target and ask for assistance. (Perhaps those who do not want to drive the ROV can serve as 1st mates, or you can rotate with students who just operated the ROV serving as 1st mates for next set of ROV operators.)

Groups "on deck" to control/drive the Trident should be near the Controller and ready to have the Controller handed off to them when the group before them is finished.

LESSON EXTENSIONS

Pair share Reflective Dictionaries (at the start of class, see above).

LESSON SUPPORTS

Group work (students who are higher performing can work with lower-performing students).
Students with modified assignments will be assessed with the modified rubric.

ASSESSMENT

Completed Note-Taking Handout for each presentation.
Completed research activity rubric.

For the complete **ROVe the Great Lakes** curriculum, visit go.wisc.edu/ROVe2.

