

FIRST IN FLIGHT, LAST IN WETLAND PRESERVATION: TEACHER GUIDE

Subject: Life Science

Grade Level: Middle School

Last Updated: September 6, 2008

Case Summary

The City of Cleveland's Department of Port Control would like to expand Cleveland Hopkins International Airport by expanding the runway. Will the change propose a problem? Are all parties for or against the runway have reasonable concerns? As young environmental experts, you will role-play the points of view of four different stakeholders and write a report that provides specific recommendations for the mayor of a city considering an expansion of the metropolitan airport that will result in the loss.

Credits

Lovelace, E.R. (teacher, Columbia Middle School, Decatur, GA), Mittal, V. (PhD student, Psychology, Emory University, Atlanta, GA) fellows of the Emory University PRISM program (<http://www.prism.emory.edu>) (2006). Authors may be contacted at vmittal@emory.edu

Learning Objectives

1. Explain how removing a wetland affects the environment.
2. Compare and contrast a lake, wetland, and an ocean.
3. List Characteristics of rivers and streams.
4. Distinguish between the different areas of the ocean.

Georgia Performance Standards

- S7CS1.* Students will explore of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works. (NSES Content Standard A)
- S7CS6.* Students will communicate scientific ideas and activities clearly. (Content Standard A)
- S7CS7.* Students will question scientific claims and arguments effectively. (Content Standard A)
- S7CS9.* Students will investigate the features of the process of scientific inquiry. (NSES Content Standard A)
- S7L4.* Students will exam the dependency of organisms on one another and their environments. (NSES Content Standard C, F)

Assessment

At the end of each scene, students will turn in their box chart, which will be graded based on clarity and completeness. Students stay on task because they are responsible for turning in their box chart. The case is graded on their combine grades of the box chart and products. A 5-point scale will determine their grade (5=excellent, 4=very good, 3=good, 2=fair, and 1=poor) that will be converted into a percentage depending on the wait of the assignment. For each criterion:

- Accuracy and depth of product component; attention to grammar and mechanics
- Individual/contribution within the team
- Individual research ability and effort – online, print, investigative questions

The last two criteria (participation and individual effort) will be judged not only by the facilitator, but also by the students to be completed at the end of the case. (See Self/Group Evaluation form in *Student Materials*).

For the Scene 1 final product, in order to help Cleveland's mayor Jane Campbell make an informed decision that is compatible with environmental concerns, legal obligations, and her desire to build a strong local economy, students will design and present (1) a document for the mayor that describes the rationale for the competing positions and outlines a compromise recommendation for action.

For the Scene 2 product, students will (1) create a Water Biome campaign poster convincing their classmates why joining their group is better. Your group will represent a water biome. Students will present their posters to the whole class.

Implementation Strategy

This case is designed to take place over five 120-minute class sessions. It has two scenes. This case can be facilitated by one or two facilitators. The students will be responsible for their own learning by brainstorming ideas within their group and then with the whole class.

Students will read, discuss and write notes on their box chart in small groups and then discuss facts, questions, hypothesis and learning issues in a whole group. During the small group discussion, the facilitator/teacher monitors each group by checking for understanding and helping students with any problems that may arise. During the whole group discussion, the teacher/one of the facilitators write down notes on a overhead projector, white board or smart board.

The teacher may want to assign students to record as well. With this method, students learn to work together in their team as well as in a whole group, sharing their information and possible competing against other teams.

Implementation Schedule:

Day 1 (120-mins.)

- Overview of Water Biomes (5 mins.)
- Read Scene 1 (10 mins.); complete box charts (20 mins.); share and discuss as a whole class (30 minutes);
- Divide up learning issues among group (10 mins.)
- Computer Lab: Research learning issues (45 mins.)

Homework: Finish researching learning issues.

Day 2 (120-mins.)

- Share and discuss learning issues research with small group (20 mins.) and then with whole group (40 mins).
- Create a convincing document to the mayor that is compatible with environmental concerns (60 mins.)

Homework: Finish researching any remaining learning issues.

Day 3 (120-mins.)

- Discuss new learning issues from homework research (10 mins.)
- Complete case 1 evaluation; wrap up (5 mins.)
- Read scene 2 (10 mins.); complete box charts (20 mins.); share and discuss as a whole class (20 minutes).
- Answer the questions at the end of the box chart (15 mins.)
- Discussion: In whole group, discuss the questions(20 mins.)

Homework: Research the extension question.

Day 4 (120-mins.)

- Share and review learning issues research with small group (20 mins.) and then with whole group. Use textbook to research any additional issues (40 mins.).
- Water Biome campaign: Design a poster that will convince your classmate to join your group. Your group will represent a water biome. (60-mins).

Homework: Bring any props from home to help with you advertisement.

Day 5

- Each group will present a 5-minute Campaign presentation. Students will be photographed. (30-mins).
- Complete case 2 evaluation; wrap up (5 mins).
- Review of scene 1 & 2 (10 mins.)

Homework: Reflection: Write a four paragraph reflection on what you have learned from the two cases (include new terms).

Facilitator Guide:

Facilitator Box Charts With Key Concepts/Issues Included:

Scene 1

<p style="text-align: center;">FACTS</p> <p>Scene 1 Airport expansion is vital to the economic health. There are endangered species of plant in the wetland. Sally Fairview wants to protect the environment and the public health.</p> <p>Scene 2 The new runway will count down traffic congestion.</p>	<p style="text-align: center;">Pre-HYPOTHESIS</p> <p>Scene 1 If the airport is expanding then the wetland will be destroyed. The environment will be affected by the new expansion of the airport. The airport expansion will produce regional economic development.</p>
<p style="text-align: center;">LEARNING ISSUES</p> <p style="text-align: center;">Scene 1</p> <p>What is the EPA? How would expanding the airport affect the wetland? What is the Federal Clean Water Act? What is mitigate? Why is it important to preserve open space? What is tributaries?</p> <p>Scene 2 What is the Federal Aviation Administration Air-Traffic Control System?</p>	<p style="text-align: center;">TASK</p> <ol style="list-style-type: none"> 1. Use reference material from the media center and internet. 2. Use the science textbook. 3. Ask other group members. 4. Ask the teacher. 5. Use old science textbook. 6. Use note in class as well as handouts. 7. Seek help from my parents. 8. Develop experimental design to test my hypothesis. 9. Interview an expert 10. Reference books at home 11. Ask an older sibling

Resources

Yu, Roger. (2006). A chance to help unclog Atlanta. Retrieved June 12, 2008 from http://www.usatoday.com/travel/flights/2006-05-15-atlanta-usat_x.htm