

The Return of the



Objective 1, Lesson 5

Lesson Title: Lord of the River

By: R. Berry, S. Mooney, and J. Powe

Grade Level: Middle School (6-8)

Goal(s): The students will predict how land use influences water quality and how this in turn influences the organisms that live in and around the watershed.

STATE OF OHIO STANDARDS:

Earth and Space Science

Benchmark:

Describe interactions of matter and energy throughout the lithosphere, hydrosphere, and atmosphere.

Performance Indicator

-Analyze data on the availability of fresh water that is essential for life and for most industrial and agricultural processes. Describe how rivers, lakes and groundwater can be depleted or polluted becoming less hospitable to life and even becoming unavailable or unsuitable for life.

Life Science

Benchmark:

Explain how energy entering the ecosystems as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interactions of organisms and the environment.

Performance Indicator:

Explain how the number of organisms an ecosystem can support **depends** on adequate biotic (living) resources and a biotic (non-living) resources.

Ways of Knowing

Benchmark:

Give examples of how thinking scientifically is helpful in daily life.

Performance Indicator:

-Identify ways scientific thinking is helpful in a variety of everyday settings.

Materials/Resources:

- Blue bulletin board paper
- 8 x 11 copy paper
- Pencils
- Crayons
- Markers
- Notebook paper

Procedures for Teaching:

1. The teacher will use a sheet of bulletin board paper to represent the Cuyahoga River. The sheet should be labeled, the "Cuyahoga River".

2. Give each student a blank sheet of copy paper that would represent their “River Front Property”
3. The students will decide what they would like to ‘build’ on their property: a park, a vacation home, a business, etc.
4. Once they have decided what to ‘build’, they should draw it onto their paper. Remember their property should be colorful and attractive.
5. Next, have students share their completed “properties” with the class.
6. Allow the students to place their “properties” along the banks of the Cuyahoga River.
7. As a class, discuss the reasoning behind placing properties in specific areas. Discuss how the location of these properties affects the organisms living in the river and the health of the river.
8. The teacher will introduce the terms point source and non point source pollutants. The teacher should provide the students with the definition from the *Return of the Cuyahoga River* glossary, as well as some examples.

(Point source pollution is pollution that is produced by industry. It is the type of pollution that students are most familiar with, such as industrial waste, dumping, and municipal waste. Non-point source pollutants are produced by individuals not associated with industry, such as lawn fertilizers, runoff, and agricultural runoff.)
9. The teacher will include point source and non point source pollutants into the diagram. The students will write about how this pollution affects the community and/or their property. How does it change the river environment? Ask the students what things can be done to improve the community.
10. The *Lord of the River* Scenario Cards (provided as a teacher resource)
The students will choose a scenario for the cards. The students will make an inference about how their property is affected by the changes. They should indicate whether the changes have a positive or negative effect on the land and the river.

Student Products:

1. The students' completed properties will be placed randomly (on opposite banks) on the drawing of the river that 'flows' around the classroom or hallway. They are to decide how to logically place their properties based upon the river flow.
2. The students should write about the effect that the 'River Community' has on the river environment.

Assessment: Student's products graded using *The Lord of the River Scoring Rubric*.

LORD OF THE RIVER SCORING RUBRIC

	3 – points	2 – points	1 - points
CONTENT	The student provides a detailed drawing of their property.	The student provides a simple drawing of their property.	The student provides a brief drawing of their property.
VISUAL APPEARANCE	The student drawing is very colorful and attractive.	The student drawing has some color, but not well drawn.	The student drawing lacks color and not neatly drawn.