



Geography Integrated Lesson Plan

Title: Pollution, Reclamation, and Conservation for Elementary Gifted

Subjects: Reading, Social Studies

Duration of lesson: Two sessions (two hours each)

Teacher: Claudia Wrigley, Elem. Gifted Resource Teacher, Putnam Co.

PURPOSE/OVERVIEW

The elementary gifted students in Putnam County will be going on a field trip to “The Wilds” nature park in Cumberland, Ohio, in early May. The park is built on the site of a former surface coal mine. In preparation for the trip, this lesson will introduce the idea of reclamation using the book by Lynne Cherry, *A River Ran Wild*, which tells the story of the reclamation of the Nashua River in Massachusetts from hundreds of years of pollution. Students will understand that surface mining causes great damage to the environment, including rivers, streams, and wildlife. By studying the timeline of the pollution and clean up of the Nashua River, they will see the process by which many environmental laws have been established to prevent such events from reoccurring. They will then be able to transfer the reclamation of the Nashua River to the “land” setting of “The Wilds. They will be able to explain how pollution (surface coal mine), reclamation (clean up, recovery of land, and building of the park), and conservation (maintenance of the park itself) has led to the creation of “The Wilds” and will be able to experience through their field trip, the results of the process. In addition, each student will create “a product” of their choice in the class time before the trip that shows the importance of stopping pollution, reclaiming what has been, and conserving and preventing damage to the environment in the future. Through the lesson the goal is for students to realize the future of the conservation of the planet is in their hands.

ESSENTIAL OR GUIDING QUESTION:

What is mankind’s, but more importantly, each individual’s role in the conservation of the planet Earth?

VOCABULARY:

pollution	citizenship
reclamation	industrialization
conservation	culture
legislation	community
wildlife	responsibility
habitat	environment

WEST VIRGINIA CONTENT STANDARDS

- SS.O.2.2.4 assess the importance of laws/rules and justify how and why they can provide order and predictability.
- SS.O.3.3.7 illustrate the path of a product from the raw material to the final product (e.g., cotton to sweater, coal to electricity).
- SS.O.3.4.6 relate how people affect and are affected by the various elements of the environment (e.g., water, soil, weather, climate, topography).
- SS.O.5.3.3 assess economic factors in various regions of the United States and show how and why they enhance or limit economic activities.
- SS.O.5.4.6 research how people have changed the environment of the United States, critique their actions and report your findings to the class.

GEOGRAPHY STANDARDS

The Physical and Human Characteristics of Places	4	2. Places and Regions
How Culture and Experience Influence People's Perceptions of Places and Regions	6	2. Places and Regions
The Processes, Patterns, and Functions of Human Settlement	12	4. Human Systems
How Human Actions Modify the Physical Environment	14	5. Environment and Society
The Changes That Occur in the Meaning, Use, Distribution, and Importance of Resources	16	5.Environment and Society
How to Apply Geography to Interpret the Present and Plan for the Future	18	6.The Uses of Geography

21ST CENTURY LEARNING SKILLS AND TECHNOLOGY TOOLS

- 21C.O.3-
4.1.LS.1 Student identifies information needed to solve a problem or complete an assignment, conducts a search and prioritizes various sources based on credibility and relevance, retrieves relevant information from a variety of media sources, and uses this information to create an effective presentation.
- 21C.O.3-
4.1.LS.2 Student accurately interprets symbols and visuals and can distinguish fact from opinion when presented with visuals through various media; student uses his/her knowledge to construct new knowledge and communicate information.
- 21C.O.3
4.2.LS.1 Student engages, with teacher assistance, in a critical thinking process that synthesizes knowledge and ideas.
- 21C.O.3
4.3.LS.4 Student appreciates, accepts and works cooperatively with others, in both academic and social contexts, shares responsibility for continued improvement of the academic performance and climate of the school, and exhibits ethical behavior while working alone or communicating with others.

MATERIALS: (include resources)

A River Ran Wild by Lynne Cherry

Large wall map of the USA

Copies of map of Massachusetts showing its rivers for each student

Nashua River Timeline handout found in *Shaped by the Standards :Geographic Literacy*
by Linda Rogers

9 small plastic clear containers (such as a plastic punch cup) filled with the following:

#1 pebbles

#6 green food coloring container

#2 toothpicks or twigs

#7 sawdust, mulch, or pencil shavings

#3 yarn clippings

#8 blue food coloring container

#4 red food coloring container

#9 yellow food coloring container

#5 punched construction paper dots

Large clear plastic tub filled half full with clean water

Copies of physical maps of Ohio showing “The Wilds” nature area

Recent local or national newspaper articles written about some form of water pollution

Copies of diagram showing process of surface mining

Copies of diagram showing how coal is used in making electricity

**Students will be asked to make a product of their choice which demonstrates their understanding of pollution, reclamation, and conservation. Examples of these products may be a poem, song ,drawing ,power point, skit, etc. to be shared with the class at the end of the session.

Internet Sources:

<http://geology.com/lakes-rivers-water/massachusetts.shtml>
<http://geology.com/county-map/ohio.shtml>
<http://www.mapsofworld.com/usa/states/ohio/maps/ohio-river-map.jpg>
http://upload.wikimedia.org/wikipedia/commons/thumb/8/87/The_wilds.gif/250px-The_wilds.gif
<http://maps.google.com/maps?hl=en&sugexp=llsfp&pq=upload.wikimedia.org/wikipedia/c>
http://www.bizplenty.com/What_Are_Coal_Mines
<http://www.efmr.org/edu/coal2009.pdf>
http://www.uky.edu/KGS/coal/coal_mining.htm
<http://www.coalwoodwestvirginia.com/images/CoalMiningTypes.jpg>
<http://www.coalwoodwestvirginia.com/images/CoalProducts.jpg>
<http://www.youtube.com/watch?v=rFWxGvYcv2s&feature=related>

MAP INTEGRATION:

1. Students will use the large map of the United States to locate Massachusetts and Ohio
2. Students will use the map of Massachusetts to locate the Nashua River
3. Students will use the map of Ohio to locate the Muskingum River
4. Students will use the Google map of Ohio to pinpoint the location of The Wilds
5. Students will use the map of The Wilds to estimate its area in square miles, as well as discuss the corporate and state partnership in its development

PROCEDURE: (include activity sheets)

1. Explain that in order to get ready to go on our field trip to “The Wilds” nature park, it is important for them to understand the process of pollution, reclamation, and conservation. Although this area involves the use of land, these concepts can be understood by reading “*A River Runs Wild*,” by Lynne Cherry and doing a “hands on” activity to recreate what happens in the book. This activity can be found in the book, *Shaped By the Standards: Geographic Literacy* by Linda Rogers.

2. Position “the river” (large clear container) on a table in the center of the room so everyone can see and have access to it. Give out the Nashua River Timelines to the students and distribute duplicates of the 9 cups which have been numbered with a sharpie so each student has one cup of materials. Have students note which # they have and explain they must pay attention to know what order they are to put their cup “in the river.”
3. Tell students they will be coming up and emptying their cup’s contents as the number on the cup is called. They will also write on their timelines together after most of the cups are emptied.
4. The teacher begins to read the story and show the illustrations in the book. At the end of page 5, cup #1 , pebbles, will be emptied and they will write an entry on the first date on their timeline. Throughout the story, reference will be made to how the spirit of the Indian chief, Weeana feels, as the students demonstrate how the river is becoming more and more polluted.
5. The process continues throughout the reading of the book as follows:
 - Read page 11 Empty cup number two
Record on timeline sheet (settlers’ logs)
 - Read page 15 Empty cups three and four
Record on timeline sheet(Industrial Revolution)
 - Read page 18 Empty cups five and six
(Do not write this time)
 - Read page 19 Empty cups seven, eight, and nine
Record on timeline sheet (chemicals)
 - Read page 27 Ask, “How might Chief Weeawa feel about the river now?
(Clean up)
6. Discuss the reasons that led to the river becoming so polluted (ignorance, greed, lack of respect for the environment and animal life, etc.). Explain that one of the themes of geography is that man affects land and land affects man. As students to give examples from the book to explain this statement.

7. Next, using recent newspaper articles about water pollution/clean up and the laws that require this to happen, bring the story of the river closer to home. What examples of pollution/reclamation/conservation are happening in our state and/or community.
8. Especially emphasize that until the 1960's and 1970's no laws were in place to control and prevent pollution from ruining our natural resources, including land, water, air, and animals. In West Virginia, coal mining is a major industry, as it is in Southeast Ohio (where "The Wilds" is located), but it wrecks much havoc on the environment. Laws are now in place for it to be reclaimed by planting and re-establishing wildlife habitats. This is how "The Wilds" came into existence.
9. Students will be given three maps of Ohio, one showing the rivers, the second and third, showing the location and a close up view of the area of "The Wilds." Ask students if any rivers exist near the area that had been used as a coal mine where the park is today. Have them discuss how the water could have been affected. Show them the diagrams of the process of surface mining. How else is this destroying the environment? Look at the diagrams of the products made from coal, as well as how coal is turned into electricity. Ask students to discuss whether what we are getting from the coal is "worth" destroying the environment. If we went to cleaner sources of power, however, how would this affect the economy (job loss, impact on communities, etc.).
10. Using the computer and projector, students will then watch a video about the process of surface mining and restoration called "The Aftermath of Strip Mining." The teacher might want to show other videos for students to see and hear what goes on during the mining process. Students will then go to "The Wilds" homepage to study the history of the reclamation process for this area by reading the timeline of events in developing it. How long has its development taken?
11. Continue discussion by asking what new additions or projects are currently taking place? Are there plans to expand it? What careers/jobs might you have to have to be able to be employed there? What types of animals are there? Why are these particular animals there?
12. Have students visit "The Press Room" drop down. Have them find an article of interest to them about something that has happened at "The Wilds" and give a brief summary to the class as to what it was about. Why did it interest them? Do they think that the projects and activities at The Wilds are making a difference to the future of the planet Earth?
13. Discuss the long-reaching effects of the process of reclamation. How has this particular incidence increased tourism and helped the economy of Ohio? What other environmental topics are being researched and studied at "The Wilds?"

14. Discuss conservation. Have students give examples of how “The Wilds” demonstrates this process. Why is conservation important to the reclamation process? What would happen without conservation of the area? Is this a one-time procedure? Explain why or why not? Who is responsible for the conservation of the earth? Why should we be involved in this process? Have students ever been involved in the reclamation, restoration, and conservation act somewhere in their community/nation?
15. As a culminating activity, explain that they will be making some form of product that shows they understand the process of pollution, reclamation, and conservation. These can be in the form of a poem, song, skit, power point, poster, drawing, or any means of expression. They should make sure that all three processes are included.

CONCLUSION/SUMMARY

1. As a follow up to this lesson, students can organize and carry out their “reclamation/conservation” project either at the school, in their neighborhood, or in the community. Encourage students to look for ways to conserve our natural resources. Explain that most areas have “river cleanups” scheduled once or twice a year. Where might they go to find this information out? Discuss recycling as a method of conservation. Students can bring aluminum cans or newspapers to class to be collected and taken to the recycling center. The important issue is that students internalize that this is an issue that affects them not only now, but their future , as well. They have the power to make a difference for the entire world. In all honesty, they do have the “whole world in their hands.”
2. Students can extend their study of “The Wilds” by researching one of the animals that live there. They can present their information in a poster, power point, etc. Have them include the background history of why it has been chosen to live there. They can share these in class.
3. Have students explore the different types of jobs at the park. Explain that many jobs involve the tourism aspect of the park, while others are more scientific and research based. They present their findings by making a brochure that describes the different types of jobs available.
4. Students can create eco-commercials to sell eco-friendly products (which they can also create) or to encourage others to “save the planet.” They can share these with other grade levels.

ASSESSMENT (include assessment)

Since elementary gifted students are not given letter grades, the following assessments will be used:

1. Students will record the activity, "Pollution, Reclamation, Conservation" on their tracking sheets kept in their individual work folders. At the end of the project, the teacher will rate each student with an E, S, or N for participation and successful completion of their chosen product and other activities that demonstrate their understanding of the lesson.
2. Students will take part and act appropriately during the activity that demonstrates pollution of the river as observed by the teacher.
3. Students will complete the Nashua River Timeline and place in their folder.
4. Students will complete all map activities as directed and place in folder.
5. Students will participate in class discussion as observed by the teacher.