

Reading the River, Summer 2003

Don't Drink the Water!

High School Spanish I and II

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Fall 2003

This lesson will be implemented as a stand-alone lesson integrating basic scientific concepts into the classroom while also learning Spanish vocabulary. It will follow the unit on ancient cultures and peoples of Mexico because at least one student makes a smart comment about “Montezuma’s Revenge” during that unit. The following core content requirements for science will be met:

The Interdependence of Organisms

SC-H-3.5.3 Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.

SC-H-3.5.5 Human beings live within the world’s ecosystems. Human activities can deliberately or inadvertently alter the dynamics in ecosystems. These activities can threaten current and future global stability and, if not addressed, ecosystems can be irreversibly affected.

Program of Studies:

This lesson will also address the following program of studies academic expectations for science and world language:

Science

Identify and refine questions and identify scientific concepts to guide the design of scientific investigations.

Use evidence, logic, and scientific knowledge to develop and revise scientific explanations and models.

Examine interrelationships and interdependencies of organisms in ecosystems and the factors that influence the interactions between organisms.

Explore how human activities alter ecosystems.

World Language

Communicating in a language other than English is central to second language study, whether that communication is in the form of conversation, writing, or through the reading of literature.

Mastery of the language cannot be achieved without a knowledge and understanding of the cultures in which it is used. The understanding of the perspectives and beliefs of other cultures greatly improves students’ abilities to function in a global environment.

The study of foreign languages offers connections to other content areas, thus allowing students opportunities to reinforce their learning and skills in other disciplines.

Second language study provides insights into students’ native languages and culture. Through comparisons of other cultural and linguistic systems, the study of second languages helps students develop critical thinking skills.

Knowledge of other languages and cultures prepares students for life and work in multilingual and multicultural communities.

The following Kentucky Learning Goals and Academic Expectations will be addressed:
1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.27, 2.28.

The goal of this activity is to raise environmental awareness of the students on a local level as well as a global level.

Objectives:

Students will be able to:

1. define basic terms regarding pollution in English and Spanish.
2. trace water movement through a system.
3. understand how a watershed works.
4. understand point and non-point source pollution problems.
5. draw conclusions regarding prevention of pollution.

Enviroscape® Activity

Two 90 minute-block class periods

Materials:

EnviroScape® Facilitator's Guide

EnviroScape®: Groundwater Model

Vocabulary handout

Handout of Additional Resources/Websites

Spanish/English dictionary

Art supplies (colored pencils, crayons, markers, etc.) as necessary

Activity Procedure:

Following instructions in the EnviroScape® Facilitator's Guide go through

Demonstration 1: How Water Pollution Occurs and Demonstration 2: Preventing Water Pollution.

Culminating Writing Project:

Students will choose one of the following options to demonstrate what they have learned about water pollution keeping in mind that the goal is to inform another targeted group of people about the problems of pollution and ways to prevent it.

Poem

Song

Letter to government official/editor of a magazine or newspaper

Pamphlet or Brochure

Story book/Coloring book

Students will use the remaining class period after EnviroScape® activities as well as one full period the next day to begin work on their writing project. A rough draft will be due one week after beginning the assignment and a final copy will be due one week after that.

Assessment/Evaluation:

Evaluations will vary depending on the style of project chosen. Students will be evaluated on inclusion of the following:

- Grammatically correct Spanish

- Visual neatness, use of color, etc.

- Audience appropriateness: did the student target a specific group and stick to it?

- Accurate information regarding ways in which pollution occurs

- Accurate information regarding ways to prevent pollution

Concepts:

In this lesson students will see an easily understood visual demonstration on the ways in which a watershed works. They will also understand the idea behind point and non-point source water pollution and ways in which it can be prevented.

Water quality is a global issue concerning every inhabitant of this planet. Human activity greatly affects the environment around us and students need to know that they can have a large influence in maintaining the health of the waterways near their home.

References:

This lesson plan was adapted from the demonstrations in the EnviroScape® Facilitator's manual.

EnviroScape®. JT&A, inc. <http://www.enviroscapes.com>
14524-F Lee Road. Chantilly, VA 20151; 1999.

Vocabulario

1. la lluvia ácida - acid rain
2. las bacterias - bacteria
3. la ecología - ecology
4. el ambiente - environment
5. la erosión - erosion
6. la polución - pollution
7. el nutritivo - nutrient
8. la insecticida - insecticide
9. la pesticida - pesticide
10. el sedimento - sediment
11. el lago - lake
12. el océano - ocean
13. el río - river
14. la granja - farm
15. la cosecha - crop
16. la fábrica - factory
17. industrial - industrial
18. la vaca - cow
19. la residencia - residence
20. residencial - residential
21. la construcción - construction
22. el abono - fertilizer
23. el campo - field
24. la selva - forest
25. el estacionamiento - parking lot
26. el aceite (de motor) - (motor) oil
27. la contaminación - contamination
28. los desperdicios - waste
29. el sistema de drenaje - stormwater drainage system
30. la basura - trash
31. la contaminante - contaminant
32. limpiar - to clean
33. prevenir - to prevent
34. la mascota - pet
35. reciclar - to recycle

Add to this list any words you need to look up in a dictionary in order to complete the writing assignment.

Watersheds: Additional Resources and Websites

You may wish to consult some of the following websites to find additional information to assist you in your final project.

NKU Science Education: <http://www.nku.edu/~scienceed>

EPA: <http://www.epa.gov/enviroed/>

KY Dept. of Fish and Wildlife: <http://www.dsfwr.state.ky.us>

KY Division of Water: <http://www.water.nr.state.ky.us/dow/dwhome.htm>

Water on the Web: <http://wow.nrri.umn.edu/wow/index.html>

Licking River Watershed Watch: <http://water.nr.state.ky.us/watch/licking.htm>

Sanitation District No. 1, NKY: <http://www.sd1.org>

Tri-State Environmental Resource Center: <http://terc.uc.edu>