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Raising Interest in Science Education

Teaching Units for High School Science Developed by

Duke University Graduate Students in Pharmacology 693/694

Master of Arts in Teaching (MAT)

http://sites.duke.edu/rise/duke-courses/pharm-693694/

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Daily Lesson Plan

Course Name: AP Environmental Science/AP Biology	⊛ Standard ⊛ Honors ● AP
Unit Title: Ecological Health of the Ellerbe Creek Watershed and its Environmental Implications	**Day/Date: 5/16**

Relevant NC Standard Course of Study Goal(s):

- **EEn.2.4** Evaluate how humans use water.
- **EEn.2.8** Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.

Specific Lesson Objectives

Students will understand:

1. Humans influence freshwater availability and quality in North Carolina's river basins, wetlands, and tidal environments.
2. Sustainable agriculture and aquaculture practices have environmental impacts.

Students will know:

1. How humans modify ecosystems through population growth, technology, resource consumption, and production of waste.
2. That urban development in the North Carolina Piedmont leads to habitat destruction and urban runoff.
3. Local environmental policies and organizations striving for effective conservation methods and stewardship.
4. How drinking water, stormwater, and wastewater systems impact the quantity and quality of water.

Students will be able to:

1. Maintain field notes and accurate records in a field notebook.
2. Develop a methodology for stream sampling.

Key Vocabulary for this Lesson

- *N/A*

Materials

- Clean Water Act handouts

Technology Needs

- Laptop
- Projector

LESSON ACTIVITIES			
Opening (Hook, Warm-Up, Anticipatory Set, Review, etc.)			
Describe activity to elicit active involvement of students or refer to previous learning: *Warm-up*: Students will read a part of the Clean Water Act and brainstorm about the positive and negative repercussions of such legislature and the difficulty of its implementation and enforcement.			
Procedure: Include all sections that apply to this lesson; combine as necessary.			
Section	**Time**	**What the Teacher will do:**	**What the Students will do:**
Statement of Objective & Purpose	3 minutes	1. Provide an overview of the day: Clean Water Act warm-up, overview on the importance of maintaining biodiversity and freshwater ecosystem health, guest speaker on environmental policy and law	1. Listen
Input, Modeling, & Check for Understanding	65 minutes	1. Teacher will provide brief PowerPoint and lecture covering the importance of maintaining freshwater ecosystem health and biodiversity 2. Check for understanding by having students brainstorm ideas in table groups 3. Teacher will ensure the guest lecturer has the required equipment and setup for their presentation	1. Take notes from the lecture 2. Participate and actively ask and answer the teacher and guest lecturer's questions
Guided Practice	0 minutes	*N/A*	*N/A*
Independent Practice/ Homework	20 minutes	1. Teacher will answer questions in regards to the warm-up and lead a group discussion in regards to environmental law enforcement	1. Students will complete the Clean Water Act warm-up
Closing/ Summary	2 minutes	1. Teacher will answer any remaining questions on the topics of the day 2. Thank guest lecturer for giving their time for teaching	1. Students will ask questions in regards to the day's topics 2. Ask guest lecturer any remaining questions in

		environmental policy	regards to the creation and implementation of environmental policy

Assessment of Student Learning

How & when will you know that the students have learned this material?
Daily review questions, during the EPA field trip, Unit exam

Differentiation Strategies*

How will you adjust aspects of the lesson to accommodate student READINESS?

Struggling Students:	Gifted/Advanced Students:	English Language Learners:
N/A	*N/A*	*N/A*

How will you adjust aspects of the lesson to accommodate students' LEARNING PROFILES?

This majority of this lesson is geared towards students whose cognitive style favors learning via detailed lecture that provides many new facts and ideas. The topic of environmental policy is complex, and by using a guest speaker from either the Sanford School or Nicholas School of Environmental Policy as the instructor, students will be able to take a Socratic approach to learning by asking many detailed questions in this specific area of the guest's expertise.

How will you adjust aspects of the lesson to accommodate students' INTERESTS?

N/A