

U.S. HISTORY 5TH GRADE LESSON CLEAN AIR ACT (1990)

Objectives

TAKS

Social Studies: 20A, B; 24D, E; 25A, C, E; 26C, D; 27A, B
Science: 5.1A, B; 5.2A, B, C, D, E, 5.3A, C, E, 5.4A

1. Students will plan and implement laboratory investigations using scientific methods.
2. Students will construct simple graphs based on investigation data.
3. Students will be able to define acid rain and outline its impact on the environment.
4. Students will identify the role that past national leaders (former President George Bush) have played in dealing with national and international issues by developing policies to deal with specific events/problems.
5. Students will be able to differentiate between primary and secondary source material.
6. Students will create written material based on research and experiences.

VOCABULARY

Hypothesis: an explanation accounting for a set of facts that can be tested by further investigation

Procedure: a course of action

Data: information organized by analysis to make decisions

Conclusion: the outcome or result

Acid: a substance which has a pH below 7 and is capable of turning litmus indicators red

Base: a substance which has a pH above 7 and is capable of turning litmus indicators blue

pH: a measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity

ACTIVITIES AND RESOURCES

Pre-Museum Visit

1. Scientific Method should be reviewed as well as safe laboratory procedures.

2. The Bean Sprout Growth Experiment should be conducted 2-3 weeks prior to Museum visit. See the resource section of the lesson plan for classroom experiment.
3. Test each of the water samples to be used in the above experiment.
4. Record pH results in Clean Air Act Notebook (Acid Rain). See resource section of lesson plan for Notebook pages.
5. Define domestic and foreign policy on worksheets before visit to George Bush Presidential Museum (definitions are taken from TEA website).
6. Collect samples of rain water or standing water to bring to the Museum.
7. Divide class into research teams to work together during the Museum visit. They will complete the Research Notebook individually to turn in for assessment.

Museum Visit

Classroom Activity

1. Based on primary source material, what is the definition of acid rain and its main source?
2. Working in small groups, student research teams will define acid rain and test various substances along with the classroom sample of water. All students should record their results in Research Notebooks.
3. Each group should rank their results from highest pH value to lowest pH value.
4. As a group, list possible problems caused by acid rain.
5. Looking at attachment F & Conventional Air Pollutants charts, what can we tell about U.S. problems with nitrogen oxide (NO) and sulfur dioxide (SO₂)?
6. What was President Bush's position (opinion) on cleaning up the environment?

Tour Activity

1. As students tour the Museum in small groups, they will use their information sheets provided to identify examples of foreign and domestic policy.
2. Which domestic policy helped the environment?
3. Based on the primary source letter to William Reilly, what is former President Bush's position on the Clean Air Act?

Post-Museum Visit Activities

1. If you run out of time, complete activities #6 and #3 after returning to your campus.
2. Students should discuss findings - *How can the government reverse the effects of pollution?*

ASSESSMENT

Students will turn in their research notebook.

NOTES

Materials needed for school activities:

Clean Air Act Notebook
pH paper
bean sprout plants
Styrofoam egg cartons

Materials needed for Museum research activities:

test liquids
pH strips
test tubes and test tube holders
pens
map pencils

Primary Source material:

Clean Air Act Option Paper: Acid Rain - May 15, 1989
Emissions: Conventional Pollutants Chart
Conventional Air Pollutants Graph
Annual Risk of Death
President Bush's note to William K. Reilly 11-2
America Repaying Debt to Damaged Environment by President George Bush