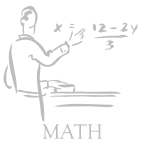
Environmental Expo

One characteristic of effective learning is the ability to apply knowledge to practical problems and real life situations. Through this project, students were able to apply what they learned in the classroom directly to the evaluation of a school habitat area. In addition, through the development of independent projects, students were able to extend their knowledge by focussing on related topics of their choosing. Finally, through the Web page and exhibition, students were able to use a variety of communication skills to convey their knowledge to others.

7
GRADE LEVEL


ARTS


LANGUAGE


MATH

Misc
MISCELLANEOUS


SCIENCE


HISTORY


SOCIAL STUDIES

10
WEEKS

$1000
TOTAL BUDGET

Curriculum/State Standard

Delaware State Science performance indicators regarding watersheds, science inquiry, and ecosystems

Overview

Students studied watershed and ecosystems through a structured set of classroom activities and outdoor labs. Students then conducted an independent project related to these topics, prepared a display for an "Environmental Expo," and created a Web page to document their activities.

Objectives

- Students will increase their understanding of watersheds and improve their understanding of the relationships between land-use, water quality, and ecosystem health.
- Students will conduct group and individual projects for an "Environmental Expo" and contribute to a Web page about the school pond wetland project and other ecosystems.

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SHOPA
Foundation for Educational Excellence
Kids In Need

THIS WINNING LESSON PLAN WAS SUBMITTED BY:

Shauneen Giudice
Delmar Middle and Senior High
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"Environmental Expo" project continued...

Materials

Environmental testing materials, such as soil and water test kits, nets and other tools to collect data about water quality and soil characteristics; digital camera to document student work and produce pictures for PowerPoint presentations and Web pages; art supplies such as poster boards, science display boards, scissors, glue, markers, etc., for student use (especially for those who lack parental support or the financial means to purchase materials for their project).

Readiness Activities

Pre-test(s) based on the state performance indicators to assess student knowledge about watersheds and ecosystems; initial visit to the school pond to make sketches and observations concerning its value for wildlife

Strategies/Activities

Classroom readings and vocabulary exercises were conducted to provide factual background. Since a significant portion of our students are reading from one to several years below grade level, they need help, practice, and reinforcement in order to be successful accessing written information. For example: I modified readings from the GLOBE background information regarding soil and water testing found at www.globe.gov and prepared questions and activity sheets to guide them through the readings.

Daily vocabulary activities were based on a core vocabulary list. Students kept a vocabulary notebook with their definitions and completed activity sheets using these words. The core vocabulary list and related activity sheets were maintained on a class Web page so students could access them as needed outside of school (especially if they were absent/lost their papers). This also allowed parents to see what work was being required.

Numerous classroom labs, models, and hands-on activities were carried out. A few samples of these activities are listed below.

- **H2O Olympics:** In this activity from Project WET, students worked in teams to complete various challenges that demonstrated different properties of water. For example, they competed to see who could float the greatest number of paper clips on the surface of a glass of water (surface tension).
- **Topographic Treasure Maps:** After learning how topographic maps can be used to determine the extent of a watershed and to interpret a simple topographic map, students created islands in which elevation was represented by a different color. Students measured each elevation level and drew a topographic map of their island.
- **Cabbage Juice pH:** After learning about how changes in the pH can affect aquatic life, students used red cabbage juice to measure the pH of a variety of household liquids.
- **How does a wetland work?:** In an activity adapted from Ranger Rick, students used paint trays and sponges to create working models of wetlands that showed how wetlands: (1) help prevent floods by absorbing excess runoff; and (2) help clean the water by trapping sediment carried in the runoff.

Outdoor environmental activities included using the test kits and tools to evaluate the water and soil around the pond. Students evaluated the texture and porosity of the soil, conducted basic tests of soil pH and other parameters, and examined the community of invertebrates living in the soil. Students also tested the pH, temperature, dissolved oxygen, transparency, and nutrient content of pond water.

Culminating Activity

Students completed individual spring research projects about a topic of their choice. Their work was exhibited in an "Environmental Expo" in the entryway of the school. Selected projects were also taken to a statewide Water Festival.

Students worked together to create a Web page using photos taken of the students doing work at the pond.

Evaluation

A post-test was administered to evaluate improvements in the students grasp of basic concepts related to watersheds and ecosystems. Rubrics were used to evaluate individual student projects with respect to:
(a) factual knowledge;
(b) organization;
(c) mechanics;
(d) effort; and
(e) mental stretch (creativity).