

Non-Majors Environmental Biology: Large Class Hands-On Experiences

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These experiences are designed to give non-major biology students some 'laboratory' experiences in environmental biology (a lecture-only course). Classes normally consist of 300 students. The exercises listed are all carried out in a lecture hall with minimal supplies, during a 50 minute class session.

The students, working in groups of ten, carry out an environmental survey of campus, which is designed to promote an awareness of environmental issues related to everyday life. Each group collects data concerning traffic flow around campus, campus recycling programs (in the computer laboratories, in the student center food court, and in the residence halls), and participation in the university car pooling program. Each group of students submits a short report containing the collected data and the conclusions reached by the group.

A chocolate chip mining activity, designed by Kutscher (1991), promotes an awareness of the financial and ecological costs of regulated versus unregulated strip mining. Working in groups, the students are given two minutes to 'mine' as many chocolate chips as they can from a chocolate chip cookie. After the two minutes have elapsed, the students count the number of chips mined. The students then attempt to reassemble the fragmented cookie. The activity is repeated using a second cookie but this time the students are required to mine the chips while preserving the overall appearance of the cookie. The students compare the results of the two mining episodes, noting the number of chips mined and the final appearance of the cookies. Using this activity as a model, the students draw comparisons between regulated and unregulated strip mining practices

The students use Bottle Biology Methodology (National Association of Biology Teachers, 1994) to determine the effects of household liquids on water quality. Artificial ponds are constructed from 2-liter plastic bottles. Pollutants (household liquids) are added to the water in the experimental ponds. Duckweed plants are added to each pond. After one week the students compare the appearance of the duckweed in a control pond (no pollutants added) to the duckweed in the experimental ponds. Students determine the relative toxicity of each of the household liquids tested.

All of these activities promote student-directed learning in the classroom and have increased student interest and participation in this environmental biology course.

References

- Kutscher, E., 1991. Hands-On Environmental Science Activities, Alpha Publishing Co., Inc. Pages 91 - 95.
- Using Fast Plants and Bottle Biology in the Classroom, (1994) National Association of Biology Teachers, Reston, Virginia. Pages 3.1 - 3.13.