
ACTIVITY

33

GETTING WET! *AN AQUATIC FIELD INVESTIGATION*

SCIENCE SKILLS:

- measuring
- classifying
- organizing
- inferring
- communicating

CONCEPTS:

- Ecologists study the physical and biological characteristics of environments in order to try to explain the distribution of organisms and study relative abundance.

MATH AND MECHANICAL SKILLS PRACTICED:

- graphing
- averaging

SAMPLE OBJECTIVES:

- Students will be able to plan and execute an ecological study of an aquatic environment.
- Students will be able to collect and analyze data.
- Students will be able to give oral and written presentations based on their field investigation

INTRODUCTION:

Nothing is more work than taking students on a field trip. Nothing is more rewarding than going out to study the real world. It is impossible to write a single guide to doing a field investigation. You may organize a three day extravaganza to the wild or spend a half a day working on a pond in a local park. If the site is on your school grounds, the study might cover several months of weekly measurements. Success depends on planning, planning and more planning.

The problem with many field trips is that they do not include classroom work in planning the trip ahead of time or working up data collected upon return: they are not true investigations. If you are going to the trouble of planning and organizing the trip, be sure to allocate pre-trip preparation time with your students to make sure everyone knows what they will be doing and why they are doing it. Set goals and objectives. Involve students in the planning. Also, leave plenty of class time to study the things you collect or see on your field trip.

LESSON PLAN:

BEFORE CLASS: The first problem is to find a place to go. There may be a very nice pond or stream within walking distance of your school which would make a great site. Ask your students. If there is a body of water nearby, some of your children will have found it. If you can afford to take a trip on a bus, you may go farther afield. If it is within your budget, consider using a nature center, environmental education site, marine lab or organization that runs field trips. Working with professional field trip people will save you a good deal of time. They will have needed facilities and equipment. Call state environmental science specialists, county

science specialists or high school environmental education teachers for suggestions about places to go. City, county, state or federal parks may also have environmental programs.

Regardless of who is running the trip, visit the site yourself first. If there are staff members at the site, talk to them. Take a teacher workshop or training program there. Take slides to share with your students and collect information on the habitat you will visit. Have the students do library research on the habitat and the organisms they can expect to encounter there. If you are running the trip yourself, make sure you have permission to use the site and permission to collect if you are going to be taking fish or plants. Collecting permits may be obtained from the state department of natural resources or fish and game departments. Show the permit to your students ahead of time and explain that one cannot just go out and collect without it. Consider these things in planning:

Is the site safe?

Are there restrooms?

What happens if it rains?

Do you or the organization you are working with have adequate equipment? If not, can you borrow it from a local high school or other source?

Do you have field guides for identification or can you check them out at the library?

Have you made reservations early? Plan a spring field trip early in the fall.

Have you arranged for transportation?

Have you sent home permission slips for the trip?

Have you recruited and trained your chaperones?

Have you given the students orientation to the site? Do they have a list of what to bring and what to wear? Are they divided into working groups, ready to go?

What kinds of information do you want to collect on your trip? What activities will your students do? Consider trying to correlate physical characteristics of the environment with the distribution of species. For example, compare the number of species and the abundance within species of fish swimming over sandy versus muddy bottoms at a lake or estuary. Look for variations in the distribution of dissolved oxygen in places: test surface versus bottom water in a lake or estuary or day versus very late night samples in a small pond. Transects across ecological gradients reveal changes in species composition. What happens to plant species as one moves from dry land into a marsh or pond? What changes are seen in invertebrates and seaweeds from the very high to the low intertidal zone? Use ideas from the activities in this curriculum. Actively involve your students in planning the field work. Give them maps of the site, examples of the equipment available, and bottles, jars and plastic bags to label for specimens. Have them help organize the gear, make the data sheets and plan the day.

Never collect without permission of the landowner if on private land or the authorities if on public land. Collection without a scientific permit is forbidden in many areas. Always find out what is legal ahead of time and explain the laws to your students. Collect as few plants and animals as possible. Teach your children respect for each organism. Do not have each student do a large collection of whole plants or animals. If plants and animals are needed for later classroom identification, take ONE of each and leave all the rest where you found them. Label each collection completely so that it can be used in class.

RESULTS:

When you return to the classroom, analyze the data you collected. Graph it with line or bar graphs. Look for correlations. Have working groups write reports and give class presentations on their results. You might want to save the oral presentations for Activity 36, the parents' science symposium.

CONCLUSIONS:

Field investigations are hard work and great fun!

EXTENSIONS:

1. Have a field biologist talk to the class about what kinds of work he/she does. Thanks to television, students have very strange ideas about field studies. The rain, heat, cold, mud, insects, long hours and tedious data analysis are missing on nature programs. Look for people from your state park system, state department of natural resources, a local environmental consulting firm or nearby college. Avoid high profile institutions like zoos or aquariums where they get dozens of such requests a week. Seek people actually conducting field research. Perhaps you could ask this person to help your students plan the field trip or an on-going research project.



