

Teacher to Teacher

OUTSIDE ACTIVITIES IN AUDIOTUTORIAL FORMAT

In many audiotutorial biology courses taught today all the learning activities are done within the classroom or learning center and usually within a 1-3 hour period. Since many of these courses have large enrollments, activities outside the classroom or over extended periods of time have usually been considered impractical. We would like to report on how we have incorporated outside and long-term activities into an audiotutorial introductory biology course that serves 700 students.

A unit of the course dealing with ecology was revised so that it included two activities outside the learning center. The first activity involved making observations of animals in their "natural" environment over a ten-week period. The goal of the activity was to determine the effect seasonal changes have on the activity pattern of gray squirrels. The students were asked to count the number of squirrels active at a given place on campus during various times of the day and to record their observations on computer cards. These cards were processed by computer, and the composite data of the entire class were graphed. These graphs were displayed in a central area along with other pertinent data (sample sizes, weather conditions, and sunrise and sunset times). Students were asked to use this data to describe the gray squirrel's average daily activity pattern and to interpret how this activity pattern was affected by seasonal changes in day length and weather conditions.

In the second activity, the students investigated population growth through the medium of computer modelling. They signed up, in groups of eight, a week in advance to attend sessions in which the graphical output capability of a Hewlett-Packard 9830A desk top computer-plotter was used to demonstrate various patterns of population growth based on the exponential and logistic models. Students were asked to interact with the computer by providing hypothetical values for the parameters of the models. Next, they were asked to describe the kind of population growth they would expect and to check their predictions with the graphical output of the computer.

The ecology unit incorporated the two activities described above into an audiotutorial segment dealing with the ecosystem. First, at the beginning of the semester the students were given a supplement to their usual study guide on ecology. It described how the various activities related to ecology and to one another and when each activity was scheduled to take place during the semester. Second, since the outside activities were to be completed just before the students be-

gan the audiotutorial segment on the ecosystem, the beginning of the audio tape was used to reiterate how the various activities were interrelated. Third, the audio tape also contained instructions for a set of brief exercises related to the outside activities. These exercises were not designed to replace the outside activities but rather to provide an opportunity for review and synthesis.

Even though the students were not given special credit for turning in squirrel observation data or for attending the computer demonstrations, over 70% of the students participated in each activity. A questionnaire given to 10% (approximately 70) of the students chosen at random revealed that the majority liked doing both these activities and believed that they should be continued. Only about 15% felt that the activities were too inconvenient or not worthwhile.

On the basis of our experience, we submit that activities outside the classroom can and should be incorporated into an audiotutorial format. The positive experiences associated with these outside activities are too important to be left out of the program. Furthermore, the majority of students do participate with very little coercion and enjoy doing the activities. Activities outside the traditional classroom or learning center need not be limited by administrative problems or the inertia of some students but only by the imagination of the teacher.

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PHOTOGRAPHS AS INSTRUCTIONAL TOOLS

One picture is worth a thousand words, or so it has been said. This may be true if pictures are used correctly; but used incorrectly, pictures are worth almost nothing. Many times photographs, movies, and transparencies are used by an instructor to take the place of actual instruction. This is a poor way to use these media resources. This paper deals with the use of still photographs as teaching tools in secondary life science classes. Used correctly, still photographs can improve concept understanding; used incorrectly, they are a waste of time.

Photographs can be used to illustrate characteris-