

## SCIENCE EDUCATION

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### ABSTRACTS

**Using Video-Technology as an Aid to Classroom Observational Learning.** SUSAN M. BRYANT, Saint Mary's College, Department of Education, Notre Dame, IN 46556-5001.—The purpose of this presentation is to demonstrate the use of video technology as an aid to elementary school students' observation and study of ecology. A sixth grade class in an inner city environment discovered a nesting pair of mourning doves outside the schoolroom window. The teacher capitalized on the immediate interest of the students and developed instruction designed to 1) increase student understanding of the natural environment and of birds, in particular; 2) develop responsible attitudes toward wildlife; 3) teach observational and record-keeping skills; and 4) practice group problem-solving strategies. The edited video-tape and a student narrated slide presentation will show how the project evolved in the classroom and how teachers can take advantage of similar situations to promote learning with a high degree of student excitement and involvement.

**Science Teaching with Bubbles.** MARY L. FRENCH, Linton-Stockton Elementary School, Linton, IN 47441.—This session will let participants experience science teaching using bubbles. While enjoying the magical, "clean" fun of bubbles, the participants will incorporate the science process skills of observation, classification, measurement, prediction, inference, and communication. Explanations of how to reinforce graphing and charting skills using bubbles will also be offered in the presentation.

**Teaching Tropical Ecology in the Tropics: The Possible Dream.** DAVID J. HICKS, Biology Department, Manchester College, North Manchester, IN 46962.—The tropical regions of the world contain valuable natural resources and are of great biological interest. It is of increasing importance that citizens, policy makers and biologists in the U.S. know about the tropics. The Central American country of Costa Rica is an excellent democracy which welcomes visitors from the U.S. Students of both basic and applied biology can find much of interest. The natural park system preserves samples of many natural ecosystem types. On the other hand, the pressures of a rapidly growing population provide examples of environmental and agricultural problems. Efficient logistic support for student groups can be provided by the Organization for Tropical Studies.

**Instrumental Methods: Experiments for the High School Laboratory, An In-service Workshop for High School Teachers.** PAUL B. KISSINGER, Physics

and Astronomy Department, DePauw University, JOHN A. RICKETTS, Chemistry Department, DePauw University, and EUGENE P. SCHWARTZ, Chemistry Department, DePauw University, Greencastle, IN 46135.—Instrumentation for use in teaching the chemistry and physics laboratories is available in many high schools. However, in all too many instances, ineffective use of this instrumentation occurs. This workshop was designed to provide high school teachers of chemistry and/or physics a “hands on” experience with the instrumentation available in the high school. Fourteen participants performed laboratory experiments directly applicable in the high school laboratory. The workshop continued over five successive Saturdays from 10:00 a.m. to 3:00 p.m. The topics included in the program were: 1) Teaching Laboratory to Enhance Reasoning Abilities, 2) Wave Motion and Atomic Spectra, 3) Spectrophotometry, 4) pH, Its Meaning and Measurement, and 5) Lasers, A Tool for Understanding Wave Motion. The content of each of the sessions is described.

**Mind Tester for Programmed Instruction.** STANLEY S. SHIMER, Science Teaching Center, Indiana State University, Terre Haute, IN 47809.—Each participant in this session will learn how to make and use the mind-tester and programmed instruction cards. The mind-tester can be made by individual students in the classroom and utilized for individual drill and practice of various concepts and facts about different science topics. Participants will also be shown how their students can make packets of programmed instruction cards on the topics of their choice.

**Pan Am Animal Sciences Exchange: Internationalizing Animal Sciences Education.** MICHAEL H. STITSWORTH, Department of 4-H Youth, AGAD Room 228, Purdue University, W. Lafayette, IN 47907.—A \$18,200 grant awarded to the Department of 4-H Youth at Purdue University by The National Association of the Partners of the Americans provided an exchange of Indiana 4-H club members and 4-S club youths in Rio Grande do Sul, Brazil. The Pan Am Animal Sciences Exchange permitted sending ten 4-H members enrolled in animal sciences 4-H project areas to Rio Grande do Sul for 6 week homestays during the summer of 1987. Purdue University faculty assisted the hosting Brazilian 4-S organization in structuring appropriate thematic experiences. The 4-H members lived on typical Brazilian animal production farms and toured agricultural training facilities, processing operations, and exporting facilities. In the summer of 1988, nine Brazilian 4-S club members lived on Indiana farms for six weeks to learn about animal science practices, research, and technology in Indiana. Four-H, a program of the Purdue University Cooperative Extension Service, is Indiana's largest non-formal educational program with a membership of 136,000 youth distributed among Indiana's 92 counties.

**“HUMAN: A Comprehensive Physiological Model,” a Content and Process Oriented Tool for Undergraduate Physiology Courses.** ALBERT A. WILLIAMS, Manchester College, N. Manchester, IN 46962.—An important component of undergraduate physiology is an appreciation of the complexity of interactions which are involved in the homeostatic regulation of living systems. Compartmentalization of regulatory controls is an unrealistic simplification that is a disservice to the student. A second essential component of all science courses is the development of an appreciation of the difficulties involved in formulating a clear hypothesis, good experimental design, and the production of an “elegant record” that relates to the hypothesis and clearly demonstrates the effect(s) of a given stimulus

on a physiological variable. The physiological simulation "HUMAN" serves both goals effectively. It is a computer simulation of physiological responses which computes over 200 physiological variables and allows the user to control more than 70 parameters. Both graphical and tabular versions are available. It has been effectively used in class lectures, as segment of structured laboratories, as a short assignment, and as the center of semester projects. It has served as a versatile tool that reinforces physiological concepts of homeostasis and the methodology of science.

