SCIENCE EDUCATION

Chairman: F. LEON BERNHARDT, Biology Department, Ball State University, Muncie, Indiana 47306

KENNETH UHLHORN, Science Teaching Center, Indiana State University, Terre Haute, Indiana 47809, was elected Chairman for 1971

ABSTRACTS

Use of Apollo Botanical Studies and Telephone Interviews as Supplements to a High School Science Program. LARRY R. YODER and PAUL G. MAHLBERG, Botany Department, Indiana University, Bloomington, Indiana 47401, and RICHARD HARTUNG, Leo High School, Leo, Indiana. ——A series of 35 millimeter color slides and a taped narration were prepared covering the biological work done at Indiana University in support of the Apollo lunar program. The hour-length presentation describes and illustrates the histological preparation and analysis of plants grown on lunar soil as a part of the Apollo XI and XII quarantine studies, and it includes interviews with university students and researchers who assisted in the project. This program was used by science classes at Leo High School and was followed by a live telephone discussion between students and the research team. Students expressed a greater appreciation and understanding of the work involved in research, with the greatest interest being shown among senior-level students. It is suggested that the telephone interview can serve as an effective supplement to class work since it brings students and authorities into direct communication with one another.

A Comparison of BSCS Versus Traditional Material and Inquiry Versus Traditional Teaching Methods by Testing Student Achievement and Retention of Biology Concepts. JERRY MONTGOMERY, Department of Biology, Marietta College, Marietta, Ohio, and F. LEON BERNHARDT, Department of Biology, Ball State University, Muncie, Indiana 47306. ——The long-term effect of BSCS versus traditional texts and inquiry teaching versus traditional teaching was examined. Twelve students for each of 28 teachers were pre-tested, post-tested, and retention tested during the first, ninth, and twelfth month after they entered a biology class. The testing instruments were the Nelson Biology Test and the Process of Science Test. It was determined that: 1) BSCS material generally improves the retention of biological knowledge; 2) The use of inquiry with traditional materials is at least as effective as the traditional approach with those materials; and 3) The inquiry teaching method coupled with the BSCS materials apparently results in the greatest post-test achievement.

The Paraprofessional Program. J. BURGESS and F. LEON BERNHARDT, Department of Biology, Ball State University, Muncie, Indiana 47306. ——The paraprofessional program was designed for Ball State University sophomores who plan to become science teachers. They were placed in a junior or senior high school under the supervision of a

science teacher. Here they were exposed to as many problems of teaching as the supervising teacher can innovate. They spent half or full days in the school for one quarter (approximately 11 weeks). The participants received up to 12 hours credit.

The program was evaluated with pre-tests and post-tests by using the Tennessee Self-Concept Scale, Concept Differential, and Minnesota Teachers Aptitude Inventory. Also principal, teacher, and participant evaluations were recorded.

The program continued through the winter quarter 1970. The concensus of opinion of administration, teachers, and participants is that the program was successful.

Factors Predicting Seventh Grade Students' Interest for and Achievement in Science. F. LEON BERNHARDT, Department of Biology, Ball State University, Muncie, Indiana 47306.——In this study the value of intelligence quotient, reading comprehension and mathematics as predictors of science achievement were measured. These three factors were selected because most schools regularly collect this information, and if the factors have predictive value, schools can very easily collect and use it for remedial purposes. Remedial work could help to reduce student failure in science courses. A stratified cluster sample of 163 seventh grade pupils was tested in 5 Indiana schools. The data collected concerning each student was: intelligence quotient, reading comprehension, mathematics achievement, sex, 6-weeks science grades, semester science grades, science interest pre-test and post-test, and science achievement pre-test and post-test. Data concerning schools and teachers were also collected and examined to insure a representative sample. Reading comprehension had the highest positive correlation with science achievement and pre-science interest was second. Post-science interest was not correlated with post-science achievement. The intelligence quotient was positively correlated to science achievement but was the least significant of the three factors tested.

Effect of Remedial Reading on Student Achievement in Science—A Pilot Study. F. LEON BERNHARDT, Department of Biology, Ball State University, Muncie, Indiana 47306.——The purpose of this study was to determine if there is a significant difference in the achievement of students who have had remedial reading before taking science. The poorest readers in a fifth grade class were identified and separated into equated groups. One group was given remedial reading and the other served as a control. Twelve students were involved in this pilot study. They were given a pre-test and a post-test in science.

If improvement in reading will produce improvement in science achievement, this technique will help prevent failures in science classes.