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The Biological Sciences in the General Education Program

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macro method but from their own reactions I am sure they wouldn't care to use it.

In conclusion may I ask, why not try this new method? Why use cubic centimeters when a few drops do the same, or why use grams when a spatula full gives the same results? Medicine droppers, spatulas, microscope slides, 10mm. test tubes, 50 ml. beakers, 50 erlenmeyer flasks, microburners, etc. are more interesting to use than the large cumbersome, expensive macro equipment. Why not be a starter instead of a follower. Try it. You and your students are in for a new lease on Chemistry, in the laboratory.

THE ROLE OF THE LABORATORY AND DEMONSTRATION IN COLLEGE PHYSICAL SCIENCE IN ACHIEVING THE OBJECTIVES OF GENERAL EDUCATION

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ABSTRACT

The major aim of the study was to determine the role of the laboratory and demonstration in college physical science in achieving the objectives of general education. Specifically, the problem resolved itself to comparing the relative effectiveness of three instructional methods in physical science laboratory. The experimental sections were taught by either the demonstration method, the individual laboratory method, or the combined demonstration and individual laboratory method.

The following were the general education objectives chosen:

1. To develop a functional understanding of scientific facts, principles and laws.
2. To develop scientific attitudes, interests and appreciations.
3. To develop skill in the use of scientific instruments and apparatus.

The experiment was carried out during the Fall, Winter and Spring Quarters of 1952-1953. All subjects in the experimental study were students enrolled in Physical Science 101, a general education course in physical science at Mankato Stae Teachers College. Two sections of 24 students each were used each quarter and the 48 students involved were randomly assigned at the time of registration before the beginning of each quarter.

A 2 x 3 randomized block design with equal subclasses was used in this investigation. The experiment was controlled carefully with respect to the instructional time, the subject matter, audio-visual aids, laboratory apparatus and experiments, and the evaluation instruments.

Information on the initial status of the students was obtained by means of honor point ratio, the ACE Psychological Examination and three pretests: Science Information, Scientific Attitude, and Laboratory Performance. The achievement criteria were three final tests given at the end of each quarter as follows: Science Information, Scientific Attitude, and Laboratory Performance.

In the experimental design, the following three null hypotheses were tested:

1. There is no difference between the three methods of teaching physical science laboratory work in achieving the objectives of general education.
2. There are no differences that are traceable to the differences in replications.
3. There are no differences that are assignable to the interaction between methods and replications.

The experimental data were subject to the univariate and multivariate analysis of variance and covariance. The effects of the following variables were statistically partialled out by the use of covariance techniques: ACE, the Science Information Pretest, the Scientific Attitude Pretest, and the Laboratory Performance Pretest. Upon completion of the statistical analysis, the three null hypotheses were accepted with respect to the three criterion measures.

On the basis of the experimental evidence, the experimentor recommends that present instructional practices in the general education physical science laboratories be modified in the following manner. If the general education curriculum requires a basic understanding of facts, principles and laws in physical science, the development of scientific attitudes, interests and appreciations, a functional understanding of scientific apparatus and equipment, then the combined method of individual laboratory instruction and demonstration should be used in physical science.

The experimental evidence showed that none of the three instructional methods proved to be superior in achieving the objectives of general education. One can conclude that the individual laboratory and demonstration played equivalent roles in achieving these objectives.

THROW-AWAY MAGAZINES AS A SOURCE OF SUPPLEMENTARY READING IN BIOLOGY

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ARSTRACT

School libraries usually secure a single copy of any one magazine. Most science classes are too large for each student to make an assigned reading from the one copy. Consequently, supplementary reading is often neglected. Most of the weekly and monthly magazines which come into the homes of the students contain worthwhile articles in science. The nature of these articles, their availability, and their worth as a valuable resource in our science classes is discussed.