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## Abstract Papers

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The results of the investigation are summarized as follows:

(1) The generalized high school senior science course and the conventional high school physics course are both effective in bringing about significant gains in knowledge of scientific facts and information of a general nature. Greatest gains took place in the conventional high school physics course probably because of the greater ability of the students enrolled in this type of course.

(2) The Generalized high school senior science course did not prove effective in bringing about significant gains in knowledge of specific physics materials while the conventional high school physics course proved effective in bringing about highly significant gains in knowledge and understandings of physics materials.

(3) Although significant differences existed between the students of the generalized high school senior science course and the students of the conventional high school physics course on scientific attitudes as measured by the Noll's Attitudes test, neither the generalized high school senior science course nor the conventional high school physics course proved effective in bringing about significant changes in scientific attitudes.

(4) The generalized high school senior science course proved no less efficient than the conventional high school physics course in the teaching of general scientific facts or principles and applications of those principles to pupils when inequalities of mental ability and previous achievement were taken into consideration.

(5) The conventional high school physics course proved definitely superior to the generalized high school science course in developing in pupils understanding of specific physics materials as measured by several physics tests even after inequalities of mental ability and previous achievement were taken into account.

(6) The generalized high school senior science course proved no more effective than the conventional high school physics course in attaining by students the specific consumer outcomes or objectives as measured by several tests after the factors of inequality of mental ability were taken into consideration.

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## THE FUNCTION OF THE COLLEGE MUSEUM IN THE TEACHING OF BIOLOGY AND THE CONSER- VATION OF OUR WILD LIFE

M. M. KEITH

*State Teachers College, Mankato*

### ABSTRACT

At the spring meeting of the Minnesota Academy of Science held at the College of St. Catherine in St. Paul last spring, the Science Education Section voted to sponsor a plan to centralize and promote the use of the natural resources of the State and other aids

in the teaching of science. In keeping with this, the Biology Department of the Mankato State Teachers College has been making its museum available to teachers of the south central part of the State. Because of the fire in 1922 which destroyed the main building of the College and the then existing museum which was housed in it, nothing of this nature has been available to the college or the surrounding community until recently. By means of a WPA grant, a State Teachers College Museum Project was established in 1938 and was terminated in 1941. While it was not possible to obtain specimens of all species of animals in that time, most of the more common species were collected and preserved in museum jars or mounted. Many of the mounted specimens have been placed in small natural habitat cases with glass on two sides so that they could be used not only for mere observation purposes but class study as well. Duplicate specimens have been prepared in the form of study skins for more detailed observation.

While our museum is of course not to be compared with those of larger institutions, yet it affords us one which is ample for the purpose for which it is intended. It is now being used not only by the college biology classes, but also by many teachers in the local Training School, the Mankato Public Schools and nearby town and country schools. It is recommended that visits be arranged for in advance so that lecturettes emphasizing the economic value and the need for conservation may be given in order to aid the teacher.

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## A STUDY OF PREREQUISITE SCIENCES AND CERTAIN SEQUENT COURSES AT THE UNIVERSITY OF MINNESOTA<sup>1</sup>

CLARA M. BROWN  
*University of Minnesota*

### ABSTRACT

The purpose of the study was to discover whether in non-laboratory science courses students could learn fundamental science facts and principles and see how concepts based upon them applied in new situations which confront them; whether students who met prerequisites by other than the traditional courses in science were able to achieve satisfactorily in sequent courses in foods and nutrition and in the biochemistry and bacteriology courses required of home economics majors; and whether alternative courses in elemen-

<sup>1</sup> Clara M. Brown. *A Study of Prerequisite Sciences and Certain Sequent Courses at the University of Minnesota*, Minneapolis: Committee on Educational Research, University of Minnesota, 1941. (This publication is available through inter-Library Loan with the University of Minnesota Library).

tary sciences might reduce the mortality of home economics students.

A five-year experiment was conducted dealing with the achievement in biological science and in sequent courses for which non-laboratory, simplified courses in biological science and chemistry were allowed as substitutes for the traditional courses for some students. Students were paired upon various bases: high school scholarship, knowledge prior to instruction, size of high school graduating class, and college achievement.

Highly objective, reliable, and discriminating devices were developed to measure both knowledge and performance in laboratory work. These were administered to students in courses in biological science and in sequent courses in foods and nutrition. The achievement of students in biochemistry and bacteriology was indicated by the marks assigned by the instructors.

The findings showed that students can learn biological concepts about equally well in non-laboratory, relatively non-technical courses as in the traditional courses and can do it in less than the typical time allotment. Moreover, students who met prerequisite requirements by the non-laboratory, simplified courses in both chemistry and biological science were not handicapped in sequent courses in foods and nutrition and the probability of their failure in courses in biochemistry or bacteriology did not seem to be increased. Achievement in sequent courses seemed to be dependent more upon scholastic ability than upon the kind and amount of prerequisite science; and professional interest seemed to be a powerful motivating factor in achievement. Permitting students in certain specializations in which science is not of major importance, to have some freedom in choosing alternative courses in science markedly reduced the mortality in the elementary science courses and did not increase the mortality in sequent courses.

It would seem desirable to carry on similar studies in other fields where long sequences are now required; to experiment with new methods of instruction which make effective use of recently developed visual aids, and with courses which combine a limited amount of laboratory experience with the lecture and demonstration techniques; and to attempt to discover whether relatively non-technical courses might not be developed which would contain content of interest to lay people and might serve also as introductory courses for students wishing to specialize in the field.