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DEMOCRATIC SOCIALISM

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NORTH ATLANTIC PACT

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MINNESOTA TERRITORIAL IRREGULARITIES

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THE MINNESOTA HISTORICAL SOCIETY,  
ITS HISTORY

HAROLD D. CATER

*The Minnesota Historical Society, St. Paul*



CONSERVATION OF NATURAL RESOURCES  
IN MINNESOTA

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## Science Education

### MAP KNOWLEDGE FOR GRADE SCHOOL GEOGRAPHY TEACHERS

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#### ABSTRACT

In the instruction of grade school children a teacher stresses certain materials, considered fundamentals, which differ for each course. In geography, a subject which involves reading ability, a map is the most important tool in interpreting the printed page. Some important map facts are:

First, a teacher should realize that only the globe is correct, and that all plans or projections are merely attempts to show part or all of the earth's surface on a flat plane in as accurate a way as possible.

Second, a teacher should be aware of the main classification of maps and their more important characteristics.

Third, one who instructs should have some understanding of the most common projections she is likely to encounter.

Fourth, an instructor should be acquainted with various kinds of map scales.

Fifth, one who teaches should be familiar with common symbols used in map legends.

Sixth, in addition to understanding maps, a teacher should know where to obtain the equipment and supplies she may need.

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### AN EXPERIMENTAL EVALUATION OF THE USE OF AUDIO-VISUAL AIDS IN TEACHING

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## INTEGRATION IN COLLEGE COURSES IN SCIENCE FOR GENERAL EDUCATION

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### ABSTRACT

The atomic bomb, hanging heavy over our heads, has become symbolic of the dangerous lag of social relationships behind technological and industrial developments. All the more pressing, therefore, has become the need for consciously teaching science for the direct transfer of training of scientific attitudes and methods to all aspects of life and its problems. Integrated courses in science reflecting the integration that actually exists in life affords possibilities for such conscious transfer of training. These possibilities lie in determining what there is in common in all sciences, natural as well as social, to enable transfer. With physics as primarily transformation of energy, with chemistry as transformation of matter, with biology involving life processes, cycles, and mechanisms of plants and animals, with meteorology and geology involving changes of the earth's atmosphere and surfaces, with astronomy and its motions of the earth and of all heavenly bodies, and with history and its rise and fall of civilizations, the concept of the Universality of Change becomes a natural.

In organizing the general education course of natural science around the concept of change, we are suggesting a series of units, each of which would be an integration or focusing of the various sciences about a specific central interest or object, important or vital in the student's everyday life. Such a unit might center, for example, about the automobile in all its mechanical, electrical, magnetic, thermodynamic, sound, radio, chemical, safety and health, historical, social and industrial considerations and applications. Obviously, the automobile as a device of motion, or of locomotion, is rich in its possibilities for showing laws of motion and change in various aspects of science with important personal and social considerations and applications. Another example of such an integrated unit and one of even more vital concern and interest would be consideration of the human body as a universe of activity at different levels, reacting to an everchanging environment with changes at one level affecting changes at other levels. These levels would be sub-atomic, chemical, physical, physiological, biological, psychological and social.

A succession of such units, not only accumulates the student's functional knowledge of himself and of the world around him in a meaningful pattern, but enables him to apply methods and find ideas already learned in a new situation. That is, the new unit, the new situation, by opening anew and with different consideration the

various areas of science, not only enables the student to apply and to reinforce what he has already learned, but to broaden, deepen and extend it.

Other possibilities of units in such an integrated course might be those of Consumer Science, Conservation of Natural Resources, The Public Health Movement, or Public Utilities a Century Ago and Today. A unit on Consumer Science, among other things, could afford excellent opportunity in a pointed transfer of training teaching, involving the looking for and the questioning of assumptions behind all statements, whether of particular principles of science, of commercial advertising, or of political and general propaganda. Or, a unit on Public Utilities a Century Ago and Today would reflect the tremendous development of scientific and industrial technique during the last hundred years, and could reveal the social significance of this growth.

For further illustration, in the integrated unit on the Human Body, the aims, methods and content would center around such considerations as: (1) the body as a miniature universe experiencing change on various scientific levels; (2) the dangers and hazards the body undergoes on all levels, how the body is equipped to meet these dangers, and how the body is and can be assisted in this; (3) the role of change for understanding the world and life, for prediction and control of our environment, and for mental health; (4) the material comforts of scientific and technological developments; (5) the scientific method and its possibilities for problem solving of all kinds; (6) how scientific development and industrial technique have shaped our present civilization, its economic, social and international problems, and us; (7) the possibilities of science in the not too distant future, for widespread human betterment as against total destruction.

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## SCIENTIFIC METHOD IN THE TEACHING OF SCIENCE

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