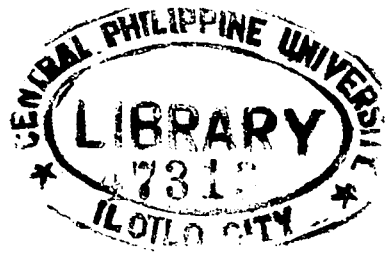
A COMPARATIVE STUDY OF THE EFFECTIVENESS OF TWO METHODS OF TEACHING SCIENCE IN GRADE FIVE

A Thesis

Presented to

Faculty of the School of Graduate Studies

Central Philippine University



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by

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CHAPTER I

INTRODUCTION

Recently many revolutionary contributions have been added to science teaching. This development has been caused by the rapid increase of scientific knowledge and the interest displayed by the scientists in the evaluation and development of science curricula.

It has become apparent that giving facts, answering questions, and asking pupils to memorize information are not enough. We can no longer regard science as a subject that simply imparts facts. According to Superintendent Aurelio Juele,[1] the textbooks and books in science should be revised every fifteen years. What is accepted as a fact in today's books may be obselete after fifteen years, or even in less time than that. Because of this nature of science facts and the datedness of books, we need science teachers who can bridge the gap between what is in the textbook and what changes have occurred since the textbook was printed. There is need, therefore, for science teachers and professors

(1) to keep with change, especially with the new teaching strategies and procedures in science;

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[1] Aurelio Juele, "Introductory Speech," Film Forum and Workshop of Science Teachers at West Visayas State College, November 12, 1973.

(2) to appreciate the new things that are happening; and

(3) to make teaching and learning experience interesting to the students or pupils in that science teaching reflects the drama of change as time goes on.

Educators are beginning to realize that the essence of science lies not so much in memorizing details of nature as in trying to understand it. In an attempt to bring about this understanding by means of obtaining and evaluating information through the use of discovery, new methods and approaches to science teaching have developed. The latest of these is called "process approach," which is still in its infancy.

To begin with, "process approach" started modestly in the United States. It started as a pet project of the American Association for Advancement of Science in 1961 at Berkely, California; St. Louis, Missouri; and Washington, D.C. In 1962 and 1963 conferences were held in various colleges and universities in the United States for the purpose of determining what to teach, the sequence in which they should be taught, and the instructional materials appropriate for each level, from kindergarten up to grade six. The materials stressed the processes of science in the early grades rather than science content alone. From 1964 to 1966 try-out centers increased from 106 to 240. Each tryout was a major

experiment in the field of American education.[2]

The most significant innovations of these series of experiments are:

(1) The clear identification of the objectives and activities of each exercise with one or more processes of science;

(2) The provision for evaluation;

(3) The provision for exercises usually reserved for the mathematics program, which enables the teachers to emphasize quantitative aspects of science experience earlier than is possible in traditional science programs;

(4) The inclusion of topics seldom, if ever, included in elementary science program;

(5) The development of working teams, of scientists from several disciplines of science, administrators, and teachers from the schools.

In the Philippines, the improvement of science education in the public schools has been continually confronted by a dearth of instructional materials.[3]

To meet this basic problem, the Bureau of Public Schools

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[2]Jose Rizal B. Sanchez, "Science--A Process Approach," The Philippine Journal of Science Teachers, IV (September, 1969), 24-27.

[3]Philippines (Republic). Bureau of Public Schools, Try-Out Guide Grades I-VI in Elementary Science (Manila: 1967), p. vii.

produced a teacher's guide in science for Grades I and II in 1957 and a Course Outline (Bulletin No. 23) for Grades III to VI in 1959. These materials, however, can no longer cope with the present needs brought about by changes in science instructional programs and by the rapid growth of technology and science itself. In order to fulfill its goal of preparing children for effective citizenship in a changing society, the Bureau of Public Schools has embarked on a long-range program of science curriculum development. This is the Elementary Science Curriculum Development Project administered by the Science Education Section and supported by the Special Subjects and Service Division. Simultaneous with this program should be the upgrading of teachers competence in science in order that the full value of the new curriculum materials could be realized.

As early as 1964, the United States of America Peace Corps Volunteers made popular the discovery approach in science, mainly utilizing the approach which has steps similar to the inductive method of teaching. However, when the first curriculum workshop was held in the General Office of the Bureau of Public Schools in 1966, in cooperation with the U.S. Peace Corps Volunteers, the main concern was to prepare curriculum materials for the upper four grades, which had only the Course Outline as instructional aid. A curriculum guide for Grade III was produced and manuscripts of science guides for Grades IV to VI were written. These guides were

finalized in 1967. The teachers' guides for Science in Grades I and II prepared by a team of selected science teachers, science supervisors, and U.S. Peace Corps Volunteers at the Third Elementary Science Curriculum Development Workshop, complete the series of Elementary Science guides developed with the assistance of U.S. Peace Corps Volunteers in the Philippines.

All these "try-out" guides are based on the new "process approach" in science teaching introduced by the U.S. Peace Corps by way of actual teaching in the Bureau of Public Schools elementary grades classes demonstration lessons, and tne holding of seminars, workshops and institutes for upgrading the competencies of science teachers.

The guides produced reveal that the "process" skills to be stressed in the grades progress from one grade level to another.[4]

The "process approach" makes extensive use of exercises in the new guides with definite processes to be used in the discovery of facts and knowledge by the pupils. The activities, through which the processes are ennanced, stress the understanding of relationships rather than learning isolated facts.

By 1974 the try-out elementary science guides from

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[4]Sanchez, loc cit.

grades I to IV had been revised and were being distributed all over the Philippines by the Bureau of Public Schools. The revisions implement the suggestions of teachers in the field who have tried out the guides from grades I to IV and have submitted these suggestions at the end of the school year 1970-1971. The revised edition of the guides from grades V and VI may be out next school year.

THE PROBLEM

Statement of the Problem

An efficient teacher should be aware of the new teaching procedures or strategies which could achieve the best results in the teaching-learning process. By "best results" is meant that his pupils should show that they have fully attained the goals set for them in the course. To attain this objective, the teacher should adopt the method or procedure which would help his pupils develop to their fullest capacity and show a remarkably high academic achievement, as well as develop the skills expected of them as minimum requirements in the grade they are in.

The purpose of this study is to discover such effective methods of teaching by comparing the academic achievement of grade five pupils who were taught through "process approach" with that of comparable pupils who were taught under the traditional method.

The researcher would like the experiment to answer the

following questions:

(1) Which of the two methods, "process approach or traditional method, will produce better results in the teaching-learning situation? In other words, which of the two groups will show higher achievement in science only, the experimental group using the "process approach" or the control group using the traditional method?

(2) Which method will be better to use for the superior group?

(3) Which one will be better for the slower group?

The effectiveness of the method should be measured in terms of significantly higher achievement of a group of pupils taught under one of the methods, after two equated groups have taken the same subject matter and been given a common orthe same achievement test.[5]

The null hypothesis adopted at the start of the experiment was that there was not significant difference between the results from the two methods of teaching Grade V science units.

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[5]Manuel N. Goboy, "The Relative Effectiveness of Two Methods of Teaching Science in Grade Six" (unpublished Master's Thesis, Central Philippine Univerity, Iloilo City, April, 1972), p. 10.