

EVALUATION OF THE REVISED 7-9 SCIENCE CURRICULUM

A Thesis

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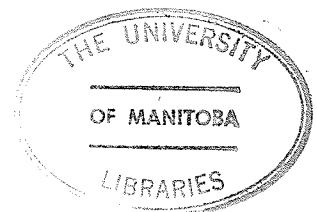
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the University of Manitoba in partial fulfillment of the requirements
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Abstract

This study was a formative evaluation of the Revised 7-9 Science Curriculum which was taught as a pilot program in selected Manitoba junior high school classes during the school year 1976-1977. The pilot program involved three rural and three urban schools, thirteen teachers, eight grade seven classes, twelve grade eight classes and fifteen grade nine classes. The teachers and classes in two of the schools comprised Group I, Classes Using Modules; the classes and teachers in the other four schools made up Group II, Classes Using Text Books.

The curriculum was evaluated on the basis of teacher acceptance of each unit, student achievement of grade seven course objectives, and grade seven students' attitudes towards science. Teacher acceptance was measured by a fifteen item researcher-designed Likert type opinionnaire administered to each pilot teacher as he/she completed each unit in the revised curriculum. Additional feedback was obtained by the accompanying interview. Student achievement was measured by six researcher-designed multiple choice tests based on the core objectives of each unit in the grade seven curriculum. Students' attitudes towards science as a school subject were assessed by a twenty item Likert type science opinionnaire.

Based on the three criteria, it was concluded that the curriculum was marginally acceptable in the form in which it was piloted. Teachers were only moderately accepting of most units. Physics and chemistry units tended to be most acceptable and space science units least acceptable. Grade nine units were more acceptable than were grade seven or eight units. Students did not achieve the core objectives of the curriculum. Student achievement was in general lower than 50 percent, while an 80 percent achievement level had been anticipated. Grade seven students' attitudes towards science were also low. Recommendations for revisions to the curriculum were made.

It was determined that there were almost no differences on any of the criteria between Groups I and II. It was concluded that the Revised 7-9 Science Curriculum could be taught as satisfactorily with a minimum of new student materials as with a complete set of the new modules.

In addition to assisting in revisions to the junior high science curriculum, this study has presented an evaluation model which could be used in future curriculum evaluations.

Chapter I

INTRODUCTION

Purpose

The purpose of this study was to design a formative evaluation scheme and to implement this scheme in evaluating the Revised 7-9 Science Curriculum.¹ During the school year 1976-1977 this revised curriculum was taught as a pilot program in selected Manitoba schools under the authorization of the Program Development Secretariat of the Department of Education, Province of Manitoba.

The curriculum was evaluated on the basis of its acceptability to teachers, student achievement of the program's objectives and attitude of students towards science in the school.

Background

Junior high school Science in Manitoba

The Programmes of Studies for the Schools of Manitoba² issued intermittently between 1896 and the present, and the annually published Reports of the Department of Education³

¹Province of Manitoba, Department of Education, Science 7 - 8 - 9 Interim Curriculum Guide, 1976.

²Programmes of Studies for the Public Schools of Manitoba, Revised 1896, 1899, 1912, 1923, 1926, 1934 (Winnipeg: Queens (Kings) Printer); see also Province of Manitoba, Department of Education, Science Grades 7-9, authorized by the Minister of Education, 1967.

³Report of the Department of Education for the Year Ending June 30, 1891 ... 1975 (Winnipeg: Queens (Kings) Printer).

from 1891 to 1975 revealed both the prescribed and the actual Science programs in the junior high grades of Manitoba throughout those years.

The first Programme of Studies was issued in 1890 after the Public Schools Act created a non-sectarian tax supported school system in Manitoba.⁴ Although this Programme is not available, it was referred to in the 1930 Report. According to this source, "Natural History" had been one of the school subjects listed in this original curriculum guide, although it was not clear at which grade levels it was to be taught. It was assumed that natural history included science topics.

The Programmes of Studies for 1896 and 1899 did not list a course called science, however, an agriculture course was to be taught in grade seven or eight. By the 1920's, physiology and hygiene alternated with agriculture in these grades.

Prescribed curricula existed for grades one to eight. Grade nine could be instituted in cities and towns, although no curriculum was given before 1912. This Programme of Studies details an extensive grade nine science course including biology, astronomy and physics.

⁴Margaret Gillet, A History of Education, Thought and Practice (Toronto: McGraw-Hill Company of Canada Limited, 1966) p. 389.

Several separate junior high schools for grades seven to nine were introduced in the 1920's. The Reports encouraged the creation of these schools because they would facilitate the teaching of specialized courses such as science. Until this time there had been little science actually taught in the schools below the grade nine level.

During the late 1920's and early 1930's, extensive curriculum revision took place. Well prepared, detailed and practical Programmes were produced for both the elementary and the secondary grades. A small amount of nature studies (thirty to forty minutes per week) was recommended at the elementary level, while in the secondary grades, science was given more importance.

The Programme of Studies for the Schools of Manitoba, 1934-1935, Grades VII - XII Inclusive outlined the science program for each grade. A broad range of topics from life, earth and physical science were listed for each of the junior high grades. An extensive equipment list was also given. The authorized texts were Science Indoors and Out.⁵

⁵Science Indoors and Out were issued in three revisions. The most recent forms consist of: C.A.E. Hensley, D.A. Patterson, and O.A. Armstrong, Science Indoors and Out Book: 1 (2, 3) (Toronto: W.J. Gage and Company, Limited,). (n.d.).

These texts in their original or revised forms continued to be used in Manitoba schools for thirty years.

The new curricula elicited many comments in the annual Reports of the 1930's. Most inspectors' reports praised the new science courses and the new methods which stressed experimentation and observation rather than dictation of notes. Inspectors lauded school boards for buying the recommended equipment and criticized teachers for not using it, although G. W. Bartlett pointed out a perennial problem. "Many of the teachers lack the necessary training for the objective and experimental presentation of the science material."⁶

The grade nine course underwent several revisions and text changes during the next thirty years while the grades seven and eight courses remained relatively unchanged.

The 1950's saw the re-organization of Manitoba into school divisions responsible for education in grades nine to twelve. The accent on curriculum development shifted to these grades. By the 1960's, most divisions administered all grades, and many separate junior high schools containing grades seven to nine were established.

⁶Report, 1929, p. 12.

During the years 1965 to 1967, a revised I - IX Science program was prepared. The 1967 Curriculum Guide, Science Grades 7-9, explained that the content of the course was still general science, "In the belief that a change of approach is of greater importance than a change of content..."⁷, however, factual information was to be de-emphasized and the content was to serve as a vehicle for teaching principles and processes. The Thurber and Kilburn Exploring Science⁸ series were the authorized texts. Workshops were held to help teachers adjust to the experimental or inquiry approach and school boards were again encouraged to invest in quantities of equipment.

In the 1970's, central control over curriculum was deemphasized. Alternative textual materials were identified to give teachers more choice of reference material in the multi-text approach. A survey, noted in the 1974 Report, revealed that teachers felt changes were needed in the junior high science curriculum, particularly in the grade nine course. The 7-9 Science Curriculum Revision Committee, which will herein be referred to as the curriculum committee, was established. This committee's work will be described in the next section.

⁷Science Grades 7-9, 1967, p. 1.

⁸Walter A. Thurber and Robert E. Kilburn, Exploring Science, seven, eight, nine (Toronto: The MacMillan Company or Canada Limited, 1967).