LABORATORY EXPERIMENT ON LOGIC FOR SLOWER LEARNING ADOLESCENTS

by

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I lovingly and gratefully dedicate this report

to my mother, Mrs. Emma Haig,

and

to the memory of my father, Mr. Vahram Haig.

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INTRODUCTION

The slower learning adolescent usually finds mathematics difficult and uninteresting. He generally takes a course in mathematics either to gain a credit for graduation or to wait for the time when he can legally drop out of school.

Many times the slower learning adolescent's dislike of mathematics is a result of inadequate teaching methods and of an uninteresting and meaningless curriculum. Professional journals, mathematics method books, and reference books on the slower learning adolescent indicate that the traditional lecture-demonstration-drill approach together with the present grade placement of topics and the emphasis on perfecting computational skills does not meet the needs of this type of student. H. Van Engen, Herbert Hannon, Edward Krug, the Secondary School Curriculum Committee of the National Council of Teachers of Mathematics, and G. M. Wilson are stating that a special mathematics program designed for the learning capacity of the slower learning student should be developed. They state that it should not be a remedial arithmetic program, but instead a mathematics program which enables students to develop mathematical concepts and skills necessary for the solution of their present problems as well as those they will meet in the future. To help develop such a program, H. Van Engen and Douglas A. Pidgeon are suggesting that the personal-social topics such as insurance, investments, installment buying, and taxation be eliminated from the intermediate school curriculum. They explain that these topics are not of interest to these students because the students are not mature enough yet to apply them to their immediate situation.

To help improve the teaching methods used in the mathematics courses for the slower learning adolescent, Donovan A. Johnson and Charles Butler are suggesting the use of the mathematics laboratory. Title III of the National Defense Education Act of 1958 is promoting the laboratory method by enabling mathematics departments to remodel facilities and to purchase equipment and materials. In addition to facilities, equipment, and materials, the teacher needs to have guide sheets for the student to use in the laboratory. This study reviews the literature concerning the needs and characteristics of the slower learning adolescents, their ability to understand and use mathematical logic, and the laboratory method of teaching mathematics.

I. THE PROBLEM

Statement of the problem. This study was designed to review the literature related to the slower learning adolescent, logical reasoning patterns, and the laboratory method and to design a sample laboratory experiment to develop the concepts of logic. This experiment is presented in the form of a guide sheet to be used by seventh, eighth, and ninth grade slower learning adolescents. Similar experiments can be designed to enable teachers to make use of the laboratory method in the classroom.

It is hoped that the writer and other teachers will use this study, and design other studies to answer the following questions:

Are slower learning adolescents able to learn and to use logical reasoning patterns?

Does the slower learning adolescent learn the concepts discussed in a unit on logical reasoning patterns more quickly, more easily, and more completely when taught through the use of the laboratory method as compared to the lecture-demonstration-drill method?