

A COMPARISON OF TWO METHODS OF TEACHING FIVE  
READING SKILLS TO INSTITUTIONALIZED,  
JUNIOR HIGH AGE, EDUCABLE,  
MENTALLY RETARDED STUDENTS

By

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## CHAPTER I

### INTRODUCTION

Deciding how to teach reading skills and what materials to use to teach reading to an educable mentally retarded student is a difficult task. When the student has been removed from the home and community and institutionalized, the problem becomes immense. Early studies by Dennis (1941), Spitz (1945), and Goldfarb (1943) indicate the difficulties encountered when attempting to teach an institutionalized child.

When planning a program for institutionalized children the teacher must ask, "Will one technique of teaching skills to institutionalized educable mentally retarded be better than another?" "Are there any lasting effects that favor one method of teaching reading to institutionalized retarded students that make it better than another?"

This study will attempt to add to the knowledge needed to answer these questions. It will attempt to do this by making an examination of the changes in test performance of institutionalized mentally retarded children, ages 13 to 16, who have been exposed to a group centered traditional method of teaching reading and an individually programmed method at Fairview Hospital and Training Center for the Mentally Handicapped in Salem, Oregon.



## Need for the Study

This research is designed to study the effectiveness of one method of reading instruction as compared to another when both methods are used on comparable institutionalized educable mentally retarded students.

Five needs and conditions have prompted this study:

1. The growing acceptance of the need to provide academic training for the mentally retarded to complement vocational programs.

2. The proliferation of programmed reading materials that are being published to teach reading.

3. The lack of research that deals with the teaching of reading to educable mentally retarded students.

4. Recent research findings, notably the work of Bijou and Birnbrauer (1966), which indicate that programmed instructional materials can be used to teach educable mentally retarded children.

5. The lack of research studies that have been conducted with systems of reading instruction that have used institutionalized mentally retarded students as subjects. Very few studies have been made, especially in the area of reading, using institutionalized populations even though all states have some type of institution to house the mentally retarded. When taken as a total group, the institutionalized population makes up a significant number of the educable mentally retarded students in the United States.

These factors point out the need to evaluate systems of reading instruction for institutionalized students.

Recent research on systems of instruction has followed the guidelines established by Kirk (1947). His criteria for teaching the educable mentally retarded were:

1. The student should receive individualized attention and extensive prompting.
2. The subject matter should be presented in small, well-organized, sequential steps.
3. The student should receive immediate knowledge of results.
4. The student should be allowed to progress at the rate he prefers, if it is not in excess of what he can comprehend.

Many of Kirk's ideas have been incorporated into the system of instruction known as programmed reading. Programmed reading meets Kirk's criterion of small sequential steps; also, the student receives immediate knowledge of results and is able to progress at his own rate of learning.

Stolurow (1963) programmed vocabulary words for use in teaching educable mentally retarded and indicated that programmed instruction was feasible and applicable to the teaching of the educable retardate. He concluded his study by saying that programmed instruction could be a more effective application of the psychology of learning to teaching activities.

Since most of the research concerning programmed instruction is new and has been conducted within a public school setting, the need for this study is evident. Newer curriculum guides need to be developed for teaching reading to institutionalized students. Institutionalized students' reactions and adaptability to new systems of instruction need to be studied. Information concerning permanency of gains made in reading

using different instructional methods needs to be compiled for institutions housing the mentally retarded.

### Statement of the Problem

The principal objective of this study is to evaluate the effectiveness of individualized programmed reading instruction as compared to a group-centered traditional method of instruction which characterizes the reading program at Fairview.

More specifically, this study will attempt to answer the following questions:

1. Will an individualized programmed method of instruction improve the reading skills of word meaning, word study skills, vocabulary growth, paragraph meaning, and silent reading comprehension skills when used with junior high age institutionalized educable mentally retarded students?
2. Will improvement by institutionalized mentally retarded students exposed to an individualized programmed method of instruction be greater than improvement made by a matched group of students taught by a traditional group centered method of instruction?
3. Will interest be sustained in programmed material over a period of four and one-half months?
4. Will there be a significant difference in the test results of the two groups after a six-week lapse of time from the post testing?

### Definition of Terms

Junior high educable mentally retarded: According to criteria established by the state of Oregon, children between the ages of 13 and

16 and possessing IQ's between 50 and 79 as measured by the Stanford Binet or the Wechsler Intelligence Scale for Children.

Reading skills: Those skills measured by the Stanford Reading Tests, Primary 2, Form W, X and Y; the Gates MacGinitie Primary C Reading Test, Forms 1 and 2; and the oral reading, silent reading, listening comprehension, word recognition and analysis, and visual memory of words subtests from the Durrell Analysis of Reading Difficulty.

Retention of gains: Those reading skills retained at the end of the intervening period between the post test and retention test.

Traditional method: This method of reading instruction is teacher oriented. It consists mainly of the steps outlined in a basal reading lesson. The teacher first goes through a readiness period with the total group. During this period vocabulary words are presented to the group, having been lifted from the story that is to be read. The words are written on the chalkboard by the teacher and pronounced for the students. The students, in turn, pronounce the words and are told their meaning or they look the words up in a dictionary. The students repeat the words until they can say them without difficulty. The teacher also asks questions in an attempt to motivate the children to read the story during this readiness period. A silent reading of the story follows the readiness session. After the silent reading, the teacher directs an oral reading of the entire story. The final step is the follow-up activity which consists of a discussion of the story and literal comprehension questions as to what happened in the story.

Programmed method: This method of reading instruction is student oriented. The student is placed in an appropriate programmed skill book, based on test results. He moves at his own rate, independently

and without competition. The skill book leads the student to generalize his knowledge into the context of words and sentences. The teacher's role is primarily one of re-direction and assessment. Motivation is self-instigated and reinforced as the student achieves success. Reading books accompany each skill level and are used to reinforce learning from the skill book. Filmstrips and slides are provided as supplementary aids to be used by the students under the teacher's direction.

#### Reader's Digest Skill Builders Level 2 Books, 1, 2, and 3:

Developed in 1958 and published by the Reader's Digest Association, these books are similar in format to basal reading texts. Level 2 books correspond to basal readers at the second grade level. As with basal readers, each level contains a book that is structured for beginning grade level and additional books that are sequential in difficulty. All the students in Group A went through book one together, then book two together, and were in book three at the conclusion of the study. The decision to use the Reader's Digest Skill Builders for Group A was a school administrative decision. The Skill Builders had been used in the past as the reading texts and were preferred by the school administration and faculty.

Sullivan's Programmed Reading Texts: This program was developed in 1964 and revised in 1966 by M. W. Sullivan. It is published by the Webster Division of McGraw Hill Publishing Company. The program is developmental, phonic oriented, and based on linguistic principles. Phonetically "regular" and "irregular" sound symbol groups are classified for the learning sequence. The program consists of three series of skill building and reading books. Series One has seven programmed skill

books and seven story books, and is appropriate for first grade.

Series Two has seven programmed skill books and seven story books, and is to be used at second grade level. Series Three has seven programmed texts and seven story books. A grade level is not indicated for Series Three. Series One, Two, and Three were used for this study by Group B.

### Delimitations

#### Scope of the Study

This investigation was conducted with educable mentally retarded junior high age students who were institutionalized in Fairview Hospital and Training Center for the Mentally Retarded in Salem, Oregon during the school year of 1968-69. The study sample was the educable junior high class.

The beginning group consisted of 30 students whose IQ scores were between 50 and 79. Of the 30 who began, 28 completed the study. None of the subjects had any physical disabilities that prohibited them from attending school on a regular basis.

The study was concerned with the gains made and retained as a result of two instructional methods of instruction. The study was also concerned with determining whether one method of instruction would prove superior to another when used with equated groups.

#### Limitations of the Study

Any investigation in the area of social sciences that attempts to identify and control the factors operating upon people and affecting their behavior is very difficult. This effort becomes particularly

strenuous when dealing with an institutionalized population where the children have been removed from the family unit. Any investigation that attempts to control social, emotional, and psychological factors affecting the reading of educable mentally retarded students can easily confound the results by placing too much emphasis on the measured factor while ignoring equally important, but obscure, factors.

This investigation does not attempt to control the intervening variables or to identify or control factors affecting the placement of students in the educable mentally retarded program.

#### Underlying Assumptions of the Study

A major assumption underlying this study is that the group utilized for this study is a representative sample of institutionalized educable mentally retarded students.

A second assumption is that the instruments used in this investigation actually measure the factors that are designed to measure and are pertinent to this study.

A final assumption is that the teacher is qualified to use both instructional methods equally well.

#### Organization of the Study

Chapter I has given an introduction to the investigation to be undertaken. It has included the need for the study, the statement of the problem, the definition of terms, the delimitations of the study, and the assumptions underlying the study.

Chapter II will present a review of the literature which is related to the problem being investigated.

Chapter III will describe the population studied, the instruments used for the collection of data, the hypotheses to be tested, and a description of the statistical treatment of the data.

Chapter IV will contain a statistical analysis of the data. It will contain the treatment of the data, the analysis of the results, and indications of the degree to which the hypotheses were found to be correct.

Chapter V will present a general summary of the investigation and a discussion of the results including conclusions and recommendations.



## CHAPTER II

### REVIEW OF THE LITERATURE

#### Introduction

The literature concerning the use of programmed instruction as a method of teaching reading to educable mentally retarded students is sparse and inconclusive. Very few controlled studies have been made comparing its effectiveness to other systems of instruction. Sullivan's Programmed Reading Texts, used as instructional texts for institutionalized junior high educable mentally retarded students, has not been reported until this time.

Reviewed for this study was the literature concerning the effectiveness of different methods of reading instruction for the educable mentally retarded. The literature will be discussed and divided into the following areas of interest:

1. Studies which report on the teaching of reading to the educable mentally retarded;
2. Studies which report on the effectiveness of programmed reading instruction for the educable mentally retarded.

#### Reading Instruction for the Educable Mentally Retarded

In an early effort, Kirk (1947) attempted to evaluate different methods of instruction that have proven successful in the remediation of

reading defects among mentally retarded students. His program outline for teaching the mentally retarded contained many of the elements of programmed reading. He emphasized an individualized program that allowed the student to move at his own pace, receive extensive prompting, and immediate knowledge of results. Kirk demonstrated tremendous foresight at that time in outlining such a program. Many of his ideas have served as a foundation for reading curricula for the mentally retarded that have emerged since that time.

Beldin (1969), reviewed the literature on teaching reading to the educable mentally retarded, and reported that research has been subdivided into five major categories:

1. the phonic method
2. the sight method
3. the kinesthetic method
4. the automated techniques
5. differing administrative procedures

He reported that the consensus about teaching methodology was that synthetic phonics is superior to analytic phonics because it can be more highly structured into an organized sequence.

Heckman (1966) compared two like groups of educable mentally retarded students using two different methods of reading instruction. The control group of ten children was taught by the basic reader approach; the experimental group of 14 children had the same basic program plus an additional half hour of visual and auditory instruction. Results indicated a favorable improvement in the areas of sentence reading, paragraph comprehension, and spelling for the experimental

group. There was also a significant difference, favoring the experimental group, in word recognition.

Mills (1956) compared four methods of teaching word recognition to 58 subjects ranging in age from seven to nine years in the second and third grades, who were retarded in reading by six months. The four approaches were kinesthetic, phonic, visual, and a combination of these three. The children were compared on their ability to learn ten words in a fifteen-minute period. The words were selected on the basis of the frequency of their use in basal readers and were equated for difficulty on this basis.

Mills found some differences in effectiveness of the methods based on level of IQ. The children with IQ's between 65 and 80 generally did best with the kinesthetic approach, but not significantly better than with a visual or combination approach. The phonic approach, which was the least effective overall, was significantly less helpful for these low IQ pupils. For the children with IQ's between 85 and 100, the visual and combination approaches worked best; the phonic approach worked less well but not significantly so. The kinesthetic approach was the least effective. Mills concluded that the effectiveness of phonic instruction, in particular, depended on IQ.

Mapless, L. E., Gilmore, A. S., Hardy, M. W., and Williams, C. F., (1963), in a study involving 66 children, compared two automated teaching procedures for helping retarded children acquire and retain word recognition, reading, and spelling skills in contrast to conventional classroom instruction. The automated devices were a semi-automated multiple choice apparatus, the Teachall, which was similar to a candy machine. It was operated by the child and reinforced and rewarded his

choice when correct. The other device was similar to a typewriter and was also operated by the child and reinforced correct responses. The results supported the use of automated instructional procedures over typical classroom instruction in teaching word recognition, spelling, and reading.

Blackhurst (1967) used the tachistoscope as a means of increasing achievement in reading for the educable mentally retarded and concluded that such training was a useful supplement to the reading program and was especially valuable at the secondary level.

Dunn (1956), in an investigation of the reading process of the mentally retarded, found them to achieve significantly below their mental age expectancy in reading, spelling, and arithmetic reasoning. Their reading was described as inferior in the use of context clues and they demonstrated little concern for content.

Shotick (1962) replicated Dunn's study, using a larger sample, and found differences supporting Dunn's results of reading tasks, but found no significant difference for his population on the performance tasks.

In one of the few studies using an institutional population, Kirk (1939) studied 63 mentally retarded children with mental ages of 5.6 to 7.5 to determine their reading aptitude and trainability in reading readiness. He gave six subjects intensive reading readiness training for ten weeks. He then retested them on the Monroe Reading Aptitude Test. Where the mentally retarded were most defective (memory, articulation, and sentence length) they made the most progress. On motor functions, where they were most superior, they scored no measurable

gains. Kirk demonstrated that adding to the background of experience through an extended reading readiness program aided the mentally retarded in acquiring skills for reading.

Janes (1953) reported the results of a program of special reading instruction in special classes in Camden, New Jersey. During the first year the subjects made nine months' progress; the second year, ten months; the third year, six months; and the fourth year, a gain of four months. He concluded that, within the range of their ability, special reading instruction was effective with the mentally retarded.

Smith (1962) matched 16 pairs of educable mentally retarded children (IQ's 50 to 80; children's ages 7 to 10) on the basis of chronological age and language age as obtained on the Illinois Test of Psycholinguistic Abilities. The children in the experimental group were taken from their special classes in groups of eight, three times a week for forty-five minutes over a three-month treatment time. They were administered a stimulating and enriching series of lessons which were high in conceptual content, as well as linguistic emphasis. Results demonstrated more than a seven month gain for the experimental over the control group who had remained in the classroom. Smith demonstrated that a program geared to special education of educable mentally retarded children in the public schools can be profitably accomplished. Mueller and Smith (1964) followed up the previous study a year later. They found the groups to still differ significantly in favor of the experimental group. One-half of the experimental group continued to show language growth acceleration while the other half held the gains they had made.

Vergason (1968) investigated the effects of using traditional methods of teaching vocabulary words as opposed to an auto-instructional method of teaching educable mentally retarded children in special education classes. He used 16 subjects (intelligence quotients, 55 to 74; chronological ages, 7.0 to 14.6; mental ages, 5.9 to 10.0) who did not know 20 words in common. For treatment, a paired associate method using automatic slide projectors to pair words with pictures was used with half the words, while the other half were taught by traditional methods using the teacher's customary methods. Good retention rates were produced by both methods after one day, but significant differences were found for retention after one, fourteen, and twenty-four months, in favor of auto-instruction.

Daly and Lee (1960), in the first phase of their investigation concerning reading and institutionalized mental retardates, made a comparison between actual reading ability and the level at which the subject should be reading according to mental age. Seventy-seven institutionalized mentally retarded subjects were tested with the Wechsler Intelligence Scale for Children. From the full scale intelligence quotient obtained, mental age equivalents were derived which in turn were used to determine expected or potential reading level. For example, a 12 year old youngster with a mental age of eight would have the potential of reading in a level approximately equal to the average third grader or eight year old.

Mental age reading grade expectancies were compared with actual reading grade levels in an effort to ascertain disability. Disability was defined as reading one grade level below expectancy level. The oral reading sub-test from the Durrell Test was used as the instrument to

determine grade level in reading. The investigators' conclusions were that a reading disability was found to exist in 38 per cent of the total number examined, and that disability was much greater among the males than the females.

In the second phase of the Daly and Lee study, 26 children were divided into an experimental group "homogeneous" in terms of reading grade level and an equated control group "heterogeneous" in terms of reading grade level. During a five-month period all subjects received 60 hours of concentrated or intensified reading stimulation. Comparisons between the two groups showed no statistically significant difference.

Baker (1966), while not reporting systematic research, described a program characterized by a shift to individualized reading as an attempt to get rid of negative and indifferent attitudes towards reading. The shift was from experience charts and stories and other experimental materials to high interest books at the preprimer level. Baker reported that the educables required time to adjust to the shift but with increased ego strength resulting from individual attention came renewed interest in reading which aided increased skill development.

A pilot study by Goldstein, Moss and Jordan (1965) examined 1,938 children in first grade classes of 20 schools and districts. Those children with intelligence quotients of less than 85 on the Primary Abilities Test were individually tested on the Stanford-Binet (1937, Form L). Those with intelligence quotients of less than 85 on both tests were then assigned randomly to treatment conditions. The experimental group (special class) consisted of 57 subjects (mean intelligence quotient, 78; chronological age months, 77) while the control

group (regular class) included 69 subjects (mean intelligence quotient, 78; mean chronological age months, 79). Ninety-six subjects completed the study. Using a special curriculum which made heavy, deliberate use of previous experience and exploring the meaning of words and ideas toward developing understandable concepts in each area, the investigators demonstrated significant differences in achievement for reading, language, arithmetic (computation and problem solving) and for social information favoring the special education group. They also suggested that children with IQ's above 80 should not be placed in special classes. For those children with IQ's below 80, they found that with a specifically designed curriculum the educable mentally retarded could be effectively taught in special classes.

Jones and Spreen (1967), reporting on the effects of meaningless and abstractness on word recognition in educable mentally retarded children, had 36 educable retarded children repeat 52 one-syllable nouns that had been presented through earphones without being presented visually. All nouns were of equal frequency of occurrence and matched in pairs of initial phoneme. It was found that in this group overall performance on the task was not related to chronological age or mental age. Meaningfulness and abstractness were significantly related to the recognition of individual words.

Hawker and others (1964) designed a study to investigate the effects of training procedure (prompting vs. confirmation) and grouping of response alternatives in teaching a sight vocabulary to 40 mental retardates. The subjects were given seven series of practice and test trials to learn an eight word list. Subjects received the stimulus word and four response pictures. The task was to select the correct picture



for each word and to say it aloud. A recognition post test and retention measures were obtained one and seven days after training. The results indicated that the subjects with IQ's of around 40 were able to learn a significant number of words in the allotted trials. There were no significant differences between the two training procedures, nor did the grouping of response alternatives affect the rate of learning. In addition, there was no significant loss in retention for any of the groups over the seven day retention period.

#### Programmed Reading Instruction for the Educable Mentally Retarded

Blackman and Copobiano (1965) evaluated the effects of programmed instruction in comparison with "traditional" special class instruction. They used mentally retarded adolescents, attending public schools, with mean chronological ages of 14 and IQ's of 54, reading grade of 1.4, and arithmetic grade of 1.7. Their objective was to teach beginning reading and arithmetic to the subjects. They found that arithmetic achievement gains were greater than the gains made in reading. Both methods produced significant gains in reading though neither method was superior in mean gain scores. In this study the teachers were in charge of both the experimental and control groups for half of each day.

Kalk (1961) evaluated the effectiveness of self-instructional device variables using sight words, with seven subjects in each group. Four of the groups had IQ ranges of 49 to 65 and four had IQ ranges of 65 to 82. The independent variables were the mode of response (construct versus multiple choice), and order of response (prompt versus confirm). Materials for the study consisted of a vocabulary of 100

words. A criterion test was evolved from the learning material used in the program. Results of the study indicated that confirming the response was superior for learning and retention, to prompting and response; construct response resulted in learning and retention superior to that of multiple choice response; and high ability produced learning and retention superior to low ability.

Stolurow (1963), commenting on 14 projects involving programmed instruction, said that programmed instruction is feasible and applicable to the teaching of the educable mentally retarded and could be the catalyst to a more effective application of the psychology of learning to teaching activities.

#### Summary

A review of the literature reveals that reading research on mentally retarded children in an institutional population is meager. Research on teaching reading by programmed methods to institutionalized populations is almost non-existent. The few studies that have been conducted have used subjects from public school educable mentally retarded programs. The total number of students involved in the studies reported has been small. A lack of controls has been a major factor in most of the studies reported. Very few of the studies have compared one method of teaching reading to another. Most of the studies have attempted to demonstrate that educable mentally retarded children can learn, and that programmed materials can be used by educable mentally retarded children. The research has not conclusively demonstrated which method of instruction offers the most promise in teaching reading to the mentally retarded.

## CHAPTER III

### DESIGN AND METHODOLOGY

#### Introduction

This chapter contains a description of the population of the study and the instruments used for the collection of the data. A description of the design of the study and method used for selecting the subject is given. Attention is drawn to the methods that were used to analyze the data.

#### Description of the Population

A study population of 30 students was chosen for this study. They were of junior high school age, educable mentally retarded and institutionalized at Fairview Hospital and Training Center. Of the 30 originally chosen, 28 completed the study. The group completing the study consisted of 21 boys and seven girls and was the total number of students enrolled in the junior high program during the school year of 1968-69.

Each student in the group had been certified as an educable mental retardate by the State of Oregon as prescribed by law. Certification as an educable mental retardate involved the administration of the Wechsler Intelligence Scale for Children or the Stanford Binet plus psychiatric and medical examinations. Students involved in the study had IQ's between 50 and 79 and were 13 to 16 years of age.

Participating subjects had been committed to Fairview because the home situation and community resources were unable to provide for their needs.

### Design of the Study

All students in this study were administered the Gates-MacGinitie Reading Test, Primary C, Form 2, the Stanford Reading Test, Primary II, Form X, and the Durrell Analysis of Reading Difficulty in the fall of 1968 prior to being placed in Group A and Group B. The Gates-MacGinitie and Stanford tests were administered in a group situation by the writer. The Durrell Test was administered on an individual basis at the institutional school by the writer and a colleague from the Oregon College of Education Reading Center. Mean test scores were obtained from the Gates-MacGinitie and the Stanford Reading Test for each student. The students were then matched on the basis of their mean test scores. The two students with the highest mean scores were paired and one was placed in Group A and the other placed in Group B. This procedure was followed until equal groups of 15 were established. The decision as to which of the matched pair would be placed in Group A and which in Group B was made by chance. At the completion of the grouping there was a difference in total mean scores of the two groups of two months.

The Durrell Analysis of Reading Difficulty was used to assess specific reading weaknesses and to facilitate proper placement in the reading books. Equal periods of reading instruction (35 minutes in duration) were used during the treatment period which lasted four and one-half months. The same teacher taught reading to both groups. She

is certified to teach the mentally retarded in the State of Oregon and was selected because of training and recommendations.

Group A had reading instruction during the morning from 8:30 to 9:05 and Group B from 12:30 to 1:05 p.m. The decision as to which group was morning and which was afternoon was by chance.

The students in Group B were taught by an individualized programmed method using Sullivan's Programmed Reading Texts. The students in Group A were taught using a traditional approach, utilizing Reader's Digest Skill Builders, Level 2, Books 1, 2, and 3 as texts.

Supplementary reading books for Group A were the Dan Frontier and Jim Forest series of books, published by Benefic Press. They were used for recreational and independent reading. Students in Group B used the reading books accompanying the skill books of the Sullivan Texts.

Independent reading for each group was limited to 15 minutes daily.

At the conclusion of the treatment period the Gates-MacGinitie Reading Test, Primary C, Form 1 and the Stanford Reading Test, Form W, Primary 2, was administered to each of the groups to ascertain growth in reading. Six weeks later the groups were retested again using Form Y of the Stanford and Form 2 of the Gates-MacGinitie of the test to measure retention. During the interval from the post testing to the retention testing, both groups remained intact, but did not use any of the materials that had been utilized during the record keeping part of the study. Specific reading instruction was stopped for both groups in favor of recreational reading.

Instruments Used and Their Application  
in This Study

Durrell Analysis of Reading Difficulty (1955)

The Durrell Test consists of a series of tests and situations in which the examiner may observe in detail various aspects of a child's reading. It covers a range in reading ability from the non-reader to sixth grade ability.

Contained in the test are seven subtests that are administered individually. They are oral reading, silent reading, listening comprehension, word recognition and analysis, visual memory of word forms, auditory analysis of word elements, spelling and hand writing. The first five subtests were used in this study. In the remainder of this paper the test will be referred to as the Durrell Test.

Gates-MacGinitie Reading Test Primary C (1964)

This standardized test of reading is presented in two equivalent forms, 1 and 2. It provides vocabulary and silent reading comprehension scores for grade three. The vocabulary test provides a grade range from 1.5 to 7.1, when the 3.8 grade level norm is used. Silent reading comprehension grade range is 1.3 to 7.0 when the 3.8 grade level norm is used.

The 3.8 grade level norm was used throughout the testing in this study. It was selected because of the wider spread of scores that were presented.

The vocabulary test from the Gates-MacGinitie samples the pupil's ability to recognize and analyze isolated words. It begins with 12

exercises each of which contains four printed words and a picture illustrating the meaning of one of the words. The student's task is to indicate the word that best corresponds to the picture. Forty exercises follow, each consisting of a test word followed by four other words, one of which is similar in meaning to the test word. The student is allowed 20 minutes for the vocabulary section of the test.

The comprehension test measures the student's ability to read and understand whole sentences and paragraphs. The test contains 24 paragraphs of increasing length and difficulty. After the student reads a passage he must answer two questions by choosing from four alternate answers. The student's task is to indicate the best answer for each question. In the remainder of this paper this test will be referred to as the Gates-MacGinitie.

#### Stanford Reading Test (1965)

The Primary II Reading Test used in this study is part of the Stanford Achievement Test Battery. It is primarily designed for use from the middle of grade two to the end of grade three. Included in the Primary II Reading Battery are three tests covering the areas of word meaning, paragraph meaning, and word study skills. Norms are provided for comparison of progress three times during the year. The 3.8 grade norm was used throughout the testing in this study.

The word meaning test consists of 36 multiple choice items, graduated in difficulty, which measure the ability of a pupil to read a sentence and select a correct word to complete the sentence.

A series of paragraphs, graduated in difficulty, make up the paragraph meaning test. One or more words is omitted from each

paragraph. The student's task is to demonstrate his comprehension of the paragraph by selecting, from four choices that are afforded him, the correct word for each omission.

Sixty-four multiple choice items, broken into two parts, make up the word study skills test. Part A is beginning and ending sounds and Part B is visual phonics. Part A consists of 15 items on beginning sounds and 15 items on ending sounds. Part B has 34 items which require the matching of the same sound in different words. In the remainder of this paper this test will be referred to as the Stanford.

### Hypotheses

The primary hypotheses in this investigation are as follows and are stated in the null:

Hypothesis I: There will be no significant differences in the reading skills of junior high age, institutionalized, educable mentally retarded students over a period of four and one-half months when an individualized programmed method of instruction is used.

Hypothesis II: There will be no significant difference in the reading skills of junior high age, institutionalized, educable mentally retarded students over a period of four and one-half months when a traditional group centered method of instruction is used.

Hypothesis III: There will be no significant difference in the reading skills of two matched groups of junior high age, institutionalized, mentally retarded students over a period of four and one-half months when taught reading by an individualized programmed method and a traditional group centered method of instruction.



Hypothesis IV: There will be no retention of reading skills by institutionalized, junior high age, educable mentally retarded students, after an interval of six weeks from the post-testing when taught reading by an individualized programmed method of instruction.

Hypothesis V: There will be no retention of reading skills by institutionalized, junior high age, educable mentally retarded students after an interval of six weeks from the post-testing when taught reading by a traditional group centered method of instruction.

Hypothesis VI: There will be no significant difference in the reading skills between two matched groups of junior high age, institutionalized, educable mentally retarded students, after an interval of six weeks from the post-testing.

Hypothesis VII: There will be no significant difference between the mean pre-treatment word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension; and the post-testing word meaning, word study skills, vocabulary, paragraph meaning and silent reading comprehension scores of the subjects in Group A.

Hypothesis VIII: There will be no significant difference between the mean pre-treatment word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension; and the post-testing word meaning, word study skills, vocabulary, paragraph meaning and silent reading comprehension scores of the subjects in Group B.

Hypothesis IX: There will be no significant difference between the mean pre-treatment word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B.

Hypothesis X: There will be no significant difference between the mean post-testing word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B.

Hypothesis XI: There will be no significant difference between the mean retention word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B.

Hypothesis XII: There will be no significant difference between the mean pre-treatment oral reading, silent reading, listening comprehension, word recognition and analysis, and visual memory of words scores; and post-testing oral reading, silent reading, listening comprehension, word recognition and analysis, and visual memory of word scores of the subjects in Groups A and B.

#### Treatment of the Data

The major hypothesis of this study is that there are significant inter and intra-group differences in the mean pre, post and retention test performance of matched groups of institutionalized junior high age, mentally retarded students. These differences will occur as a result of being taught reading by two different instructional methods. Progress charts are presented in the Appendix. They report the number of pages covered in the programmed skills books per week by students in Group B. Since the two groups were matched, the statistical tool used to test for significance of difference in means was the "t" test for correlated data as reported by Popham (1967), on page 152.

### Summary

This chapter has described the population studied in the investigation, the instruments used in the collection of data, and the description of the treatment of the data.

The final sample for this study consisted of 28 junior high age, institutionalized, educable mentally retarded students at Fairview Hospital and Training Center for the Mentally Retarded. All subjects had IQ's between 50 and 79 and were chronologically between the ages of 13 and 16.

The subjects were matched and divided into two groups as a result of the pre-test scores obtained from the Gates-MacGinitie and the Stanford Reading Tests. Students in Group A were taught by a teacher-oriented traditional method employing the Reader's Digest Skill Builders, Level 2, Books 1, 2, and 3 as texts. Students in Group B were taught by an individualized programmed method utilizing Sullivan's Programmed Reading Texts. Sub-test scores from the Durrell Test were also used at the pre-treatment stage to facilitate correct placement in the reading books.

Both groups were exposed to a treatment period of four and one-half months. Each group was taught reading by the same teacher. Group A had reading instruction first period in the morning and Group B first period after lunch. At the end of the formal treatment period both groups were tested to measure gains, using Form 1 of the Gates-MacGinitie and Form Y of the Stanford Test and certain sub-tests from the Durrell Test. Inter and intra-group mean gains were compared for significance of difference by the use of a "t" test for correlated means.

Six weeks later each group was re-tested with Form II of the Gates-MacGinitie and Form Y of the Stanford Test. Again, a "t" test for correlated data was used to test for significance of difference in means.

## CHAPTER IV

### TREATMENT OF DATA AND ANALYSIS OF RESULTS

#### Introduction

The purpose of this chapter is to present a detailed description of the statistical treatment of the data and a statement of the results.

This study had one main area of concern. Would one of two groups, containing matched pairs of institutionalized junior high mentally retarded students, demonstrate significant differences in test performance over a period of four and one-half months on the Stanford Reading Test, the Gates-MacGinitie Reading Test and the Durrell Reading Test attributable to being taught reading by two different methods. Differences between intra-group and inter-group means were tested for statistical significance using the following "t" test formula.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_1}}\right)}}$$

The International Business Machine 1401 Computer in the Statistical Laboratory at Kansas State Teachers College was the instrument used for all computational procedures.

The data will be discussed by examining the intra and inter-group differences in test performance of Groups A and B on pre, post and retention tests. Hypotheses I, II, IV, V, VII, VIII, and XII will be concerned with intra-group differences and hypotheses III, VI, IX, X, and XI will be concerned with inter-group differences.

#### Tests of the Hypotheses

Hypothesis I: There will be no significant difference in the reading skills of junior high age, institutionalized, educable mentally retarded students over a period of four and one-half months when an individualized programmed method of instruction is used. This hypothesis is combined with hypothesis VIII for statistical treatment. Hypothesis VIII is stated as follows. There will be no significant differences between the mean pre-treatment word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension; and the post-testing silent reading comprehension scores of the subjects in Group B.

Data on the mean pre-treatment and mean post-test scores for Group B are presented in Table 1.

Group B made no significant gains in silent reading skills from the pre-treatment test to the post-test as a result of having been taught reading by an individualized programmed method of instruction. Hypothesis I and hypothesis VIII as stated in the null are accepted.

TABLE 1  
STATISTICAL COMPARISON OF PRE AND POST-TEST  
SCORES FOR GROUP B

Test	No.	S.D.	Mean Score	"t" Value
Word Meaning				
Pre	15	1.354	2.807	.216-NS
Post	14	.995	2.707	
Word Study Skills				
Pre	15	1.324	2.227	1.532 NS
Post	14	1.829	3.164	
Vocabulary				
Pre	15	1.715	2.493	.778 NS
Post	14	1.613	2.993	
Paragraph Meaning				
Pre	15	.961	2.420	.329 NS
Post	14	.978	2.543	
Silent Reading Comprehension				
Pre	15	1.334	2.540	.648 NS
Post	14	1.257	2.846	

Hypothesis II: There will be no significant difference in the reading skills of junior high age, institutionalized, educable mentally retarded students over a period of four and one-half months when a traditional group centered method of instruction is used. This hypothesis is combined with Hypothesis VII for statistical treatment. Hypothesis VII is stated as follows. There will be no significant difference between the mean pre-treatment word meaning, word study skills, vocabulary paragraph meaning, and silent reading comprehension; and the post-testing word meaning, word study skills, vocabulary, paragraph meaning

and silent reading comprehension scores of the subjects in Group

A.

Data on the mean pre-treatment and mean post-test scores for Group A are presented in Table 2.

TABLE 2  
STATISTICAL COMPARISON OF PRE AND POST-TEST  
SCORES FOR GROUP A

Test	No.	S.D.	Mean Score	"t" Value
Word Meaning				
Pre	15	.993	2.453	.526 NS
Post	14	.868	2.643	
Word Study Skills				
Pre	15	1.586	3.630	.930- NS
Post	14	1.834	2.821	
Vocabulary				
Pre	15	1.123	2.107	1.389 NS
Post	14	1.458	2.800	
Paragraph Meaning				
Pre	15	1.007	2.587	0.122 NS
Post	14	1.064	2.636	
Silent Reading Comprehension				
Pre	15	.764	1.893	1.103 NS
Post	14	1.068	2.286	

Group A made no significant gains in silent reading skills from the pre-treatment test to the post-test as a result of having been taught reading by a traditional group centered method of instruction.



Visual examination of the mean scores indicates a slight gain in word meaning, vocabulary, paragraph meaning, and silent reading comprehension while a slight drop in word study skills is evident. Hypothesis II and Hypothesis VII as stated in the null are accepted.

Hypothesis III: There will be no significant difference in the reading skills of two matched groups of junior high age, institutionalized, mentally retarded students over a period of four and one-half months when taught reading by an individualized programmed method and a traditional group centered method of instruction. This hypothesis is combined with hypotheses IX and X for statistical treatment. Hypothesis X is stated as follows. There will be no significant difference between the mean pre-treatment word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B. Hypothesis X is stated as follows. There will be no significant difference between the mean post-testing word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B.

Data on pre-treatment and post-test differences in mean scores between the two groups are presented in Table 3.

Data presented in Table 3 reveals no significant differences between mean scores of Groups A and B on the pre-treatment and post-tests. Hypothesis III and statistical hypotheses IX and X as stated in the null are accepted.

TABLE 3

STATISTICAL COMPARISON OF PRE-TEST AND  
POST-TEST SCORES OF GROUPS A AND B

Test		S.D.	Mean Score	"t" value
Word Meaning				
Pre A	15	.993	2.453	.787 NS
Pre B	15	1.354	2.807	
Post A	14	.868	2.643	.252- NS
Post B	14	1.000	2.550	
Word Study Skills				
Pre A	15	1.586	2.620	.712- NS
Pre B	15	1.324	2.227	
Post A	14	1.834	3.121	.443- NS
Post B	14	1.608	2.821	
Vocabulary				
Pre A	15	1.123	2.107	.705 NS
Pre B	15	1.715	2.493	
Post A	14	1.458	2.800	.024- NS
Post B	14	1.631	2.786	
Paragraph Meaning				
Pre A	15	1.007	2.587	.449- NS
Pre B	15	.961	2.420	
Post A	14	1.064	2.636	.625- NS
Post B	14	.973	2.386	
Silent Reading Comprehension				
Pre A	15	.765	1.893	1.573 NS
Pre B	15	1.334	2.540	
Post A	14	1.068	2.286	.920 NS
Post B	14	1.298	2.714	

Hypothesis IV: There will be no retention of reading skills by institutionalized, junior high age, educable mentally retarded students after an interval of six weeks from the post-testing when taught reading by an individualized programmed method of instruction.

Data presented in Table 1 reveals that Group B did not make any gains during the treatment period that could be retained. Hypothesis IV as stated in the null is accepted.

Hypothesis V: There will be no retention of reading skills by institutionalized, junior high age, educable mentally retarded students after an interval of six weeks from the post-testing, when taught reading by a traditional group centered method of instruction.

Data presented in Table 2 reveals that Group A did not make any gains during the treatment period that could be retained. Hypothesis V as stated in the null is accepted.

Hypothesis VI: There will be no significant difference in the reading skills between two matched groups of junior high age, institutionalized, mentally retarded students after an interval of six weeks from the post-testing. This hypothesis is combined with hypothesis XI for statistical treatment. Hypothesis XI stated as follows. There will be no significant difference between the mean retention word meaning, word study skills, vocabulary, paragraph meaning, and silent reading comprehension scores of the subjects in Groups A and B.

Data on mean retention scores for the two groups retested six weeks after completion of the program are given in Table 4.

An analysis of the data presented in Table 4 reveals that no significant differences exist in the mean silent reading retention test scores of the two groups. Hypothesis VI and statistical hypothesis XI as stated in the null are accepted.

TABLE 4  
STATISTICAL COMPARISON OF RETENTION TEST SCORES  
FOR GROUPS A AND B

Test	No.	Mean Score	S.D.	"t" value
Word Meaning				
A Retention	14	2.650	.878	.224- NS
B Retention	14	2.571	.913	
Word Study Skills				
A Retention	14	3.250	1.804	.758 NS
B Retention	14	2.771	1.384	
Vocabulary				
A Retention	14	3.093	1.621	.173- NS
B Retention	14	2.986	1.530	
Paragraph Meaning				
A Retention	14	2.707	1.070	.054 NS
B Retention	14	2.729	.929	
Silent Reading Comprehension				
A Retention	14	3.228	1.369	.923- NS
B Retention	14	2.750	1.273	

Hypothesis VII: This hypothesis was combined with hypothesis II and accepted as stated in the null.

Hypothesis VIII: This hypothesis was combined with hypothesis I and accepted as stated in the null.

Hypothesis IX: This hypothesis was combined with hypotheses III and X and accepted as stated in the null.

Hypothesis X: This hypothesis was combined with hypotheses III and IX and accepted as stated in the null.

Hypothesis XI: This hypothesis was combined with hypothesis VI and accepted as stated in the null.

Hypothesis XII: There will be no significant difference between the mean pre-treatment oral reading, silent reading, listening comprehension, word recognition and analysis, and visual memory of words scores; and post-test oral reading, silent reading, listening comprehension, word recognition and analysis, and visual memory of words scores of the subjects in Groups A and B.

Data on the five sub-tests from the Durrell Test are presented in Table 5 for each group. Table 5 represents the mean pre and post-test scores for the two groups, standard deviations, and "t" values.

TABLE 5  
STATISTICAL COMPARISON OF PRE AND POST-TEST  
SCORES OF GROUPS A AND B ON AN  
INDIVIDUAL TEST

Test	No.	Mean Score	S.D.	"t" Value
Oral Reading				
Pre A	15	1.893	1.694	.777 NS
Post A	14	2.386	1.593	
Pre B	15	1.573	1.262	.690 NS
Post B	14	2.071	1.093	
Silent Reading				
Pre A	15	1.907	1.427	.096-NS
Post A	14	1.850	1.647	
Pre B	15	1.493	1.470	.434 NS
Post B	14	1.779	1.021	
Listening				
Pre A	15	2.700	1.437	.853 NS
Post A	14	3.143	1.245	
Pre B	15	2.513	1.554	.677 NS
Post B	14	2.943	1.736	

TABLE 5, Continued

Test	No.	Mean Score	S.D.	"t" Value
Word Recognition and Analysis				
Pre A	15	2.560	2.395	.574 NS
Post A	14	3.100	2.491	
Pre B	15	2.800	2.253	.354 NS
Post B	14	3.121	2.503	
Visual Memory of Words				
Pre A	15	2.727	2.080	.275 NS
Post A	14	2.957	2.280	
Pre B	15	2.607	2.400	.342 NS
Post B	14	2.936	2.610	

Data in Table 5 reveals that no significant differences exist in mean scores for either group from the pre-test to the post-test.

Hypothesis XII as stated in the null is accepted.

#### Summary

This chapter has presented a detailed analysis of the statistical treatment of the data. Twelve hypotheses were treated by means of a "t" test. Hypotheses I, II, IV, V, VII and VIII were concerned with intra-group gains made by Groups A and B on five silent reading skills from the pre-treatment tests to the post-tests to the retention tests. These hypotheses were accepted as stated in the null.

Hypotheses III, VI, IX, X, and XI were concerned with comparing inter-group differences of Groups A and B on the five silent reading skills at the pre, post, and retention levels. These hypotheses were accepted as stated in the null.

Hypothesis XII was concerned with intra-group gains of Groups A and B from the pre-treatment tests to the post-tests on certain sub-tests from an individual reading test. This hypothesis was accepted as stated in the null.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

#### General Summary of the Investigation

This study investigated the gains made in reading by two matched groups of students who were taught reading by an individualized and a traditional method of teaching.

The sample consisted of 30 junior high age, educable mentally retarded institutionalized students at Fairview Hospital and Training Center for the Mentally Handicapped in Salem, Oregon, during the school year of 1968-69. Of the 30 beginning students, 28 completed the study.

Fifteen matched pairs of students were established on the basis of test results obtained from the Gates-MacGinitie Primary C Form 2 Reading Test, and the Stanford Primary 2 Form X Reading Test. The subjects were matched on the basis of vocabulary, comprehension, word meaning, paragraph meaning and word study skills and placed in either Group A or Group B by chance.

Subjects in the two groups received reading instruction for 35 minutes each day for the duration of the study which was 90 school days. The same teacher instructed both groups. Group A received instruction first period of the morning and Group B received instruction the first period in the afternoon.



Sullivan's Programmed Reading Texts, Series One, Two and Three were used as texts by Group B while Reader's Digest Skill Builders were used as instructional texts by Group A.

Proper placement in the correct book at the beginning of the study for each group was facilitated by the use of the Durrell Analysis of Reading Difficulty. This same instrument was also used as a post-test to determine growth in reading during the span of the study.

Students in Group B moved at their own rate with a minimum of interaction from the teacher. The teacher was restricted to administering check-up tests and giving re-direction when a student needed help.

Students in Group A were taught by a traditional method that had been used at Fairview for several years. This method was teacher directed and followed the steps outlined in basal textbooks of reading.

At the end of 90 instructional days each group was administered alternate forms of the silent reading tests to ascertain growth and to see if one group had demonstrated greater silent reading gains than the other. The individual reading test was also administered to both groups at the end of 90 school days for comparative purposes. Six weeks later both groups, who had remained intact, were retested with the silent reading tests to determine if any gains that had been made were retained.

### Conclusions

Results of the study indicate that the two groups' scores were not significantly different on the pre-test, the post-test or the retention test.

Results of the study indicate that Groups A and B did not demonstrate any significant gains in the silent reading skills of vocabulary, comprehension, word meaning, paragraph meaning, and word study skills, from the pre-treatment test to the post-test. Results of the study indicate that Groups A and B did not demonstrate any significant changes in the skills measured by an individual reading test from the pre-test to the post-test.

The weekly progress chart in Appendix A confirms that Group B was able to follow a programmed format during the study. The weekly progress chart also reveals the difficulty the subjects had in making progress when initially introduced to the programmed texts.

#### Discussion

Groups A and B began the study as homogeneous groups and through two subsequent testing periods remained as such. Neither group made any significant progress in reading skills during the 90 days of instruction using either method of instruction or either set of materials. The significant question to be asked is why did these subjects not make any progress in reading during one-half of a school year?

Teacher comments made during the course of the study reveal that interest in reading was high. The progress chart in Appendix A reveals that several hundred pages were completed in the skills books by Group B. The teacher was enthusiastic about the study and used the materials as prescribed by the teacher's guides. These factors would seem to warrant progress.

In the opinion of this writer, based on observations of four and one-half months, two major factors were operating during the study that

prevented the subjects from making progress: (1) the subjects were institutionalized, (2) the subjects did not feel there was any hope of ever getting out of the institution. Many student comments made during the study reflected the feeling that the institution was a prison rather than a home. They were on the same grounds with older mentally retarded people who had spent their lives in the institution. The students were afraid this was to happen to them. Many of their comments reflected this fear.

These factors were present twenty-four hours per day in the lives of these students. It is the belief of this writer that these factors definitely affected the results of this study.

#### Recommendations

1. It is suggested that this study be replicated using public school educable mentally retarded junior high students and the results be compared to the results of this study.

2. A study should be made of the reading achievement of other institutionalized students at Fairview on a pre and post-test basis with the amount of time spent in the institution a variable to be controlled.

3. A study should be made using other methods of instruction for similar institutionalized populations. Considering the results of this study, it becomes extremely important to try different instructional methods of teaching reading.

4. A study should be made using programmed reading for younger institutionalized mentally retarded students. The amount of time required to become oriented to the programmed format may be significant.

5. A study should be made that will last an entire year using the programmed method of study.

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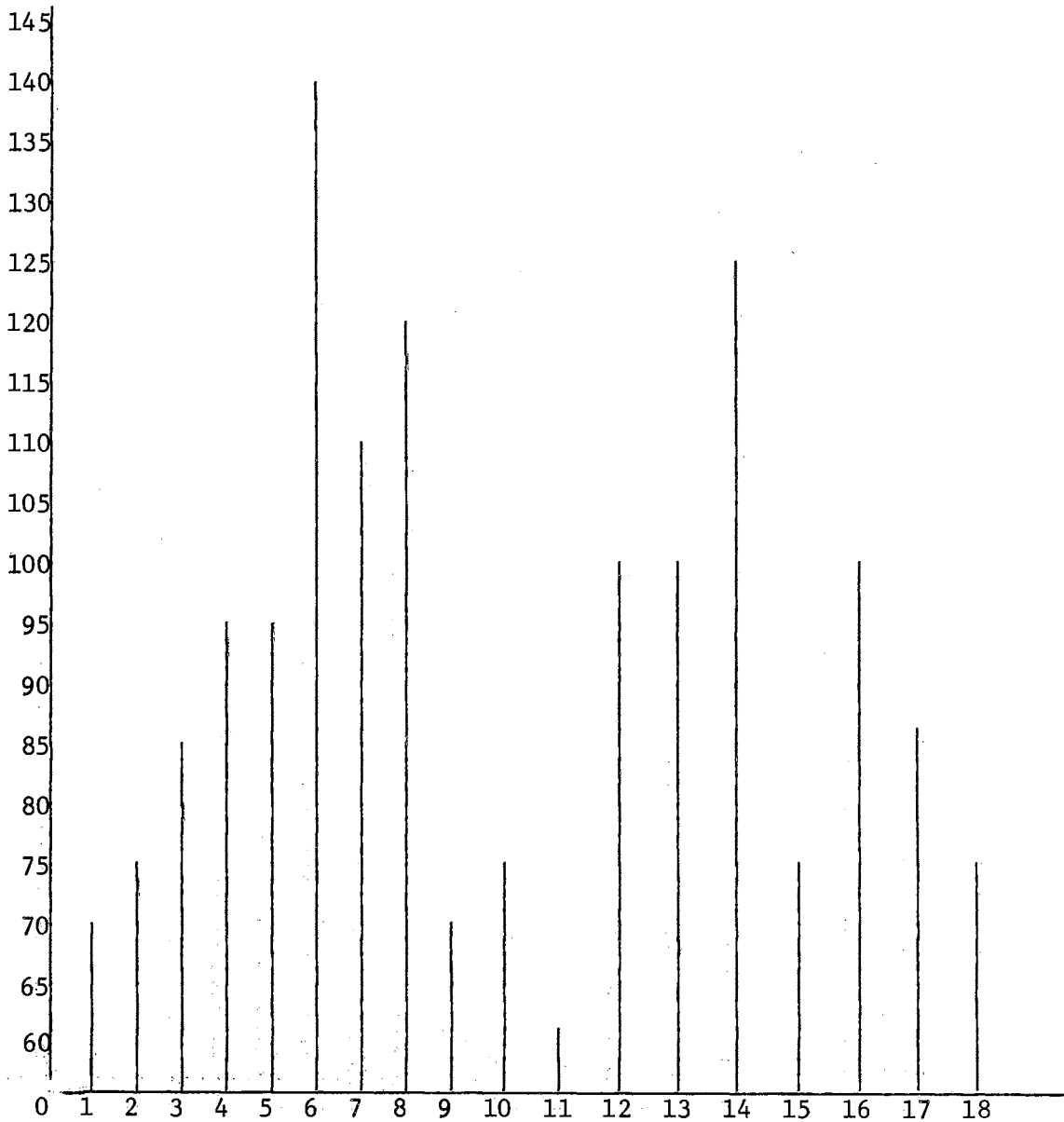
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APPENDIX

WEEKLY PROGRESS CHART FOR GROUP B

AVERAGE NUMBER OF PAGES COVERED PER WEEK BY  
GROUP B IN PROGRAMMED SKILLS BOOKS



Horizontal scale = weeks; vertical scale = number of pages covered per week.

VITA

2  
James Archie Gibbs

Candidate for the Degree of

Doctor of Education

Thesis: A COMPARISON OF TWO METHODS OF TEACHING FIVE READING SKILLS TO INSTITUTIONALIZED, JUNIOR HIGH AGE, EDUCABLE, MENTALLY RETARDED STUDENTS

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Education: Graduated from Corbin Central High School, Corbin, Kentucky, 1953; graduated from Berea College, Berea, Kentucky, with a Bachelor of Arts degree in Elementary Education, 1957; attended Ohio State University, 1959-60; graduated from Oklahoma State University, Stillwater, Oklahoma, with a Master of Science degree in Elementary Education, 1964; completed the requirements for the Doctor of Education degree at Oklahoma State University, July, 1970.

Professional Experience: Employed by Production Control Office, Holly Carburetor Corporation, Bowling Green, Kentucky, summers, 1956-57; elementary teacher, Worthington, Ohio, 1957-60; elementary principal, Floyd County, Kentucky, 1960-63; taught reading improvement courses, Oklahoma State University, Stillwater, Oklahoma, 1964-65; Reading Consultant, Pawnee Public Schools, Pawnee, Oklahoma, 1965-66; Director of Extreme Learning Program, Oregon College of Education, Monmouth, Oregon, 1966-69; Reading Consultant, Fairview Hospital and Training Center for the Mentally Retarded, Salem, Oregon, 1968-69; Director of Reading Program, Kansas State Teachers College, Emporia, Kansas, 1969 to present.