A COMPARISON OF A SELF-IMPROVEMENT AND TEACHER-ORIENTED APPROACH TO READING IMPROVEMENT AT THE COLLEGE AND UNIVERSITY LEVEL

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PREFACE

The work reported in this study was performed under a graduate teaching assistantship at Oklahoma State University. The writer wishes to express his thanks to his co-workers for their cooperation during the period of this investigation.

I am especially grateful to Dr. Bernard R. Belden, Chairman of the advisory committee, for his advice and continued encouragement. Sincere appreciation is expressed to Dr. James K. St. Clair, Head of the Education Department; Dr. Franz J. Frederick, Dr. W. Ware Marsden and Dr. John E. Susky for serving on the writer's advisory committee.

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CHAPTER I

PRESENTATION OF THE PROBLEM

Introduction

College and university enrollments have increased greatly in recent years. These increases have been greater than predicted and even larger enrollments are forecast in the coming years. Tead (62) states that the total enrollment in higher education in 1953-54 was approximately 2¼ million, and predictions were made that this enrollment would climb to between 3 to 5 million in the 1960's. The United States Office of Education (42) reports the following:

> Opening fall enrollment nearly reached the six-million mark in 1965. The total of 5,967,411 students enrolled in 2,238 colleges represents an increase of 12.2 per cent over the corresponding total for Fall 1964.

This greater than anticipated increase has caused many problems. One of these has been the situation involving college students that have reading difficulties or the need or desire to improve their skill in handling the material confronting them in college. Faced with this problem, colleges and universities have responded in many ways.

One of the most common approaches has been the establishment of reading improvement centers and clinics, with

related courses, in most institutions of higher education in the United States. These programs have proven to be successful and highly desired by the student in need of reading assistance. Ray (47) and Stebens (60) have shown that not only is the program effective but is also of a relatively permanent nature.

This study is concerned with the problem facing college and university reading centers across the country: how to more successfully organize the reading improvement program and courses. The needs of the students must be cared for; however, faculty, facilities and time with which to work are frequently unequal to the demand.

In the past many of these centers have handled these courses as traditional classroom instructional situations. With current enrollments and demand for these services, and the anticipated increases in both in years ahead, colleges and universities are facing a need for new approaches and methods of organization, to better meet the demand for the services of the reading centers.

Background of the Study

As the tremendous rush of students swelled the campuses of colleges and universities across the nation following World War II, there became an awareness of a problem shared by a large number of new students: the problem of reading proficiency. The reasons as to why this problem existed can be debated. However, despite the innumerable reasons

or rationalizations, the important fact remains that the problem exists and must be faced and dealt with in some fashion. In order to meet this problem, colleges and universities tried establishing reading centers and clinics. As these began to come into existence on a fairly large scale, many debated whether such efforts were educationally justifiable for institutions of higher education. Many felt that such 'remedial' work had no place at this educational level.

According to Brown (10), those who challenged such programs, especially at those institutions that make a genuine effort at securing a more select student body, believed that the institution should assume that all students already possessed these tools of learning and only address the problem of education from the pursuit of knowledge standpoint. Those in favor of such programs felt that, because of the basically public nature of their existence, they shared a duty to provide these students with the best tools possible with which to work in attaining their objective.

In order to survey this problem from an objective viewpoint, we look briefly at the philosophical question of what higher education is and for whom such education is intended. It has been generally accepted that higher education in the United States does not follow the European tradition either in broadness of the democratic base nor as to the nature of what should be undertaken. In answer to

those who fear quantity will dilute the quality of higher education, as well as defining what 'quality' higher education should be, Benezet (4) gives the following statement:

> Anyone who listens even casually to conversations about quality in higher education will come away with a welter of beliefs about what it is. However, definitions of quality education usually break down into three basic categories:
>
> A. Quality in higher education is that which goes on in colleges and universities of the highest educational reputation.
>
> B. Quality in higher education is that which is shown by the brightest students, preparing for the most intellectually demanding professions.
>
> C. Quality in higher education comes from whatever process moves individuals furtherest in their attainment of the knowledge, skills, and appreciations which are generally associated with higher education.

Following this line we then would accept that quality education should mean provision for the student's individual needs. This means we must begin work with the students where they are and help them as best we can in the direction of worthy, desirable educational goals and objectives.

The reading act is one of the most useful tools in helping the individual to more successfully cultivate his critical faculties and independence of mind, as well as aiding in the development of the abilities of appreciation and creation. The improvement of reading skills should be an aid in increasing the feeling of personal worth and dignity. A greater contribution by the individual to his society could be an important result.

Reading skills can be improved at any level of schooling. As we face the present and future problem of the knowledge explosion it becomes increasingly important that we be certain that all citizens are as skilled as possible in utilizing this important communication skill. Therefore, it would seem that institutions of higher education are not only justified, but actually should feel compelled to furnish this service.

Assuming that we are correct in offering such services, the question is then brought forth as to the effectiveness of such a program. Can results of an objective nature be shown that improvement is, in fact, an end result of such a reading improvement program? Ray (47) conducted such an investigation and an analysis of the program at Oklahoma State University. His research indicates that there is indeed a quite significant improvement shown on the basis of a pre-training and post-training testing and comparison situation. No effort was made to compare these results with a similar group of students over the same period of time that did not receive this training. An attempt will be made in this study to make such a comparison.

McDonald and Bryne (38) list a set of eight factors on which they found most college reading improvement programs to be differentiated. The one uniting factor found, regardless of the particular approach, was that such programs were effective. When the faculty is adequately trained and aware of the problems, when facilities and materials are

made available, and interest in finding a solution to the problem is present, success seems to result from many varied approaches.

One sub-purpose of this study shall be to determine if those students enrolled in the reading improvement program at Oklahoma State University make significantly greater gains than do those students not enrolled in this course. The major area of the study, as given in the title, is an attempt to ascertain the value of a self-help approach to reading improvement at the college and university level.

Statement of the Problem

A great deal of research today in the area of reading has been done and is currently in progress regarding methods of teaching reading in the elementary schools. However, few studies and research projects have been reported regarding various methods of organization, especially at the college and university level.

At the present time enrollment in reading improvement courses is limited by space and faculty available, as well as the ability of the advisor and student to be able to arrange the student's schedule in such a manner as to include a class of reading improvement in his program. Frequently problems arise in these areas that prevent a student's taking such a course at the time the need is recognized.

This problem would seem to become even more troublesome

in the future as enrollments continue to rise. The recent legislation passed by Congress granting educational benefits to veterans of the United States Armed Forces serving since 1955, should also serve to complicate the situation additionally by causing enrollments to increase at a much faster rate than original forecasts had indicated. If past records hold true this rapid influx of students will also mean a greatly increasing pressure on a reading improvement program to help a large proportion of these new students in developing their reading skills for better application to the learning situation at the college level.

Ray (47) reports the Oklahoma State University Reading Improvement Program "...provided reading improvement opportunity to more than 300 students." This was the 1961-62 school year. The number of students initially enrolled in the program for the fall semester of 1966-67 alone exceeded 700 students.

In order to meet this demand for services, the reading improvement programs must plan now for more effective organizational arrangements. It is hoped the results of this study will be useful in helping to formulate such plans.

Hypotheses

A. Group A and Group B are used in completing a subordinate part of the study. The area of primary concern for the study, as given in the title, utilizes Group C and

Group D and is investigated under B of the hypotheses. The secondary area of concern is presented first for purposes of establishing a better foundation for the area of major concern.

The secondary purpose of this study was to determine if students enrolled in the reading improvement program, Group B, make significantly greater gains in reading skills than do students not enrolled in this program, Group A, over the same period of time. The hypotheses relating to this area are:

1. Participating in the reading improvement program, Group B, should result in vocabulary gains significantly greater (.05 level, one-tailed) than those not participating, Group A, in the reading improvement program.
2. Participating in the reading improvement program, Group B, should result in comprehension gains significantly greater (.05 level, one-tailed) than those not participating, Group A, in the reading improvement program.
3. Participating in the reading improvement program, Group B, should result in reading rate gains significantly greater (.05 level, one-tailed) than those not participating, Group A, in the reading improvement program.

B. This section dealt with the area of primary concern of the study. An attempt was made to make a comparison of

changes in reading skills between students trained under the traditional scheduled classroom approach, Group C, and students working with the same materials and equipment under an unscheduled self-help arrangement, Group D. The hypotheses relating to this area are:

1. The self-improvement approach to reading improvement, Group D, should result in vocabulary gains significantly greater (.05 level, one-tailed) than the teacher-oriented approach to reading improvement, Group C.
2. The self-improvement approach to reading improvement, Group D, should result in comprehension gains significantly greater (.05 level, one-tailed) than the teacher-oriented approach to reading improvement, Group C.
3. The self-improvement approach to reading improvement, Group D, should result in reading rate gains significantly greater (.05 level, one-tailed) than the teacher-oriented approach to reading improvement, Group C.

Definition of Terms

The following are definitions and clarification of terms as they are applied throughout this report.

Self-Improvement Approach

The self-improvement approach is defined as organizing Group D in such manner as to allow these students to work

individually to improve their total reading skills. They will be given no set time schedule to follow but will be encouraged to strive for five hours per week of work in the reading laboratory. After an orientation period there will be no teacher supervision, other than during the pre-test and post-test administration.

The Oklahoma State University Reading Improvement Program

This is described by the Oklahoma State University Catalog (39) as "Laboratory experience for the improvement of reading speed, vocabulary comprehension, and study skills." The Oklahoma State University Reading Center Syllabus (40) lists the objectives of reading improvement course as:

1. To appraise the reading skills of the student, to develop an awareness within the student of individual weaknesses, and to build a program to strengthen those weaknesses.

2. To develop general reading skills through various training methods, including vocabulary, comprehension, and speed improvement.

3. To encourage good reading and study habits through lectures, demonstrations, and student laboratory experiences.

4. To offer counseling services as requested by the student to help solve unique reading problems.

5. To develop flexibility of approach to reading materials.

6. To make periodic evaluations of each student's progress and to make recommendations in light of these evaluations.

7. To make a post-training evaluation of reading growth and to make recommendations for continued improvement.

Reading Skills

This term will refer to those skills measured by the Nelson-Denny Reading Test (Forms A and B) which are divided as follows: (1) vocabulary, (2) comprehension, (3) total reading score, and (4) rate of reading.

Satisfactory Completion of the Program

For the purpose of this study a student must have done the following in order to have satisfactorily completed the program: (1) submitted to a pre-test, (2) participated in training sessions, (3) submitted to a post-test. Gains or lack of gains do not enter into this term, for purposes of this study.

Delimitations

Scope of the Study

This study includes an analysis of reading test raw scores of four groups of students. Group A received no formal instruction in reading improvement and is compared to Group B, which satisfactorily completed reading improvement under the traditional approach. Studies by Ray (47) and Stebens (60) indicate that students trained under this approach made significant gains. No study has been done at Oklahoma State University comparing two such groups over a short period of time. The current subjects were enrolled at the university during the fall semester of the 1966-67 academic year.

The number of students utilized in this study are as

follows:

1. 38 students, freshmen, majoring in Education and who satisfactorily completed the reading improvement program at Oklahoma State University during the first half of the above semester.
2. 38 students, freshmen, majoring in Education who had not already taken and were not currently enrolled in the reading improvement program.
3. 71 students, undergraduates, who satisfactorily completed the traditional reading improvement course during the first half of the fall semester of 1966-67.
4. 71 students, undergraduates, who satisfactorily completed the experimentally organized reading improvement course during the first half of the fall semester of 1966-67.

This study is concerned with comparing the change in reading skills between Group C and Group D; also, a comparison of change in reading skills between Group A and Group B. The study should help to determine if a self-improvement approach can be effectively applied to the Oklahoma State University Reading Improvement Program.

Limitations of the Study

1. Due to the fortuitous nature of the sample it is possible some bias exists in favor of Group B. Table I indicates Group B had 12 students ranking in the first Quartile on the pre-test. Group A

had only 1 such student. Lower ranking students may tend to make greater gains than higher ranking students.

Due to the fact that this study is in the realm of the social sciences it is extremely unlikely that all possible variables can be controlled.

Controls

The term controls as here applied is defined as referring to restraints on experimental conditions.

1. The same materials and equipment will be used by Groups C and D. This will consist principally of Science Research Associates Reading Laboratory materials, the Controlled Reader and limited use of the Shadowscope.
2. Group D will not have a teacher supervising and "overseeing" their laboratory sessions in the reading improvement course after the initial orientation period.
3. Members of each group shall be determined by a random process through use of a table of random numbers.

This study does not attempt to control for other possible intervening variables and factors that might effect the reading performance of university students. The study is confined to the population, as defined in Chapter III, at Oklahoma State University and may not be representative of other populations, and may be called a historical,

'handy' or fortuitous sample.

Assumptions

1. It is assumed the sample is in fact representative of the population of students enrolling in the Oklahoma State University Reading Improvement Program, due to the random selection procedure.
2. It is assumed the Nelson-Denny Reading Test will be as valid and reliable a measure of reading skills with this sample as with the population used during the revision procedure.
3. It is assumed the statistical tool chosen will render an effective analysis of the data resulting from this study. Justification for selection of the statistical tool is described in the section on statistical design.

Organization of the Study

Chapter I has introduced the problem to be studied. This has included the need for the study, the statement of the problem, the delimitations and assumptions and a definition of terms as used in the study.

Chapter II will review the literature concerning the study, relating to the hypotheses being tested.

Chapter III will describe the population of the study, the sample selected, and the instruments utilized for measuring the reading skills. It will also describe the statistical tools and methods to be used in evaluating the

data resulting from the study.

Chapter IV will contain a statistical analysis of the data. This chapter will also designate the degree of acceptability of the hypotheses within appropriate limitations.

Chapter V will offer a discussion of the results of this study. Recommendations will be made pertaining to the need for future studies in the area.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Much has been written regarding research in the elementary education area of reading instruction. The demand for such research has been great. This area has received attention and aid at the federal level. However, there has not been an abundance of research relating to the particular aspect of college reading instruction under study in this particular research effort. Much has been written dealing with the various philosophical aspects, as well as course descriptions, comparisons of materials and other such areas of interest, but not a copious supply of research.

The review of literature for this study has been restricted to those research reports that specifically relate to the problems under examination by this study and of these only those more important, recent and most closely consociated with the study. There appears to be a lack of dissertation research directed at this problem and not an extensive amount of journal and periodical articles of an actual research nature.

Two reasons would seem to be prominent for this dearth

of material. One is that college reading improvement programs are relatively new, existing in large numbers only since the middle 1950's. In a survey study by Parr (43) in 1930 it was discovered that only seven institutions of higher learning had some formal reading improvement instruction available for college students. In another report giving similar information, Barbe (1) found that out of 95 major colleges 36 were offering such a program in 1951.

Ray (47) reports that in 1954 Oklahoma State University, under the auspices of the College of Education, began such a program to meet the needs of its students and that during 1961-62 furnished such help to more than 300 students. During the fall semester of 1966-67 more than 650 students enrolled in this program. As this acceptance and growth have continued, problems relating to staff, physical facilities and scheduling conflicts have arisen. This type of study should aid in guiding future planning of the college reading improvement program.

Effectiveness of College Reading Improvement Programs

A number of studies have been made comparing gains of students participating in a reading improvement program and those not participating. A report by Barbe (1) has 50 college students evenly divided into control and experimental groups. Both groups were pre-tested for reading rate and comprehension at the start of the program and

post-tested at the conclusion. They were also retested six months later. A t test of the mean differences was calculated. It was reported the experimental group made significant gains in rate during the training program. The control group did not improve significantly. It was reported the gains made by the experimental group were retained over the six month period of time. The author does not present the information regarding any changes in comprehension.

Reed (51) reports on a study of 36 student nurses divided into equal groups for experimental and control purposes. Following a training period of 27 hours for the experimental group, a comparison was made on a post-test situation with the control group which had received no formal reading instruction. It was found that the experimental group had made significantly greater gains in reading rate and vocabulary. Comprehension gains were not significant. The gain in rate seemed to be relatively lasting when retested seven months later, but the vocabulary gains were not maintained.

A study at the United States Naval Academy utilized two groups of freshmen totaling 322 students evenly divided for control and experimental purposes. Potter (46) reports that, following a pre-test to determine the reading rate, the experimental group received reading training for a span of 20 class periods. The control group was not given any formal reading improvement training.

As a result of a post-test administered to both groups it was ascertained that the experimental group had made significantly greater gains than the control group in reading rate. Blake (6) reporting on a study at Maryland University, which involved a systematic and anonymous student evaluation of the reading and study skills program they were required to take as probationary students, found that the students were aided academically. There were 187 students involved in the reading course evaluation. Only 4.9 per cent felt they had received "little" help and 59.9 per cent felt they had received either "considerable" or great help. Not a single student felt that he had received no help. Blake concludes:

> ...the compulsory training given students does help many achieve their immediate goals despite the stigmatization suffered in varying degrees by students when first placed on probation.

He did not explain how his control group was formally selected.

In a report dealing with industry, Hunt (27) reports on a study involving workers at the managerial level. The classes were small group oriented with 12 per class . The classes meet twice a week for 10 weeks. The work given included individual work as well as group and a continuing diagnosis was maintained through the course. The gains reported were 86 per cent gain in reading rate with a 17 per cent gain in the area of comprehension.

Bloomer (7) reports using an experimental group of 40 education freshmen who received formal reading training.

His control group of 39 similar subjects did not receive this training. The experimental group had significant gains over the control group in reading rate and in comprehension. The control group, on the other hand, made slightly greater gains in vocabulary.

Staton (59) reports "indications" of a gain in rate of reading and comprehension with a very small study with Air Force officers. No mention was made of vocabulary. He indicates some retention of these gains but does not give the figures for verification.

Ray and Belden (48) have examined the immediate gains made in the reading improvement program at Oklahoma State University. Included is a description of the testing materials and methods as well as the results which were derived on the basis of a pre-test and post-test approach. The results reported show a significant improvement as a result of the present program of reading improvement at Oklahoma State University. This program is of the traditional nature, with a regularly scheduled, teacher-oriented classroom situation.

The calculated t values for all aspects of reading skills far exceeded the tabulated t values at the .05 level of confidence on the pre-test and post-test examination using the Nelson-Denny Reading Test (Form A) and the Nelson-Denny Reading Test (Form B). The data were treated statistically by the t test of correlated means and the t test of independent means.

Ray (47) reports on the retention or permanency of these gains. When one group was retested three months after completion of the course no significant difference was found between the post-training test scores and the retest scores. The results at the end of six months with the other group showed a positive difference of significance in performance between post-training vocabulary and rate of reading retest scores. Comprehension did not show any significant difference between post-training performance and the retest performance.

These results would indicate a positive difference in reading skills as a result of the present program of reading improvement at Oklahoma State University. Also, these gains seem to be of a relatively permanent nature over the period of time tested.

Rose (52), in reporting a study at the University of Kentucky, found that improvement in speed and comprehension can be attained by the majority of college students. She did note a very high attrition rate in this particular study. One hundred forty began the course but only 76 satisfactorily completed it. Her subjects were not randomly selected.

Olson, et al. (41) reports on a study completed at the University of Maine. The purpose of this research study was to determine the effectiveness of a training program in reading and study skills. The population used for this study was comprised of freshmen students. The sample

utilized contained 145 in the experimental group and 174 in the control group. The control group received no formal instruction in reading improvement or study skills.

The experimental group received a formal program consisting of eight fifty minute sessions during a semester of sixteen weeks. This was done through a regularly scheduled orientation course.

Pre-testing was done with the Nelson-Denny Reading Test (Form A) and post-testing at the end of the semester was accomplished with the Nelson-Denny Reading Test (Form B). Both groups were tested at the same time.

The results of the study indicates the experimental group made significantly greater gains, at the .05 level of confidence, than the control group in comprehension and reading rate. In vocabulary no significance was found. The statistical tool applied to this study was the analysis of covariance.

Stebens (60), reporting in his study, found that participation in the reading improvement program by his experimental group of freshmen at Oklahoma State University resulted in immediate gains in vocabulary, comprehension and reading rate. These gains were significant beyond the .01 level of confidence. This group was composed of 108 members who as entering freshmen in the fall of 1963 had enrolled and satisfactorily completed the course in reading improvement.

The control group for this study was comprised of 108

freshmen entering in the fall of 1963 who had not participated in this program. This study also indicated the gains of the experimental group were retained over a five semester period of time and that the skills gained in vocabulary and reading rate had significantly improved (.05) between post-training testing and retesting. Over this same time span, comprehension had not changed significantly.

The control group likewise improved significantly (.01) in vocabulary and reading rate over the five semester span. They did not show significant change in comprehension skills from the time of their entrance as freshmen.

The results of a comparison of gains made by the two groups indicated the experimental group gains in vocabulary, comprehension and reading rate were significant beyond the .01 level of confidence over the gains made by the control group.

Stebens concludes that not only do immediate gains result from training in the reading improvement program but they are also of a relatively permanent nature over the five semester period of time covered by this study.

This paper also investigated the academic performance of the experimental and control groups. The results indicated the experimental group received better grades in all of the subject areas studied (English, Social Science, Natural Science and Mathematics) and significant differences in favor of the experimental group, at the .05 level of confidence, were found in academic achievement in the

social sciences and over-all academic achievement.

The statistical tools used in arriving at these conclusions were a single-classification analysis of variance and t test of mean differences. The report concludes with the following statement.

> The results revealed by this study appear to indicate that the methods utilized in the Oklahoma State University Reading Improvement Program are successful in promoting the acquisition and retention of desirable reading skills. The findings also indicate that students who are successful in acquiring these skills tend to use them in an academically beneficial way.

Schick (53) authored an article based upon a study of several different programs at a number of institutions. His reports indicate a wide range of methods and materials utilized to achieve the desired objectives. The methods were many; study skill oriented, book centered, films and workbooks and various combinations. Schick concludes his article with the following statement.

> Notwithstanding the noteworthy wide range of means adopted to bring about the desired goals, it is thus apparent that the most effective and enduring of reading programs are based: first, on detailed analysis of specific needs of students as demonstrated by test and observation; second, on selection of the most useful printed matter and mechanical teaching aids to enable each student to eliminate his own deficiencies; and third (finally), on continually modified instructional techniques, materials, and devices to the end that reading skills, habits, and achievement are developed to the very limits of every student's native capacity.

Entwistle (20) reviews studies of 22 programs of reading improvement and study skills. Her conclusions indicate such courses usually result in gains in reading skills,

which tend to be retained. Also, she found a modal gain in grade point average of approximately one-half a grade point in overall academic performance.

From the literature it appears that immediate gains are to be expected for most students taking a course in reading improvement. The greatest gains are usually in the rate of reading followed by comprehension. Vocabulary usually increases but seems to be somewhat less predictable.

Retention of gains in rate of reading is generally excellent and many studies indicate a continuing increase after formal instruction ends. Comprehension gains are usually retained to a certain extent but little increase after formal instruction ends has been noted.

Trends and Programs Relating to Individualization or Self-Improvement in College Reading Improvement Programs

A considerable number of articles not of a formal research nature have been published in recent years relating to this aspect of this study. Some of these that are most pertinent and authored by recognized professionals are included in this section. Also, the research reports that seem to be most closely related to this problem are herein briefly reviewed.

Berg (5) has dealt with the most popular and commonly utilized methods and materials used for reading improvement programs at the college-adult level and gives some consideration to "individualized" as well as group methods

of instruction. He has not given a definitive description of this individual program.

Cranney (17) has discussed how the reading program at Minnesota University has evolved from the standard group procedure to the current and "individualized" method they are currently following. The materials and methods are not the same as are applied in this study. Their program has a reading counselor directly supervising the student as he works and appears to retain much of the teacher-oriented approach.

Colvin (14) has reported that one of the greatest needs of colleges in Pennsylvania is to be able to make the reading improvement program available to more students than is currently possible under their classroom approach. He suggests moving into an "individualized" approach but does not define or elaborate on exactly what this means nor how he suggests it be accomplished. The reasons given for dissatisfaction with the current classroom method are lack of enough time and personnel to care for all those students wishing to enroll in the program.

Maxwell (33) gives the reasons for the change to a self-help program at the University of Maryland as well as an excellent description of their goals and the means utilized to attain these goals. Each student, after diagnosis, works individually on his own materials at his own rate and level. Because there is such a wide range of needs in those seeking help, the students can immediately

begin to work on their own specific individual needs. Students may enter this program at any time of the year.

As an illustration of how this approach has aided the University of Maryland in successfully helping these students without overloading their facilities and faculty the following statement is made.

> In 1963-64, over 800 students sought help from the laboratory. Even though 1400 students enrolled in the program in 1964-65 the size of the staff remained the same: The director, one half-time instructor, and four half-time graduate assistants.

Maxwell states they are currently experimenting with 'satellite' laboratories in dormitories and Greek houses with some early success. This is an effort to further extend the help of the laboratory.

Maxwell and Magoon (35) have described the program at the University of Maryland including a description of the type of student seeking assistance. Of all the applicants during the year of this report (1959-60), fifty-seven per cent were men. All colleges of the University of Maryland were represented by the applicants, and the greatest amount, sixty-seven per cent, were freshmen. Upon examination of the ACE scores it was found that forty-five per cent fell in the upper half of the distribution of ability scores on the University of Maryland norms. This indicates the program is not solely remedial in nature but also has a developmental emphasis.

The authors state that one of the main objectives of their continuing research and experimentation is "...a more

flexible program which can be geared to individual needs and at the same time reduce the amount of professional staff time involved."

Braam and Sherk (9) report briefly on an experimental self-help program at Syracuse University. They report: "...improvement of students in the experimental sections was equal to that of students participating in other sections of the course." Their statistical proof for this statement was not given.

Raygor (50), University of Minnesota, reports on the reasons why their program was individualized and lists the reasons they feel such a program is the best possible. These are basically founded upon the principle of individual differences of the students seeking help.

Smith (57) reports on current innovations and trends in college reading programs. He finds a trend today toward various methods of individualization of these programs. He states: "Nevertheless, I believe that we are seeing a substantial trend toward individualization...."

Spache (58) writes on a study of three college level reading program procedures studied at the University of Florida. These were an audio-visual emphasis, reading workbook method and an 'individualized' approach.

The class with the audio-visual emphasis used lecture films, filmed reading exercises, work with tachistoscopic material and other material prepared by the makers of the Perceptoscope. The teacher presented the films, answered

questions and was generally available for help.

The workbook approach was built around The Art of Efficient Reading, by George D. Spache and Paul C. Berg, Macmillan Company, 1955. The instructor explained and elaborated upon the material in the book, made assignments and supervised the practice exercises. The teacher was available for help and consultation.

The individualized method involved interpreting the pre-test scores to the students, discussing relevant information and helping the student set up a work program. Other than the post-test evaluation the students worked independently on various materials according to their own particular needs and levels of ability.

No significant difference in reading gains were noticed but the individualized approach did result in what the author calls a significant improvement (.05 level of confidence) in reading habits and attitudes over the other methods used. To determine this difference, Spache utilized a locally prepared test of reading habits and attitudes which is not further described. The tests used for determining rate of reading, vocabulary and reading comprehension were the Diagnostic Reading Test, Survey Section, Form E (pre-test) and Form A (post-test). The analysis of covariance technique was used to analyze these data.

The size of these groups appears to have been somewhat limited. There were thirty students in the workbook centered class, fifty-three students in the audio-visual

centered class, and fifteen students in the individualized arrangement. No mention is made regarding the population.

Spache concludes the University of Florida will continue their individualized program without fear that the student is being slighted.

Weeks (69) writes a review of an experiment conducted at the University of Maine in self-help in reading improvement for college freshmen. The group of students used in this program were defined as sub-college level students. A description of the materials and tests used are given by the author as well as charts and graphs showing the changes in reading performance experienced by the students of the experimental group. This group was relatively small, with only 27 having complete records to be used in the study. The author states regarding this experiment:

> ...even with a group that is below average, rather remarkable improvement in rate of reading is possible solely through the student's own efforts under some slight guidance and encouragement.

Changes in comprehension did not appear to be significant.

Walther and Ferguson (67) reports on a very recent study dealing with self-instructional reading courses. This study was made with males of 16 to 21 years of age with a reading grade level of 3.6 to 5.4. Those with an I. Q. below 80 were excluded from the study.

The sample, totaling 66 in number, was selected from the poorly motivated, including some from the Maryland Correctional Institute. Reading grade level was determined by the California Achievement Test.

Statistical design was accomplished with a matched groups design with matching done on the basis of the California Achievement Test scores. The test for correlated means was applied and a matched groups analysis of variance approach was used to make certain comparisons.

Although the main purpose was a comparison of different automated approaches, students did work on a self-instructional basis. Regardless of the automated system applied, the subjects significantly improved at .005 level of confidence.

Of the studies surveyed regarding the general effectiveness of independent study, though not in reading instruction, there seem to be some conflicting reports.

Wakely et al. (65) report their study indicated independent study subjects achieved at an inferior level to traditional classes. In an earlier study, Paul (45) reported similar results.

The majority of research seems to indicate no significant difference in comparative gains. McCollugh and Van Atta (37) report these results as does Jensen (28) in an earlier study.

Parsons (44), reports in 1957, a significance in favor of the independent study subjects. A report by Hartnett and Stewart (24) in 1966 gives the results of a new study. This experiment was conducted at the University of South Florida, with classes in the College of Basic Studies forming experimental and control groups. Comparisons were

carried out on a matching basis using the analysis of variance technique. In every case the final examination grades were better, and in 2 of the six, significantly better (.05 level of confidence), for the independent study group. This comparison was done with six courses having at least 15 pairs of matched--ability students.

Summary

In the review of literature it has been demonstrated that reading programs have not only grown in quantity but their effectiveness has also been well established. Many studies have shown quite significant immediate gains in comprehension, rate of reading and usually in vocabulary. Rate of reading seems to show the greatest significance in gains, even in those programs not placing specific emphasis in this area.

Retention has been investigated by several recent studies. In most instances, retention has been significant and further improvement has occurred in some areas, rate of reading especially.

Many authorities are interested in the possibilities of independent or self-help study in reading improvement programs at the college level. Those experiments investigated that dealt with this area found generally favorable results. Advantages were mentioned quite frequently by those reporting.

Experienced teachers and reading center personnel

have been concerned for some time about improving reading improvement courses at the college level. From the material covered in this review it would seem the self-help approach is worthy of further consideration as one means of accomplishing this goal.

CHAPTER III

METHODOLOGY AND DESIGN

This chapter will describe (1) the Oklahoma State University Reading Improvement Program, (2) the population and the sample of the study, (3) the testing instruments utilized in the study, and (4) the statistical approach used to test the significance of any change in reading skills during the study.

The Reading Improvement Program

The reading improvement program at Oklahoma State University is one of open enrollment. Any student desiring to participate, undergraduate or graduate, is free to enroll. The only restrictions are those dealing with class size, number of sections offered and the ability of the student to arrange his academic schedule to allow his participation in the program. There is a laboratory fee of $15 charged for participation in the program.

The class sessions meet for 40 clock hours during the eight weeks period in which they are scheduled. A period of pre-testing and post-testing is used for purposes of diagnosis and evaluation. In order to better meet the needs and the demand, the classes are scheduled in multiple

sections twice each semester.

In the fall semester of 1966, sections 1 through 20 were scheduled during the day time hours. In addition three sections were scheduled at night, one night per week for the entire semester. The night sections are not included in this study. These daytime sections had an initial enrollment of 531 students. Of these, 123 either did not report for instruction or did not satisfactorily complete the course.

As outlined previously in Chapter I, the reading improvement program is designed to aid the student in improving all areas of reading skills. The program is not designed to give emphasis to any one of the reading skills, but rather is aimed in the direction of a well balanced development of all these areas. The program consists of laboratory experiences, with some early lectures during the initial orientation stage. Rather intensive practice is furnished in vocabulary development, rate of reading and comprehension improvement.

Commercially produced materials are utilized in helping to develop the reading skills of the students. The program, as a whole, is aimed at allowing students to progress in accordance with their abilities. The following are the materials and aids used:

A. The SRA Laboratory IV (College Prep Edition) published by Science Research Associates, is a graded set of materials specifically designed

to improve comprehension, increase the vocabulary skills, and increase the rate of reading.

B. The Controlled Reader is a machine that projects an image of the reading material from a filmstrip onto a screen. Speed of projection is controlled by the operator with a pre-setting at the rate desired. At the conclusion of viewing the subjects take an examination over the material to determine the level of comprehension at that particular speed. This examination can be self-administered and self-scored.

C. The Shadowscope is a machine that casts a light bar on a printed page. The light bar moves down the page at a predetermined rate of speed which is controlled by the reader. This machine currently is not used extensively in the program.

D. A collection of workbooks and other textual material are maintained by the reading center. A card file lists the materials available in this collection dealing with the various reading skills and sub-skills. These are available for use by the students. The use of this material is determined by the needs of the individual student and the particular class situation.

Other exercises and materials are used to develop study and reading skills. Many of these are locally prepared by various staff members and are used by them in

meeting the needs of their students. These materials are made available for all staff members and all classes.

The instruction is based upon the traditional classroom approach. The classes are instructed on the basis of grouping the students, according to their needs, into small group situations. These groups are supervised, and guided. Evaluation and diagnosis is of a continuing nature during the course.

The Populations and Samples of the Study

This study is actually concerned with two different populations and samples. The area of the study involving Groups A and B will be described first.

The population of this part of the study is composed of freshmen education majors enrolled in Education 111, Orientation, during the fall semester of 1966. This consisted of 461 formally enrolled in the thirteen scheduled sections.

Two sections of Education 111 were randomly selected through a table of random numbers, Sections 3 and 13, and those students not currently enrolled in a reading improvement class and who had not previously taken the course were used as the control group for this part of the study. These students were given the pre-test (Nelson-Denny Reading Test, Form B). On the same day the students in Group B, the experimental group for this section of the study, were tested with the same test. Forty-three students

were given the pre-test. On the post-test date only 38 of this number remained. The size of group A was then determined to be 38 subjects.

Group B was randomly selected from freshmen education majors that had satisfactorily completed the traditional reading improvement course on November 11. The total available for this selection was 68 subjects. Through random selection 38 were designated as composing Group B. This made the total sample for this section of the study the sum of 76 subjects.

In the area of the study dealing with the comparisons of Groups C and D the population is defined as all those students enrolled in Education 120 Reading Improvement, for the first half of the fall semester of 1966-67 at Oklahoma State University. This total for initial enrollment was 531. Of these subjects 123 either did not report for class or did not satisfactorily complete the program on November 11, 1966.

The sample for this section of the study consisted of 200 undergraduate students selected from the initial enrollment record of reading improvement during the first half of the fall semester of 1966-67. The selection was made through the use of a table of random numbers. The first fifty selected were assigned to the experimental group; the second fifty assigned to the control group and this process continued until the total of two hundred was reached.

Group C received the traditional reading improvement training used in the reading improvement program. This traditional training is basically a teacher-oriented situation on a regularly scheduled classroom basis. Each section meets five hours per week for the length of the course. The length of the course during this study was eight weeks, for a total of forty clock hours of instruction. Members of this group were spread randomly among all sections of reading improvement during the first half of the fall semester 1966-67 at Oklahoma State University. This randomization was carried out in an attempt to have as representative a sample as possible. The actual random selection procedure is described at a later point.

Group D participated in the self-help program of improving their reading skills. They were not scheduled as to a certain time for attendance. It was recommended they strive for five hours per week in the reading laboratory for a total of thirty hours of practice.

When classes began it was found that of the original 100 in the control group (Group C) 99 actually began training in the classes. Of the original 100 in the experimental group (Group D) 92 actually were in attendance. At the conclusion of the post-test it was found that 71 members had satisfactorily completed the program in each group for a total sample size of 142 subjects. This population limitation will necessarily restrict any formal generalizations to the situation at Oklahoma State

University.

Procedure

Group A received no formal reading instruction. Group B received the normal training in Education 120, Reading Improvement. Comparisons are based on the changes indicated by the pre-test and post-test raw scores on the vocabulary, comprehension and reading rate section of the Nelson-Denny Reading Test.

Group D was not separated from Group C until after several hours of orientation and lectures were presented to all class members in the reading improvement sections. Following these lectures and orientation sessions in the use of the materials and equipment Group C was separated from others in the reading improvement sections. They were told they had been randomly selected to create another group to utilize some space we had available and to help alleviate an overcrowded condition in the sections of reading improvement.

In order to avoid the Hawthorne Effect as much as possible, they were not told they were participating in an experiment. The Hawthorne studies indicate a tendency for an experimental group to show improvement regardless of the conditions imposed, when they were aware they were participants in an experimental situation.

A complete set of materials, duplicating those in use in the regular reading improvement sections, was made

available for the experimental groups exclusive use. Individual laboratory carrels were made available for this group completely separated from other reading improvement students. Controlled Readers and Shadowscopes were reserved for their use. Individual timers for use with the SRA Laboratory materials were provided. Access to the workbook and reference materials was nearby and use by the students was encouraged.

A typical practice session for students in Group C and Group D would be as follows:

1. Complete and score 2 Rate Builders (SRA Laboratory IV).
2. Complete and check a Power Builder (SRA Laboratory IV).
3. Observe a film strip (Controlled Reader) and answer questions over the film.
4. Work with other materials as time allows.

It was emphasized that they should aim for 5 clock hours of reading laboratory work per week if at all possible. A Log Book was provided for recording the dates of attendance and the time spent in the laboratory on each day. The laboratory was available for their use beginning at 6:30 a.m. Monday through Friday. On Monday, Tuesday and Wednesday closing time for the laboratory was 9:00 p.m. On Thursday and Friday closing time was 6:00 p.m. Saturday morning the laboratory was available for their use until 12:30 p.m.

The researcher personally checked the Log Book at the end of each week and made a spot-check at irregular intervals to see if any false or erroneous recording of attendance was occurring. Only one such error was noted. Upon investigation it was determined to be accidental and no further occurrence was noted.

The control group was distributed through all sections of reading improvement. The selection of this group has already been described. They likewise were not aware they were involved in an experimental study and teachers of the various sections did not know which students were selected as members of the control group.

A table of the complete attendance records of Group C and Group D is shown in Appendix A at the conclusion of this report. Due to unavoidable circumstances the attendance for two members of Group C was not available.

It is interesting to note that the mean attendance for Group C was 24.28 hours per student during the period of time covered by this experiment. The mean attendance for Group D was 22.87 hours per student during the period of the experiment. On the basis of one hour per school day during the span of the experiment 30 hours per student was the desired goal. No statistical comparison was made of the attendance. The actual attendance record for each group is presented in Appendix A.

Table I shows the distribution of Group A and Group B according to the quartile rank on the pre-test Nelson-Denny

Reading Test total raw score. The academic classification of students in both groups was grade 13 and all were majors in the College of Education. Each of these groups was composed of 38 members. A distribution of the Nelson-Denny Reading Test vocabulary, comprehension and reading rate scores, both pre-training and post-training, for both groups is presented in Appendix B.

TABLE I

DISTRIBUTION OF GROUP A AND GROUP B WITH RESPECT TO QUARTILE RANK OF THE NELSON-DENNY READING TEST (PRE-TEST) TOTAL RAW SCORE

Nelson-Denny	Group A		Group B	
	Male	Female	Male	Female
Q4	1	11	1	2
Q3	2	13	1	9
Q2	0	10	2	11
Q1	0	1	1	11
Total	3	35	5	33

Table II shows the initial distribution of Group C with respect to quartile rank on the Nelson-Denny Reading Test (pre-test) total raw score, college of enrollment, and academic classification of the students in this group.

The total number of students in this group is 71.

Table III shows the initial distribution of Group D with respect to quartile rank on the Nelson-Denny Reading Test (pre-test) total raw score, college of enrollment, and academic classification of the students in this group. The total number of students in this group is 71.

Standardized Testing Instrument

This section of Chapter III is devoted to a brief explication of the Nelson-Denny Reading Test (Form A and B). This particular test was used for several reasons. This is the test that is currently in normal use for purposes of measurement in the Oklahoma State University Reading Improvement Program. Also, the test has been standardized using a large sample and the correlation between the above tests is given as .92, indicating a high degree of reliability between Forms A and B.

This test was first copyrighted in 1929. It was revised by James I. Brown, of the University of Minnesota, and is published by Houghton Mifflin Company, Boston, Massachusetts. Sub-tests are contained for vocabulary (100 items), comprehension (44 items); provision is made on the first long comprehension item for measuring the rate of reading. By adding the vocabulary raw score and the comprehension raw score a total raw score is determined. This does not include the rate of reading score.

Standardization of the revised instrument was with a

TABLE II

DISTRIBUTION OF GROUP C WITH RESPECT TO QUARTILE RANK ON THE NELSON-DENNY READING TEST (PRE-TEST) TOTAL RAW SCORE, COLLEGE OF ENROLLMENT, AND ACADEMIC CLASSIFICATION

			College of Enrollment							Academic Classification			
Nelson-Denny	Male	Female	Educ.	Eng.	Agr.	A&S	Vet. Med.	Bus.	H.Ec.	13	14	15	16
Q4	8	3	2	2	0	5	0	2	0	11	0	0	0
Q3	8	5	3	2	0	5	0	2	1	13	0	0	0
Q2	13	12	7	4	1	5	0	6	2	25	0	0	0
Q1	13	9	2	4	4	5	0	3	4	20	0	0	2
Total	42	29	14	12	5	20	0	13	7	69	0	0	2

TABLE III

DISTRIBUTION OF GROUP D WITH RESPECT TO QUARTILE RANK ON THE NELSON-DENNY READING TEST (PRE-TEST) TOTAL RAW SCORE, COLLEGE OF ENROLLMENT, AND ACADEMIC CLASSIFICATION

			College of Enrollment							Academic Classification			
Nelson-Denny	Male	Female	Educ.	Eng.	Agr.	A&S	Vet. Med.	Bus.	H.Ec.	13	14	15	16
Q4	6	2	2	2	1	2	0	1	0	7	0	1	0
Q3	12	12	2	8	0	6	0	4	4	23	0	1	0
Q2	9	8	5	5	2	2	0	2	1	17	0	0	0
Q1	15	7	8	2	2	4	0	5	1	22	0	0	0
Total	42	29	17	17	5	14	0	12	6	69	0	2	0

population of 7,497 students representing academic classifications of grades 13, 14, 15 and 16. These students were from colleges and universities from all sections of the United States. The reliability coefficient for vocabulary was found to be .93, for comprehension .81, for reading rate (initial) .93.

In this study the Nelson-Denny Reading Test (Form B) was the pre-test given. For determination of a post-test score the Nelson-Denny Reading Test (Form A) was used. The date of administration for the pre-test was September 22, 1966. The post-test was utilized on November 10, 1966 for post-test purposes, due to scheduling arrangements.

Statistical Design

The purpose of this section is to briefly present the procedures used to statistically test the hypotheses previously mentioned. The statistical tool selected originally for this purpose was analysis of variance. This procedure is described in detail by Wert et al. (70). In proceeding with this statistical approach it is considered necessary to check for homogeneity of variance. To accomplish this Bartlett's test was applied. It was found that in one instance the data did not meet the criterion necessary to establish homogeneity. Regarding this situation, Kerlinger (29), on page 258, states:

> It is assumed, in analysis of variance, that the variances within the groups are statistically the same. That is, variances are assumed to be homogeneous from group to group, within the bounds

> of random variation. If this is not true, the F test is vitiated. There is good reason for this statement.

Kerlinger also states: "The effect of widely differing variances is to inflate the within-groups variance". Regarding the application of parametric statistical procedure Kerlinger (29), on page 258, states:

> When in doubt about the normality of a population, or when one knows that the population is not normal, one should use a non-parametric test that does not make the normality assumption.

Siegel (56), on page 31, states:

> Certain assumptions are associated with most non-parametric statistical tests, i.e., that the observations are independent and that the variable under study has underlying continuity, but these assumptions are fewer and much weaker than those associated with parametric tests.

According to Siegel the Mann-Whitney U test is best applied in two sample cases involving independent samples with at least ordinal level of measurement. The Randomization test, for two independent samples is the strongest in determining central tendency. However, regarding the Randomization test, Siegel, on page 157, states:

> ...this test can be used only when the sample sizes are small and when we have some confidence in the numerical nature of the measurement obtained. With larger samples or weaker measurement (ordinal measurement), the suggested alternative is the Mann-Whitney U test,....

Siegel (56) reports the Mann-Whitney U test is an excellent alternative to the t test, without the restrictive assumptions associated with the t test and it's power-efficiency is close to 95 per cent even for moderate-sized samples and increases as the N approaches 100. Walsh (66)

verifies the assumptions required by the Mann-Whitney U Test, as reported by Siegel (56), as being (a) effectively two independent random samples and (b) that the variables under study have underlying continuity.

Following these recommendations it was decided the most appropriate approach would be to use the Mann-Whitney U Test in analyzing the data from this study. These data consist of the raw scores of the vocabulary, comprehension and rate of reading sub-tests obtained from the pre-test and post-test administration.

The formulae for this statistical method are presented in Appendix C.

Summary

This chapter has been utilized to give a description of the population and sample used for this study. It has included a brief description of the current Oklahoma State University Reading Improvement Program as conducted in Education 120. A brief description of the testing instrument and the statistical procedure has also been included.

It should be noted the sample was composed of undergraduate students. There was a very high proportion of freshmen. Six colleges across campus were represented. The attrition rate, those not satisfactorily completing the program, was approximately 25 per cent. This is much better than expected. Ray (47) reports 50 per cent attrition rate in his study. The difference in the mean hours

of attendance during the span of the experiment by Groups C and D was only 1.41 hours.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

Introduction

The purpose of this chapter is to present a detailed description of the statistical treatment of the data and the tests made of the hypotheses of the study.

This study has two areas of concern. The first part of the study was concerned with determining the reading skill gains of freshmen education majors enrolled in reading improvement courses as compared to the gains of freshmen education majors not participating in reading improvement. The major area of the study was to compare gains made by undergraduate students in the reading improvement courses with gains made by an experimental group using the same materials but on a self-help basis. This study, then, was directed toward investigating the immediate gains resulting from the reading improvement program as opposed to nonparticipation in such a program: also, toward determining if a self-help approach would produce significantly greater gains than the traditional classroom program.

In the treatment of the data obtained, it is important to be concerned with whether differences are significant. To accomplish this the Mann-Whitney U Test, a nonparametric

technique designed to be used with two independent samples, was used because of failure to meet certain requirements for utilization of a parametric approach. This failure was explained at the appropriate point in Chapter III.

Findings of this study are reported under two headings: first, the comparison of gains of students participating in reading improvement with those of students not participating in such a program; second, the comparison of gains of a self-help approach with gains of the traditional reading improvement program.

Comparison of Gains of Students Participating in Reading Improvement and Nonparticipants

To determine if differences of a significant magnitude existed, in terms of gains made in reading skills by Group A and Group B for the three hypotheses of this area of the study, tests of significance were made using the Mann-Whitney U Test (one-tailed). Tables IV, V and VI show the results of these tests.

Hypothesis A-1: There will be a difference significant at the .05 level of confidence between the pre-test and post-test vocabulary raw scores of Group A and Group B and this difference will favor Group B.

The obtained U was 380.5 and the obtained z value was 3.553. From the computed significance, based upon this z, as shown in Table IV, it is concluded that a significant difference in gain in vocabulary, in favor of Group B, did

occur beyond the previously set .05 level of significance.

TABLE IV

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN VOCABULARY FOR GROUP A AND GROUP B

Groups	N	Sum of Ranks	U	z Value	Computed Significance
A	38	1121.5			
			380.5	3.553262	0.000190*
B	38	1804.5			

*p < .05

Hypothesis A-2: There will be a difference significant at the .05 level of confidence between the pre-test and post-test comprehension raw scores of Group A and Group B and this difference will favor Group B.

The obtained U was 237.5 and the obtained z value was 5.056. From the computed significance, based upon this z, as shown in Table V, it is concluded that a significant difference in gain in comprehension, in favor of Group B, did occur beyond the previously set .05 level of significance.

TABLE V

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN COMPREHENSION FOR GROUP A AND GROUP B

Groups	N	Sum of Ranks	U	z Value	Computed Significance
A	38	978.5			
			237.5	5.056087	0.000033*
B	38	1947.5			

*p < .05

Hypothesis A-3: There will be a difference significant at the .05 level of confidence between the pre-test and post-test reading rate raw scores of Group A and Group B and this difference will favor Group B.

The obtained U was 97.5 and the obtained z value was 6.488. From the computed significance, based upon this z value, as shown in Table VI, it is concluded that a significant difference in gain in reading rate raw scores, in favor of Group B, did occur beyond the previously set .05 level of significance.

The relationship of the previously submitted data to Tables IV, V and VI will be discussed in Chapter V.

TABLE VI

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN READING RATE RAW SCORES FOR GROUP A AND GROUP B

Groups	N	Sum of Ranks	U	z Value	Computed Significance
A	38	838.5			
			97.5	6.488238	0.000033*
B	38	2087.5			

*p < .05

Comparison of Gains of Students in the Traditional Reading Improvement Program and Students in a Self-Help Program

To determine if differences of a significant magnitude existed in terms of gains made in reading skills by Group C and Group D for the three hypotheses of this area of the study, tests of significance were made using the Mann-Whitney U Test. Tables VII, VIII and IX show the results of these tests.

Hypothesis B-1: There will be a difference significant at the .05 level of confidence between pre-test and post-test vocabulary raw scores of Group C and Group D and this difference will favor Group D.

The obtained U was 2369.5 and the obtained z value was

0.617. From the computed significance, based upon this z value as shown in Table VII, the weight of evidence indicates that a significant difference in gains in vocabulary between Group C and Group D did not occur at the previously set .05 level of confidence.

TABLE VII

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN VOCABULARY FOR GROUP C AND GROUP D

Groups	N	Sum of Ranks	U	z Value	Computed Significance
C	71	4925.5			
			2369.5	0.616947	0.268635*
D	71	5227.5			

*p > .05

Hypothesis B-2: There will be a difference significant at the .05 level of confidence between pre-test and post-test comprehension raw scores of Group C and Group D and this difference will favor Group D.

The obtained U value was 2204.5 and the obtained z value was 1.294. From the computed significance, based upon this z value as shown in Table VIII, the weight of evidence indicates that a significant difference in gains

in comprehension raw scores between Group C and Group D did not occur at the previously set .05 level of confidence.

TABLE VIII

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN COMPREHENSION FOR GROUP C AND GROUP D

Groups	N	Sum of Ranks	U	z Value	Computed Significance
C	71	4760.5			
			2204.5	1.293753	0.097875*
D	71	5392.5			

*p > .05

Hypothesis B-3: There will be a difference significant at the .05 level of confidence between pre-test and post-test reading rate raw scores of Group C and Group D and this difference will favor Group D.

The obtained U value was 1553.0 and the obtained z value was 3.948. From the computed significance, based upon this z value, as shown in Table IX, it is concluded that a significant difference in gains in reading rate raw scores, in favor of Group D, did occur beyond the previously set .05 level of significance.

TABLE IX

THE MANN-WHITNEY U TEST OF SIGNIFICANCE OF DIFFERENCE IN GAINS IN READING RATE RAW SCORES FOR GROUP C AND GROUP D

Groups	N	Sum of Ranks	U	z Value	Computed Significance
C	71	4109.0			
			1553.0	3.948029	0.000039*
D	71	6044.0			

*p < .05

Summary

Chapter IV has presented a detailed account of the statistical treatment of the data pertaining to the study. The findings of this investigation were applied in the determination of the rejection or non-rejection of the hypotheses of the study.

It was determined that in two instances the researcher failed to accept the stated hypothesis at the predetermined level of confidence. In analyzing the data pertaining to the other four hypotheses, it was found the evidence to be such that the researcher failed to reject these hypotheses at the predetermined level of confidence. The results presented in Chapter IV will receive additional consideration in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

General Review of the Purpose and Design of the Study

This study consisted of two sections. The first area presented was subordinate to the main purpose of the study, as indicated by the title of this investigation. This first part was designed to show a comparison of changes in reading skills of students participating in reading improvement and nonparticipants. Ray (47) had indicated in his study there was a need for this to be investigated. Three areas of concern were studied: (1) comparison of gains made in vocabulary, (2) comparison of gains made in comprehension, and (3) comparison of gains made in reading rate.

Group A, the control group in the first part, consisted of 38 freshmen education majors not currently enrolled in a formal reading improvement program. Group B, the experimental group in the first part of this investigation, consisted of 38 freshmen education majors successfully completing the regular reading improvement course at Oklahoma State University. These groups were pre-tested and post-tested with the same instrument over the same period of time.

The analysis of the resulting data was accomplished through use of the Mann-Whitney U Test for significance. This is one of the strongest nonparametric tests for two independent samples.

The second area studied was the area of major concern, as indicated by the title of this investigation. This involved an experimental study, utilizing gains made in reading skills by two groups of students in the reading improvement course. Group C, a control group of undergraduate students, successfully completed the traditional reading improvement course at Oklahoma State University. Group D, an experimental group of undergraduate students, successfully completed a self-help course in reading improvement. Each group consisted of 71 members randomly selected. Both groups utilized the same materials during their training sessions. Each group was pre-tested and post-tested with the same instruments on the same dates.

The analysis of the resulting data was accomplished through use of the Mann-Whitney U Test for significance. This was applied to three areas of concern: (1) comparison of gains in vocabulary, (2) comparison of gains made in comprehension, and (3) comparison of gains made in reading rate.

The instrument used to determine these changes in reading skills was the Nelson-Denny Reading Test (Form A and B). These tests were used in both parts of this investigation.

Conclusions

The results of the first part of the study, a comparison of gains of Group A and Group B, would seem to be quite impressive. The predetermined level of significance stated in the hypotheses was .05. It was noted in Chapter IV that in all three areas, vocabulary, comprehension and rate, Group B appears to have made gains far beyond the .05 level as compared to Group A. It is noted that the significance of gain in vocabulary in favor of Group B was indicated to be beyond the .001 level. However, for the purpose of testing hypothesis A-1 the predetermined level of .05 was used.

The significance of gain in comprehension in favor of Group B was even more impressive. This was indicated to be beyond the .0001 level. Again, for purposes of testing hypothesis A-2, the .05 level was used.

The comparison of gains of Group A and Group B in reading rate was also very significant. Once again, Group B appeared to have made gains significantly greater than Group A beyond the .0001 level. This would seem to be the same as gains noted for comprehension: however, by observing the z scores (comprehension $z = 5.057$ and reading rate $z = 6.488$) it would be noted that reading rate seems to register the greater gain. For the purpose of testing hypothesis A-3 the predetermined level of significance was .05.

From the results of this part of the investigation the following conclusions relative to the Oklahoma State University Reading Improvement Program were made:

1. It was concluded that freshman education majors participating in the reading improvement program will tend to improve in vocabulary skills at a significantly greater rate than nonparticipating freshman education majors.
2. It was concluded that freshman education majors participating in the reading improvement program will tend to improve in comprehension skills at a significantly greater rate than nonparticipating freshman education majors.
3. It was concluded that freshman education majors participating in the reading improvement program will tend to improve in reading rate skill at a significantly greater rate than nonparticipating freshman education majors.

The second area of this study, involving Group C and Group D, shows varying results. Only one of the three hypotheses, as tested by the Mann-Whitney U Test, tended to be significant at the .05 level of confidence.

The comparison of gains in vocabulary skills indicated that at the .05 level Group D, the experimental group, did not tend to be significantly greater than Group C. Therefore, due to this lack of significance at the .05 level, it appeared hypothesis B-1 was not tenable. It should be noted

that greater gains in vocabulary did appear to result in favor of Group D but not at the predetermined .05 level.

The comparison of gains in comprehension indicated that at the .05 level Group D did not tend to be significantly greater than Group C. Therefore, due to this lack of significance at the .05 level, it appeared hypothesis B-2 was not tenable. Again, it should be noted that greater gains in comprehension appear to result in favor of Group D but not at the predetermined .05 level.

The comparison of gains in reading rate indicated that at the .05 level Group D did tend to gain significantly greater than Group C. Therefore, it appeared hypothesis B-3 was tenable. It should be noted that Group D appeared to have made gains significantly greater than Group C beyond the .0001 level. For the purpose of testing hypothesis B-3 the predetermined level of significance was .05.

From the results of this area of the investigation the following conclusions relative to the hypotheses under study were made:

1. It was concluded that undergraduate students did not tend to make significantly greater gains (.05) in vocabulary skills under the self-help approach when compared to gains made by undergraduates participating in the traditional reading improvement program. There does appear to be a possible tendency for greater gain by Group D but not approaching the .05 level.

2. It was concluded that undergraduate students did not tend to make significantly greater gains (.05) in comprehension skills under the self-help approach when compared to gains made by undergraduates participating in the traditional reading improvement program. There does appear to be a possible tendency for greater gain by Group D but not approaching the .05 level. It should be noted that comprehension gains favoring Group D was at a much higher level than vocabulary gains favoring this group.
3. It was concluded that undergraduate students did tend to make significantly greater gains (.05) in reading rate under the self-help approach when compared to gains made by undergraduates participating in the traditional reading improvement program. The results indicate a significance beyond .0001 level, though the hypothesis relates only to the .05 level.
4. It was concluded that the reading skill registering the greatest gain as a result of the reading improvement program was that of reading rate: the next greatest increase was in comprehension and the least gain, in both parts of the study, was vocabulary.

The results of this investigation are only in partial agreement with studies reported in Chapter II. The results

of studies by Ray (47) and Stebens (60) tend to be generally confirmed by findings of this investigation, regarding gains resulting from successful completion of the Oklahoma State University Reading Improvement Program.

The results of this investigation tend to indicate the reading improvement program of Oklahoma State University is effective in aiding the further development of reading skills for those students participating. This is also supported by findings reported by Ray (47) and Stebens (60) in their studies.

It is to be noted that those students participating in the self-help approach (Group D) appeared to do significantly better in reading rate development. Also, though Group D did not appear to make gains significantly greater than those of Group C (the control group) in vocabulary and comprehension, the results seem to show a tendency for Group D to make somewhat greater gains in these areas. Therefore, indications seem to exist that students may tend to do significantly better in reading rate development under a self-help approach and their development in vocabulary and comprehension skills does not appear to be adversely effected by such an approach.

Maxwell (33) reports a wide acceptance of a similar program at the University of Maryland. Spache (58), though not finding a significant difference in gains between his control and experimental self-help groups, concluded that students in the self-help approach at the University of

Florida were not slighted by such a program and indicates plans to continue such a program.

Based upon the results of this study, those mentioned above and others listed in Chapter II, indications would seem to exist that a self-help approach might profitably be utilized at Oklahoma State University.

Recommendations

A continuing program of evaluation should be promoted and maintained in order to better serve the needs of students. This investigation suggests the need for further research in college reading training in the following areas.

1. Studies designed to determine the importance of student motivation to success in the reading program.
2. Studies designed to improve the significance of gains in the area of vocabulary.
3. Studies designed to examine why reading rate improves as significantly as is indicated.
4. Studies to determine the significance of gains in reading skills between sexes at the college level.
5. Studies designed to determine the relative significance of gains made by students of differing initial performance levels.
6. Studies designed to determine the relative significance of gains made by students from the various colleges.

7. Studies designed to determine the relative significance of gains made by students of the various academic classifications.

It is hoped the results of this study will be of service in a continuing evaluation of the current reading improvement program at Oklahoma State University and may aid in determining possible direction of the program in the future.

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APPENDIX A

ATTENDANCE RECORDS FOR GROUP C AND GROUP D

ATTENDANCE RECORDS
GROUP C AND GROUP D

Hours Attended Group C*		
24	24	28
27	23	25
29	25	26
27	23	26
27	24	29
22	19	26
27	22	24
22	28	25
29	26	25
19	27	28
30	27	27
19	20	27
26	21	28
21	30	20
24	25	25
23	27	29
21	4	27
15	27	28
28	26	24
20	22	Total = 1675
18	27	
24	26	
25	6	
27	24	
24	27	

Average hours attended = 24.275

Group C range = 26

Hours Attended Group D		
28	12	28
20	23	25
24	29	16
26	24	20
24	27	27
28	26	25
29	18	29
26	18	26
24	13	27
26	24	21
26	20	31
26	30	32
30	29	10
17	25	23
16	16	23
25	15	23
8	16	25
28	30	16
11	30	19
15	18	20
14	17	32
14	30	Total = 1624
25	36	
22	14	
34	20	

Average hours attended = 22.873

Group D range = 28

*Two students attendance records not available.

APPENDIX B

DISTRIBUTION OF TEST SCORES FOR GROUP A, GROUP B, GROUP C AND GROUP D

TABLE B-I

DISTRIBUTION OF PRE-TEST AND POST-TEST RAW SCORES, GROUP A

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
1	38	36	279	39	40	309
2	42	42	327	40	50	287
3	30	38	188	35	16	262
4	47	60	413	55	66	491
5	28	30	279	31	38	327
6	25	38	379	31	46	371
7	52	50	327	46	50	371
8	35	46	368	34	46	318
9	38	50	344	35	50	318
10	48	54	488	42	64	468
11	52	50	235	40	48	161
12	39	70	269	45	66	309
13	35	52	226	33	58	262
14	54	48	379	46	56	318
15	45	52	327	54	60	338
16	47	42	290	43	38	298
17	36	50	203	43	58	309
18	35	42	214	29	50	396
19	37	38	214	26	36	226
20	39	40	368	57	46	371
21	35	52	333	41	54	359
22	25	22	319	22	26	298
23	56	58	327	47	62	407
24	55	62	319	49	54	262
25	60	60	319	57	56	359
26	28	34	226	28	36	262
27	30	48	368	33	50	396
28	39	44	368	35	52	426
29	45	40	309	32	20	338
30	47	54	290	42	50	327
31	40	38	195	31	38	287
32	44	50	269	46	46	327
33	31	34	309	35	36	309
34	45	62	269	56	62	371
35	35	40	319	42	46	298
36	36	36	327	39	46	359
37	48	44	327	50	48	371
38	35	40	257	28	44	262

TABLE B-II

DISTRIBUTION OF PRE-TRAINING AND POST-TRAINING RAW SCORES, GROUP B

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
1	37	38	203	48	52	359
2	38	50	165	47	54	327
3	34	28	214	37	42	309
4	24	36	214	29	44	349
5	25	24	195	16	38	349
6	24	26	245	31	40	349
7	34	42	279	37	44	338
8	44	50	257	52	56	578
9	34	26	195	33	52	287
10	41	42	245	44	61	436
11	33	32	214	30	50	318
12	38	34	188	49	52	396
13	37	34	245	39	42	327
14	16	36	214	31	48	371
15	20	32	368	40	50	609
16	45	44	214	48	42	480
17	53	50	226	50	60	436
18	27	26	214	34	52	275
19	29	48	214	31	46	524
20	23	26	203	25	42	396
21	51	34	195	49	60	338
22	37	42	095	38	50	262
23	31	36	141	30	46	384
24	38	42	279	56	56	318
25	22	28	177	40	48	216
26	25	22	214	25	34	359
27	28	28	226	25	38	396
28	17	32	203	20	36	309
29	26	34	245	31	34	287
30	25	40	195	32	56	359
31	21	24	309	30	32	407
32	24	28	177	33	32	359
33	28	44	165	33	50	216
34	56	44	177	69	66	275
35	44	56	195	57	56	550
36	32	44	165	32	52	338
37	30	38	177	42	50	417
38	33	32	165	51	42	298

TABLE B-III

DISTRIBUTION OF PRE-TRAINING AND POST-TRAINING RAW SCORES, GROUP C

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
1	27	48	226	26	60	491
2	35	40	203	33	50	436
3	35	46	203	35	42	359
4	21	24	309	30	32	407
5	57	60	269	65	70	456
6	36	46	165	38	52	238
7	16	22	214	31	42	275
8	43	34	245	34	46	318
9	34	28	245	41	40	318
10	28	26	153	18	28	238
11	25	20	153	24	28	327
12	49	48	195	47	58	216
13	30	28	226	24	28	250
14	41	56	203	56	60	359
15	23	38	235	23	36	262
16	22	28	177	40	48	216
17	28	24	141	37	30	238
18	42	20	095	50	44	185
19	36	24	195	37	38	207
20	31	36	141	30	46	384
21	36	40	188	46	30	298
22	35	40	177	39	52	216
23	42	56	214	38	30	384
24	14	26	153	13	28	250
25	39	52	245	47	58	359
26	48	50	235	48	60	407
27	29	36	129	41	42	371
28	45	48	195	51	56	396
29	38	42	269	42	58	407
30	33	30	165	21	42	309
31	33	56	129	34	58	216
32	44	56	226	49	58	359
33	48	48	257	54	48	436
34	40	58	165	49	50	327
35	37	44	245	32	38	275
36	45	56	327	49	56	578
37	22	22	214	20	26	396
38	14	24	129	16	30	250
39	41	24	141	36	40	298
40	40	50	214	41	62	456
41	59	50	165	50	60	371
42	28	26	177	35	46	298
43	20	24	195	21	16	216
44	35	60	188	49	62	238
45	27	32	226	34	32	338

TABLE B-III (Continued)

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
46	27	28	195	32	36	207
47	37	34	245	39	42	327
48	34	30	165	35	38	407
49	17	32	299	19	30	327
50	37	38	203	48	52	359
51	44	40	188	48	58	396
52	38	50	165	47	54	327
53	12	22	141	23	30	226
54	22	24	165	24	28	318
55	25	26	141	26	28	349
56	27	24	106	31	30	262
57	25	38	226	29	52	407
58	28	36	117	30	36	238
59	36	46	177	41	44	226
60	22	28	141	20	20	349
61	21	36	269	21	54	327
62	23	16	195	21	32	250
63	30	38	177	42	50	417
64	31	36	141	29	36	226
65	28	24	226	29	36	298
66	53	50	235	58	50	436
67	22	36	129	21	30	185
68	23	48	177	21	40	226
69	30	34	226	31	46	226
70	40	48	309	51	60	480
71	13	12	177	16	24	275

TABLE B-IV

DISTRIBUTION OF PRE-TRAINING AND POST-TRAINING RAW SCORES, GROUP D

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
1	18	30	165	23	40	338
2	19	24	226	25	52	359
3	09	42	165	27	48	359
4	22	42	177	22	34	338
5	09	22	153	19	34	349
6	31	30	188	27	38	371
7	34	44	165	41	60	238
8	18	36	188	21	34	238
9	31	48	257	45	58	359
10	35	30	203	50	40	298
11	16	20	148	12	22	309
12	46	38	141	42	44	250
13	23	30	177	33	44	371
14	20	32	195	25	48	275
15	40	24	165	45	58	407
16	41	52	235	41	56	359
17	45	48	245	43	34	550
18	34	36	299	38	40	426
19	43	38	141	58	56	384
20	38	42	203	41	42	396
21	24	24	226	23	40	396
22	48	38	129	52	53	318
23	52	54	226	49	54	396
24	56	36	214	42	46	491
25	35	42	188	38	48	371
26	17	22	165	17	24	327
27	16	24	117	19	40	298
28	38	32	214	37	44	491
29	53	58	203	58	62	456
30	21	38	129	28	48	298
31	46	54	203	55	64	417
32	25	46	327	38	48	396
33	49	54	188	50	56	275
34	58	62	195	73	64	639
35	26	48	257	29	46	384
36	37	38	235	37	46	396
37	26	30	195	19	42	309
38	25	26	188	21	32	207
39	40	44	153	38	52	275
40	38	42	279	43	62	468
41	39	54	195	49	60	537
42	45	46	379	58	58	524
43	18	22	245	31	30	384
44	27	38	188	30	50	380
45	46	34	245	60	58	426

TABLE B-IV (Continued)

Student	Nelson-Denny, Form B			Nelson-Denny, Form A		
	V	C	R	V	C	R
46	24	22	177	27	42	396
47	40	40	327	26	46	426
48	65	60	257	61	64	537
49	21	22	177	19	34	359
50	50	50	279	58	58	417
51	31	26	129	29	50	318
52	38	40	188	44	46	250
53	44	23	333	51	58	537
54	34	52	141	40	46	262
55	38	46	188	55	64	298
56	29	40	177	31	44	338
57	27	28	203	27	48	359
58	34	44	141	33	50	468
59	28	44	203	35	62	446
60	27	36	141	27	52	349
61	21	34	279	31	34	371
62	37	46	226	33	52	417
63	58	54	165	59	60	426
64	23	30	188	28	30	396
65	26	34	165	28	36	407
66	29	34	333	24	30	578
67	36	46	203	47	54	371
68	25	28	226	31	38	318
69	34	32	177	27	28	298
70	60	56	226	59	60	480
71	21	26	117	25	38	344

APPENDIX C

DAILY LOG SHEET USED TO RECORD ATTENDANCE OF GROUP D STUDENTS

LOG SHEET
EDUCATION 120

NAME _____

Sept. 30	to	Oct. 27	to
Oct. 3	to	Oct. 28	to
Oct. 4	to	Oct. 31	to
Oct. 5	to	Nov. 1	to
Oct. 6	to	Nov. 2	to
Oct. 7	to	Nov. 3	to
Oct. 10	to	Nov. 4	to
Oct. 11	to	Nov. 7	to
Oct. 12	to	Nov. 8	to
Oct. 13	to	Nov. 9	to
Oct. 14	to	Nov. 10	to
Oct. 17	to	FINAL TEST ON NOVEMBER 11	
Oct. 18	to	Please list dates and times	
Oct. 19	to	below for each make-up or	
Oct. 20	to	extra practice session.	
Oct. 21	to		
Oct. 24	to		
Oct. 25	to		
Oct. 26	to		

LOCAL ADDRESS _____

LOCAL TELEPHONE _____

NAME OF ADVISOR _____

APPENDIX D

STATISTICAL EQUATIONS USED IN THE ANALYSIS OF THE DATA

STATISTICAL EQUATIONS*

$$U = n_1 n_2 + \frac{n_1 (n_1 + 1)}{2} - R_1 \qquad \text{(Siegel)}$$

$$z = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\frac{(n_1)(n_2)(n_1 + n_2 + 1)}{12}}} \qquad \text{(Siegel)}$$

*Mann-Whitney U Program. (Ed Butler, Ph.D), Oklahoma State University Computer Center, Oklahoma State University, Stillwater, Oklahoma.

VITA

J. O. Miller, Jr.

Candidate for the Degree of

Doctor of Education

Dissertation: A COMPARISON OF A SELF-IMPROVEMENT AND TEACHER-ORIENTED APPROACH TO READING IMPROVEMENT AT THE COLLEGE AND UNIVERSITY LEVEL

Major Field: Higher Education

Biographical:

Personal Data: Born near Warsaw, Missouri, October 27, 1929, the son of Jacob O. and Mary C. Miller.

Education: Graduated from Kingsville High School, Kingsville, Missouri in 1947; received the Bachelor of Science in Education degree from Central Missouri State College, Warrensburg, Missouri in 1956 with a major in Physical Education; received the Master of Science in Education from Central Missouri State College, Warrensburg, Missouri with a major in School Administration, in 1959; completed requirements for the Doctor of Education degree in May, 1967.

Professional Experience: Taught elementary grades in Missouri, 1949-51; entered United States Air Force in 1951 and was honorably discharged in 1953; taught in secondary school at Clarksburg, Missouri, 1953-1955; employed as teacher, then Principal, then Superintendent of Schools at Calhoun Public Schools, Calhoun, Missouri, 1956-1962; employed as an Academic Advisor and Instructor at Central Missouri State College, Warrensburg, Missouri, 1962-1965; served as a graduate assistant at Oklahoma State University, Stillwater, Oklahoma, 1965-1967.

Member of International Reading Association, Phi Delta Kappa and Missouri State Teachers Association.