THE READING ABILITIES OF STUDENTS IN METHODS OF STUDY CLASSES

by

MILDRED BENSON STEPHENS

A THESIS

submitted to

OREGON STATE COLLEGE

in partial fulfillment of
the requirements for the
degree of

MASTER OF SCIENCE

June 1950

APPROVED:

[redacted]

Professor of Educational Psychology

In Charge of Major

[redacted]

Chairman of School Graduate Committee and

Dean of School of Education

[redacted]

Dean of Graduate School

Margaret Barber, Typist

ACKNOWLEDGMENTS

The writer wishes to make grateful acknowledgment to Dr. Herbert R. Laslett for his indispensable assistance and direction in the preparation of this thesis; to Dr. Robert R. Reichart, Professor Raymond Hatch, and Mr. Gilbert C. McFadden for their generous cooperation in the gathering of the data for the thesis.

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CHAPTER I

INTRODUCTION

The purposes of this thesis were those of presenting (a) a brief survey of the vast amount of material which has been printed about the subject of reading and reading skill and (b) some data which would show the effect of four "Methods of Study" classes taught by three different instructors by the classroom method and without laboratory periods upon the reading skills of the members of these classes at the college level.

The members of these classes were practically all freshmen who were advised by their counselors in the various schools in Oregon State College to take the course in "Methods of Study" because they had not been doing satisfactory college work for any of several reasons. Some of them were low in scholastic aptitude, but others were average or even superior in this trait. Some of them, according to their statements of their weekly distributions of time, spent long hours in study; but it was not effective study. Most of them had not had to study in high school and, when faced with the necessity of studying, became emotional or resentful and sought short-cuts rather than

knowledge. Most of them were doubtful of their own abilities to make good scholastically, although they often hid this under an exterior of indifference or bravado. When shown better methods of study and when given encouragement, most of them responded well. The most of those who did not were still somewhat hysterially self-doubtful.

The method of the original part of the study was that of giving to these students the Co-operative Reading Test C-2, Form T, in three of the classes and the Nelson-Denny Reading Test in the fourth class, first, within the first two weeks of the winter quarter, 1948-1949 and, second, within the last two weeks of the same quarter to find what changes -- if any -- had occurred in the reading skills of the members of these classes under the conditions under which they were taught; i.e., classroom work only without any laboratory periods. The Nelson-Denny Test was used with the one class because the instructor had already collected considerable data on similar classes from other quarters and desired to add these data to the others that he had. In order that the scores from the two kinds of test might be compared, the test scores were converted into percentile scores according to the tables supplied with each of these tests and based on the nation-wide results of the administration of these tests. While the percentile scores may not be quite as accurate as the test scores

themselves, it was believed that they were accurate enough for the purposes of this thesis. Reading scores are, at best, only the most satisfactory approximations of actual reading skill currently available. It was hoped that any errors of over-estimation and under-estimation in the percentile scores would, more or less, cancel each other out. Test results on both administrations of both tests were obtained from 104 students, except for the rate or speed of reading. The Nelson-Denny Reading Test does not yield a rate of reading score, with the result that only eighty scores were available on this phase of reading skill. The tests were administered and scored according to the instructions in the test manuals.

Chapter II contains a brief review of the material which has been published on the subject of reading and reading skill.

CHAPTER II

A SUMMARY OF STUDIES ON READING

The United States Office of Education estimated that there were ten million illiterates in this country in 1948. An illiterate was defined as a person fourteen or more years of age who cannot read with the skill of an average elementary school pupil who has completed the fourth grade. In addition to these acknowledged illiterates, there must be many additional thousands or hundreds of thousands who have passed through the fourth, sixth, or even eighth grades who could not and cannot now read well enough to meet the low requirements of literacy. These people are to be found not only in the hill sections of the Old South, but in the foreign-language areas of Texas, New Mexico, and California among the Mexicans and Indians and in the poorer sections of many cities, again most often in the foreign-language areas. Illiteracy, however, is not limited to the foreign-language groups by any means.

Not only in the large cities, but in the towns, villages and rural areas, truants are absent from school so frequently and for such long periods that they might almost as well not attend at all. Sometimes, it would seem, their absences are welcomed by the school authorities; and this is understandable. The solution of this problem seems not

to lie in the current trend of passing more laws to be added to those already ignored, nor to require longer attendance at school of those who do attend, nor to lower the requirements for graduation beyond their already low level in order that all who attend school may be graduated. The solution which appeals to the writer would be the offering of wide and varied educational opportunities to those who will appreciate and profit from them and to release the others from all educational requirements after every reasonable effort has been made to help them adjust socially, academically, and economically to the schools, with the idea that they become employed as soon as possible or achieve such other fates as they will achieve sooner or later, as the case may be. Admitting that this is, for the moment, educational heresy, there is little advantage in ignoring the facts of truancy, indifference, or antagonism to a considerable amount of what the schools are seeking to conform to nor the educational or social "principles" which are currently spoken and written -- and less often practiced. Officers of the juvenile courts do enter not only high schools but elementary schools to apprehend their suspected or known delinquents. Children do run away from home to avoid school or to get away from home and for other reasons. Girls do deliberately become pregnant in order to get away from home, or to get out of

school and, they hope, into homes of their own. In other words, it is the belief of this writer that education cannot be forced upon people unwilling to receive it. Only when people are willing to work for an education and when they understand its values can they become really educated. Many who refused an education earlier seek it later.

Similarly, many, but not all, illiterates are educable. Where illiteracy is the result of lack of opportunity or of poor educational customs, people who have come to realize the values of education often seize proffered opportunities eagerly. This is shown not only by the success of the so-called "moonlight schools" of Kentucky (43, preface) and Tennessee and the church schools in many outlying areas, but in the educational programs of the Armed Services during both World Wars I and II. The former was largely at the company level, and was highly or only moderately successful according to the initiative of the company commander. The latter has been written up, somewhat glowingly, by Witty (57, p.1-3) as follows:

"In order to satisfy (57, p.1) the need for manpower in the Armed Forces, it became necessary to induct large numbers of illiterate and non-English-speaking men. Special training units were organized by the Army to give these men the academic training they required as soldiers. Fourth-grade level in reading and other academic subjects

was the standard believed essential. This level was to be acquired in twelve weeks or less.

"These men (57, p.1) who were illiterates came from all parts of the country. Our large cities had their representatives out of the foreign colonies. Some came from areas where educational opportunities were good or even excellent and some came from parts of the country where educational opportunities were very meager. Typically, these men in special training units were eager to learn. Experience had shown them the disadvantage of being unable to read. More than anything else, they wanted to be able to read letters from home and to write letters home."

"The teachers (57, p.2) in these special training units were enlisted men. Most of them had had considerable professional and academic training, and many had been teachers in either public schools or colleges. This program of special training demonstrated that the mass of American youth are educable. Moreover, it showed that illiteracy need not continue as a great social problem in America."

The purpose of learning to read is the gaining of information from the printed page as a quicker means of gaining knowledge and as a means of gaining wider knowledge than could be gained by direct personal experience and especially by trial-and-error alone. It is feared

that not only numerous pupils, but some teachers, have lost sight of this purpose and that small refinements and adornments have come to be regarded as the principal purposes of reading.

Reading (6, p.26) is not a single skill but is a group of skills. It involves not only the use of the eyes, but of the occipital and the word-association areas of the brain. If it is to be at all effective, it must be an active form of inquiry by the reader and not a passive process.

Reading may be divided into oral and silent reading. This thesis will contain an examination of the latter only, leaving the former to the teachers of that subject from the elementary school levels to the speech, dramatics, and debate instructors in the colleges and the professional schools. It is, however, the belief of this writer that silent reading skills would be greater if there were more practice in oral reading in both the elementary and the high schools because oral reading exposes many of the disabilities of pupils in silent reading; for example, knowledge of the pronunciation and the meanings of sentences. Reading ability may also be divided into rate of reading and comprehension from reading. While each is important, much more has been written about rate than about comprehension, possibly because it

is the easier to write about. In some of the writings, too much emphasis has been placed on the importance of rate or on speed of reading and not enough on comprehension. The most satisfactory balance (51, p.94) between the two will vary with the individual reader, with the purpose of each act of reading, and with the difficulty of the material -- all of this in addition to the reader's general skill in reading, the quality of his attention, his intelligence, and his interest in the particular selection of material.

There is (51, p.158) an intimate relationship between speed and comprehension in reading when the textual material is within the reader's educative experience. Traxler (53, p.365) found evidence of a direct relation between rate of reading and speed of association with five groups of pupils. This relationship was positive and was large enough to be significant. If the slow reading is the result of slow speed of association, teachers should not utilize the usual methods to get the pupils to read more rapidly while, if the slow rate of association is the result of slow reading, effort should be made to speed up the reading. An individual (8, p.3-4) obviously does different kinds of reading under different circumstances. Much will depend on the effort of the reader in his reading and the effectiveness of this effort.

Patently, there are great individual differences in reading skill. The magazine editor or book reviewer at one extreme and the usual unskilled laborer at the other will illustrate this point. According to Brown (7, p.387-90), twelve per cent of 338 students entering a small college were able to read at only the ninth-grade level or below, twenty-three per cent were able to read at the tenth-grade level or below, and thirty-seven per cent were at the eleventh-grade level or below. Henry (24, p.72) concluded from his experience as a high school principal that one-third of the pupils in grades nine to twelve of our American high schools "cannot read on a fifth-grade level or write a coherent paragraph reasonably free from errors". Another investigator (58, p.114) found that forty-six per cent of the ninth-grade pupils in one school fell below the sixth-grade norms in reading ability. Center (58, p.114) reported that, of 1,000 boys and girls entering the ninth grade in a New York City high school, fifty-nine per cent were defeated before they started because of low reading ability. The test results placed them below the norms for the sixth grade. Three-fourths of these pupils came from homes in which a foreign language was spoken, but these children had lived in the United States all of their lives and had attended American schools. In a state-wide survey of reading ability in New

York (58, p.114) "it was found that two-fifths of the ninth-grade pupils, one-third of the tenth, one-fifth of the eleventh and one-tenth to one-third of the seniors fell below the standard ninth-grade performance on the Iowa Reading Examination. In certain small high schools, one senior in three was leaving high school incapable of reading at the ninth-grade level."

The mechanics of reading are widely known. The eyes move along the lines of print irregularly; that is, alternate movements and pauses or fixations. Only during the latter can the eyes apprehend the printed material. Studies have shown that the pauses occupy (52, p.10) about ninety-five per cent of the reading time.

While the visual pauses of slow readers are longer, the rate of movement of their eyes along the lines between pauses is also slower and less certain. With the faster readers, the pauses are shorter and the movements of the eyes are also quicker and more certain. With the faster readers, the number of words grasped during a pause; i.e., the recognition span, visual span, or eye-span, is usually, but not always, larger than the number of words grasped by poor readers. Very rapid readers (8, p.28) may make only three fixations along one line of print, but extremely few are able to achieve this rate. The return of the eyes from the end of one line to the beginning of the next line

is also faster and more certain in the better readers than in the poorer readers (19, p.693) almost without exception. The better readers' eyes move (34, p.86-7) forward over the lines with fewer backward movements or regressions to pick up words or ideas not understood than is the case with the poorer readers. This should not be understood as meaning that there should be no regressions among the better readers. If a word or an idea is not understood, the reader should go back and pick it up. The omission of a "no" or a "not", for example, makes a considerable change in the meaning of a sentence.

Because the better reader pays much more concentrated and effective attention to the material being read than does the less capable reader, he has fewer reasons for regressions and usually has longer recognition spans. He is likely to grasp a larger percentage of the ideas contained in and closely related to the material being read. He is not, usually, diverted (50, p.524) by daydreaming, wandering attention, self-pity, or worry over his performance. He is not so likely, as the poorer reader is, to be overcautious on the one hand or superficial on the other hand about interpreting what he is reading. He is more likely to make better selections of ideas to be remembered and to work them into a better outline or system of thought than the poorer reader is. The latter, often burdened with the

mechanics of reading through reading only half-heartedly or through poor reading habits, does not always grasp correctly the material presented, may miss much of it, and is likely to leave it in an unorganized little heap of ideas when he has read it. By trying to remember through sheer force even a relatively small number of unrelated ideas, he sets for himself a task that is rather hopeless and, sooner or later, he becomes tired of and discouraged by the effort put forth in comparison with the results accomplished. The still poorer readers who read only a few words at a time do not connect many of the words into ideas. It may be said that they cannot see the trees of ideas because they are lost in the woods of words.

The more intelligent readers are usually the better performers in the thinking part of the act of reading. They are not only more receptive to new ideas, but they are likely to be more systematic in both their reading and thinking and they have a greater wealth of ideas with which to compare, contrast, enlarge upon, modify, and illustrate the ideas obtained from the reading. They are usually better motivated, more eager for additional ideas, less patient with their own incorrect ideas, and more confident in their examinations and evaluations of the ideas of others. Thinking is as much a part of the act of reading as the movement of the eyes is and, certainly, a more

important part for the person whose senses are normal. Traxler (54, p.59-60) found correlations of .70 to .80 between intelligence and reading ability in a study of high school pupils. He found ability in reading to bear about the same relationship to subject-matter achievement as intelligence does. This was more true at the lower grade-levels than at the higher (54, p.59-60) grade-levels in which achievement grows in complexity and is dependent on a larger number of factors.

Much has been written about the value of skimming or very rapid reading. Much of this is mistaken or incorrect. When one is searching for specific ideas with which he is familiar or for material to be quoted, he should skim until he finds this material. When he is running through a book or a magazine article to determine that he does or does not care to read it, he should skim until he makes his decision. When one is familiar with a subject and picks up a new book on this subject to look for any new ideas it may contain, he may profitably skim except as he finds material which he wishes to examine more closely. To urge, however, that all reading by all readers should be of the skimming type or that skimming is the most superior type of reading is obviously fallacious. If one is reading relatively new material which promises to be valuable to him, he should be willing to study it; and

the rate of reading is relatively or completely unimportant or, one may say, this type of reading has its own scale of rates which is different from other scales in degree.

Much, perhaps too much, has been written about the causes of disability in reading. Without question, too little has been done about these disabilities in many cases. Since the first part of the reading-act depends upon the eyes, one may consider such ocular defects (15, p.282) (17, p.12) as myopia, presbyopia, cataracts, astigmatism, glaucoma, faults of the rods and cones or other defects of the retina within the eye; strabismus or cross-eyedness, nystagmus, and other defects of the eye musculature; and trachoma, conjunctivitis, and rhinitis, outside of the eyeballs, but affecting the use of the eyes. Myopia or near-sightedness, presbyopia or far-sightedness, astigmatism or the defect in which the lines of light from an object do not fall on the corresponding parts of the two eyes or fall unevenly upon the involved area of one or both eyes due to unevenness of the surfaces of the retinas or of the lenses or both in one or both eyes and resulting in unclear delineation of the object, can almost always be corrected by glasses. So can heterophoria or muscular ineffectiveness that causes the eyes not to operate as a single unit or to be under the

control of their user. Separation of the retina and the sclerotic coat so that the retinal coat hangs more or less perpendicularly can now be corrected by a relatively simple and quite safe surgical operation by an ocular specialist. The latter is also true of the correction of strabismus and of cataracts. Trachoma, an infectious disease of the eyelids which may result in blindness; conjunctivitis, or inflammation of the mucous membranes of the eyeball or the eyelids; and rhinitis -- or inflammation of the nasal passages, including the tear duct which may become closed, usually yield to medication by the specialist. Cloudiness of the ocular humors, or glaucoma, can sometimes be eliminated by withdrawal of the humors, but this is not yet a thoroughly safe or satisfactorily effective procedure. Ptosis of the eye, or partial or complete paralysis of the muscles which raise and lower the upper eyelids, can be partially overcome by surgical means to the extent that the "drooping" of the lid is not noticeable and does not interfere with sight nor cause emotional complications aroused by the reactions of others. Defects within the retinas are not yet amenable to correction except that which can be accomplished through glasses.

In recent years, inflammation of membranes at the rear of the eyeball and the adjacent socket have appeared

to make necessary the removal of numerous eyeballs. In earlier years, it appears that this inflammation spread -- in some cases -- to the optic nerves, with fatal results. Much more rarely, defects of the optic tract or of the visual area in the rear of the brain (occipital lobe) due to blows, high blood pressure, or cancer interfere with vision or preclude it entirely.

For some time (58, p.114), the attention of certain reading experts centered on muscle imbalance and fusion irregularity. A few investigators state that most poor readers, ninety per cent or more, were unable to read because of this condition. More thorough investigators (58, p.114) showed that this claim was untenable. It was found, in fact, that (58, p.114) there was about the same number of visual irregularities of these kinds in both good and poor reading ability groups.

Moreover, it has been clearly demonstrated (58, p.115) that most individuals cannot be classified accurately into "reading types". Few poor readers; for example, can be said to lack completely or even extremely such things as visual or verbal imagery, or powers of association, or to belong clearly to any other lucidly defined single "type". It is now generally conceded that the principle of "multiple causation" can be applied to most cases of poor reading. This simply means that many

factors contribute to poor reading, and that all of them must be studied if the needs of the poor reader are to be properly disclosed. One would be inclined, also, to question the assumption that one-third (58, p.116) of the secondary-school population can be characterized as non-verbal and dismissed as uneducable.

The effects of myopia, hyperopia, astigmatism, and heterophoria (21, p.120) on reading performance have been studied extensively. As these were found in a large number of both good and poor readers, they do not account for any great percentage of necessary reading disability. Since these difficulties are usually correctible by glasses, they cannot be considered as constant. The condition of marked visual imbalance which they bring about, is unquestionably a contributing factor to retardation in reading performance. In cases in which this muscle imbalance is highly pronounced, it produces deviations of retinal images sufficient to cause double or blurred vision. Such readers (21, p.115) must compensate for this condition by constant adjustment of the eyes in trying to bring about better focusing. This constant effort results in some fatigue, strain, general nervousness, and confusion in the individual. In conditions where the muscle balance is normal, the blending of the images on the proper retinal areas, or fusion, is nearly complete. Where the fusion is

less complete, the need for adjustment is greater and the greater is the probability of some retardation in reading ability or of the necessity of greater perseverance or will-power in order to accomplish the desired results.

One cannot, however, safely assume (21, p.115) that there may be perfect fusion of the two retinal areas at any reading distance even though the eyes have no muscular imbalance. Binocular vision (21, p.115) is dependent upon the image striking corresponding retinal points. The maculae or fusion area or area of clearest vision of one eye apparently must correspond, point for point, with the similar area of the other eye for best vision. The vertical meridians of the two eyes seemingly must everywhere correspond and the same relationship between the horizontal meridians must exist. Diplopia, or double vision, will result if the two images of an object fall on parts of the two retinas that do not correspond. There are (21, p.115) two ways of preventing double vision when this faulty condition of the eyes exists. These are (a) by forced fusion or (b) by mental suppression of one image -- except in cases in which the more valuable method of correction by glasses operates effectively.

Another group of popularly adhered to reading-defect causes that were studied with some care (20, p.17) (34, p.84) showed about the same percentages of right-handedness

and of left-handedness among readers of all abilities. Hand-preferences, on the whole, showed little significant relationship to the different abilities in reading among the several groups studied in the later researches. Eye preference, on the contrary, appeared to show a slight relationship. Among the reading-defect cases (34, p.84), there was a greater proportion of children who preferred the left eye in sighting and who showed right-hand dominance with left-eye dominance than is found in the population at large. Even this has, however, been questioned by some workers in this field (20, p.14-5).

It is obvious that poor motor control of the eyes impedes the progress of immature and unskilled readers. Readers (34, p.107-8) who cannot direct the eyes accurately to the printed words and maintain proper motor adjustment for a normal period of time usually have difficulty in attending to the visual symbols with sufficient persistence to form the necessary ideational associations. Such readers frequently lose their places while reading. They may skip words or lines. They often follow the text with their fingers in order to keep their places and, in paying so much attention to the mechanics of reading, may lose out on the content.

It would appear (20, p.19) (15, p.290-1) that visual defect of some sort or sorts is the most conspicuous

characteristic of the visual reversals groups thus far found. Visual reversal (34, p.105) (15, p.290-1) is the tendency to see the letter "p" as "q", "q" as "p", "b" as "d", "d" as "b", and the words "saw" as "was", "from" as "form", and similar errors. This reversal tendency (20, p.19) (45, p.488-9) is common, and instruction in the first grade should be designed to guide pupils to form not only consistent left-to-right eye-movements in perception of words, but to see the letters and words as they are. Sometimes the sliding of a pencil or ruler (35, p.69) along the text by the teacher serves to keep the pupil's eyes moving toward the right and also helps him to eliminate the reversal habit. Where earlier opinion was inclined to associate reading reversal and left-handedness, later studies (20, p.13-4) (34) have shown that left-handed children show no greater difficulty in reading in general and no greater tendency to make reversal errors than do right-handed children. Of those who make reversal errors, the percentage of left-handed children is (20, p.13-4) no greater than that in the population at large. The poorer reading of left-handed children, where it occurs, may be associated with disturbance in the word-center in the brain and may be considered as closely related to the stuttering which so often occurs when left-handed writers are forced to change themselves into

right-handed writers too rapidly and under improper emotional conditions.

An earlier and more elaborate formulization of this topic was written by Orton (37, p.1095-9) in which this tendency to reversal of letters was called "strephosymbolia". He found that it was not particularly associated with sub-normal intelligence, nor to local brain defect; but that children with this reading disability showed considerable ability in reading script as seen in a mirror and in producing mirror-writing. He believed this trait to be a physiological variant due to the persistent activity of the non-dominant cerebral hemisphere. He recommended kinaesthetic training and other forms of proper instruction in reading as corrective measures offering probable success in overcoming this reading defect.

Similarly, lack of precision in the motor control of speech may impede progress in reading. Articulatory speech defects due to cleft palate, partial paralysis, clumsy movements of the muscular mechanisms of speech, or failure to establish proper motor habits of speech -- usually through laziness or self-consciousness -- offer impediments to precise auditory discriminations of speech sounds and to the formation of good reading associations. Stuttering also presents an impediment to reading, either as a disruption in the motor aspects of silent reading

or in association with confusions and blockings in the word-association center of the brain. The reader often confuses words in reading which contain the confused sounds in speech. This was shown (27, p.528-38) in a study of the eye-movements of stutterers during both oral and silent reading. Photographic records were made of the eye-movements of fifteen stutterers and of non-stutterers while they were reading. Comparisons were made of the differences in measurements of these eye-movements. In oral reading, the stutterers showed more regressions per line, more fixation pauses per line, and about the same average duration of fixation as did normal speakers. Stutterers showed greater differences in eye-movements during oral and silent reading than did the normal speakers. Disturbance in eye-movements coincident with speech mechanism disturbances were found. This fact suggests a general disequilibration of the nervous system as a whole during stuttering.

The child must be able to understand (34, p.96) and use the speech symbols which are to be associated with the printed symbols. The factors which affect speech adversely undoubtedly affect reading (15, p.286-7) in a similar manner by presenting a confusion in the sounds of words to be associated with the printed symbols. The child, therefore, is likely to develop confusions in the

mechanics of reading both in terms of inner speech and of comprehension which would not have been present if his articulation had been more accurate (35, p.91).

Examples of faulty articulation can be shown most obviously in the patois of the South in such words as "crick" for "creek", "far" for "fire", "fur" for "for", and in the exaggerated speech of some radio broadcasters who make "news" into "nee-uze" and "Tuesday" into "Chee-uze-day". Speech handicaps make for insecurity rather than for success and for pleasure in beginning reading. Lisping and other defects of articulation are also frequent causes of trouble in this connection. Certain words which have the same endings but are pronounced differently cause confusion in the minds of all beginning readers. To the pupils who are "word-minded", they cause much less trouble than they do to pupils who are not sensitive to word-structure, word-meaning, and pronunciation and who do not retain words well after they have been introduced to them once or even several times. Such a set of words would be "bough", "cough", "dough", "rough", and "slough" (a backwater). The change of "pronounce" to "pronunciation" has confused numerous pupils and older people, as well.

Auditory impressions of words (34, p.95-6) consist not only of sound qualities, but also of the temporal

distribution of sounds in a pattern. Words are articulated in sequences of sounds, for example, "stop" and "spot" are different, not in their sound composition but in the temporal sequence of sounds in the word pattern. A child must be able to differentiate the sequence of sounds as well as the spatial pattern of the letters in his vision before he can develop a phonetic system by which he can read strange or unfamiliar words. Other difficulties (34, p.106-7) related to the auditory aspects of reading are:

1. Lack of auditory acuity due to partial deafness may impede progress in reading. The child omits endings and non-stressed syllables because he does not hear them. He confuses some of the consonant and vowel sounds.

2. Lack of precision in the discrimination of speech sounds may impede progress in reading. The difficulty in discrimination may be due to a defect in the auditory mechanism for some ranges of pitches and sound qualities. The difficulty is often associated with articulatory speech defects. When the child confuses words composed of similar sounds, such as "send" and "sand", or "bit" and "bet", he has difficulty in forming visual-auditory associations.

3. Lack of precision in the discrimination of the temporal sequence of sounds may impede progress in

reading. The difficulty in the discrimination of sequence of sounds, such as "party" for "pottery" and "fowl" for "follow", may result from inability to discriminate the separate sounds of the pattern.

Where a beginning writer tends (20, p.13-4) to write in a mirrorwise manner or to write from right to left, perceptual habits may be set up which interfere with the normal development of reading skills and tend to produce reversal errors. This kind of writing-reading situation is usually readily correctible if enough of the correct kind of individual attention can be given to the pupil. The difficulty lies within the central nervous system rather than in the sense organs or the neuro-muscular system.

The various kinds of causes of reading deficiency and the importance of each in causing the whole of the deficiency (44, p.493) have been discussed at considerable length in the literature, but have been discussed mostly from limited points of view and backgrounds. It was thought at one time that poor mental ability was the foremost cause of reading disability, but children with high intelligence quotients frequently have marked reading difficulties. Nevertheless, it is obvious that people of limited intelligence must be limited in their ability to read because they do not have the ability to handle many

ideas rapidly or the mental power to understand complex or abstract ideas at all.

It is well known that (44, p.493-4) continued or lengthy absences on the part of the child at the initial stages of learning or at any time in the early school years when the fundamentals of education are being taught may cause deficiencies in the material being learned. By the time such a child has returned to the class, the rest of the children have gone forward and there is a real gap between the place at which he left off and the place at which he begins again. If such children are bright and industrious, they will practice by themselves until they have gained the skills needed to bring them up to class average or better but, if they are timid, confused, or lazy, they should be tutored over the material missed.

Sometimes, a child who enters school does not have a mental age equal to his chronological age. If a child is not at least six years (44, p.494) of age mentally, he is not ready to begin reading because he does not see the similarities and differences which are needed in the recognition and the use of the symbols that make up reading. If the child stumbles along in his reading, memorizing parrot-fashion and with no understanding of what he is doing, there is soon too much for him to remember and he begins to make confusions that take a long time to

eradicate.

The subject of individual differences plays an additional large part in learning to read. Not all pupils progress at the same rate, and some need more time and more repetitions than others. When vocabulary is presented at too rapid a rate and without mastery, many children rely on guessing, with its attendant confusion and worry. Since, in every class, the needs of the children vary, the teacher should have at her disposal all valuable personnel records which will enable her to interpret the pupils' abilities. At whatever grade the difficulty is discovered, some attempt to correct it should be made. The reading problem (44, p.493) is an all-school problem. Reading is a phase of thinking, not (44, p.496) an isolated subject.

Some of the personality and emotional factors (34, p.110) that hinder progress in reading are attentional instability, resistance to reading, fear, timidity, embarrassment, and withdrawal. In some cases, emotional factors may be due to poor habit-training or to constitutional instability; in other cases, the emotional factors may result directly from the failure to learn to read well in comparison with the other pupils in the grades in which the pupils are located. These may aggravate or increase each other; for example, it has been shown (50, p.526)

that emotional maladjustment, especially emotional reaction to the reading situation, may be caused by reading disability. Non-readers usually show such an emotional reaction, but so do poor readers who have no actual physiological disabilities. Sometimes the failure to improve in reading ability in response to specific remedial techniques, on the parts of children who do not reason quickly, is a symptom of underlying emotional illness. An investigation of the emotional backgrounds (33, p.271) of thirty normally intelligent children with reading difficulties showed that one-third of the children had overly hostile mothers and another third had mothers who were markedly tense, critical, and coercive in their attitudes. Miscellaneous emotional problems were found in the other one-third. The reading of an occasional child may be affected by general emotional conditions, but the emotions of children are usually attached to specific situations and the fact that a child may be upset, discouraged, confused, or rebellious in one activity does not necessarily make it impossible for him to delight in another. The only successful way to remove (15, p.284) emotional blocking that interferes with reading is to provide the child with a carefully graded and well-motivated program in reading.

Parents often are blamed for the poor attitudes

(15, p.284) which children exhibit. A few teachers take a gossipy delight in pointing out that the child is not disciplined at home and that his inattention in school or his attentional flightiness comes from this source. The school (13, p.396) should, if possible, identify early those children likely to fail in reading, from any cause, and provide them with programs suited to their needs and with trained teachers to carry out the programs. This applies to the fearful or the timid child, the child who is easily and frequently embarrassed, and the child who withdraws into himself at the slightest provocation. Before the child can make much progress in reading, he must be taught to overcome his emotional difficulties. The training in the two should go hand-in-hand rather than separately, but the greater early emphasis should be on the correction of the emotional disability. The extent of the influence of personality factors upon success or failure in reading is still not clearly understood, but it is an important factor and should be considered in any well-balanced instructional program in reading. The establishment (3, p.125) of good emotional relationships in reading programs which have been successful may account for much of the success which has been attributed to the methodology in the instruction in the act of reading.

In oral reading (45, p.158), teachers are not only

concerned with the eye-movement habits but also with the vocalization habits. This habit of making adequate vocalization pauses between word groups in oral reading so as to allow time for the eye and mind to recognize the next word group is exceedingly important in reading in the primary grades. Undoubtedly the development of rhythmical and fluent oral reading greatly aids the building of proper eye-movement habits in the primary stages. The teacher, however, should not get (45, p.483) the misconception that the span of recognition for a single eye-pause is the same length as the meaning unit grasped by the mind and uttered by the voice. The child (45, p.483) who reads right on without regard for commas or periods is, obviously, not giving proper attention to the meaning of the reading matter. The best method for the prevention or the correction of this tendency is attention to the thought of the material being read and reasonable stress on the natural expression of the meaning rather than a dogged and unthoughtful determination to read what has to be read and get it over with or undue emphasis on oral reading or "elocution" as the end to be achieved. Tiffin found (48, p.430-1) that although silent reading and oral reading are recognized as being essentially different

processes, many clinicians make use of oral reading as a diagnostic tool in the treatment of poor silent reading. Poor silent readers are also inferior in oral reading, and make essentially the same kinds of errors in both silent and oral reading. These are, principally, vocalizing to oneself and non-interpretative reading.

A slow (15, p.293) silent-reading rate may result from vocalization or lip movements carried over from oral reading, if the two are not carefully separated in practice. In silent reading (38, p.55), one is usually unconscious of physical activity in the throat or vocal cords though one may be aware that his lips are moving as though to form the words for oral reading if this is actually the case. This phenomenon is known by various names -- inner speech, vocalization or, when more obvious, as lip movement. When one considers the length of the period which elapses before a child enters school and the extent to which he is bound to speak and often to read aloud after he has entered, it is not surprising that his vocal apparatus is likely to respond as though he were going to say the words aloud. There are, thus, several reasons for the phenomenon of vocalization. Even with skilled silent readers, vocalization or even explosive speech may occur under conditions of intense concentration of attention, excitement, or emotion. Teachers would do

well to remember that pronounced habitual inner speech tends to retard the rate of silent reading and that experiments (20) (38, p.55) have shown that children can learn to read almost from their first beginnings without obvious articulatory responses. In attempting (38, p.55) to reduce inner speech, however, the teacher should avoid overemphasis of the repression of this activity in order to avoid mental confusion and worry on the parts of the young readers.

After all, even silent reading is talking to oneself. Vocalization cannot be completely eliminated in reading. It can only be reduced, as shown by experiments involving the use of galvanometric contacts placed on the throat over the larynx. These experiments show that activity occurs in the larynx in even the most rapid silent reading.

Similarly, there is activity of the tongue during silent reading. This was shown by the filling of the mouths of several experimental human subjects with small balloons connected with pneumographs which were, in turn, connected with kymograph recording drums. From a study of these records, it was concluded that involuntary tongue movements are very common, if not always present, during silent reading (42, p.386). Similarly, thinking is talking to oneself and here, too, vocalization can be reduced

to a desirable minimum but never eliminated. Very important (38, p.55) is the improvement of reading through the minimizing or elimination of certain accompanying undesirable habits other than vocalization -- lip-movement, head-movement, finger-pointing, wandering attention, eye-strain, and other signs of bodily fatigue.

The most (15, p.293) (34, p.110) prevalent condition among the poor readers in the elementary school, however, is chronic inattention. Mind-wandering (8, p.2) is one of the worst enemies of effective reading. The teacher should make a careful study of her pupils and prepare a chart with notes upon these undesirable habits which tend so much to retard reading progress. The teacher's personal interest, sympathy, and watchfulness can do much to decrease or eliminate these obviously poor techniques in reading.

According to Monroe (34, p.18), no other factor which was studied affected reading ability among beginning readers as much as sex. Her figures imply that there is something about a boy which makes him nine times as likely as a girl to fail in reading. It may be surmised that the greater adaptability and willingness to please of girls accounts for a large part, if not all, of this difference, if it is a real and widespread difference.

In many individuals (34, p.99-100) (32, p.285-6),

reading disability is the result of poor vocabulary or of difficulty in combining words into meaningful relationships. Some children possess vocabularies so limited that they cannot grasp the meanings of the material being read; others who have adequate vocabularies are so poorly trained that they are unable to follow the organization of the relationships of the words read. The sentences are, therefore, meaningless to them. The first group of children cannot utilize context in giving cues to words since their vocabularies are too meager to suggest possibilities for the unknown words. The second group of children whose facility in the organization of language is badly limited may become confused in reading even though they possess adequate vocabularies. One of the important reading habits to develop (22, p.51) is an acquisitive attitude toward vocabulary.

The role of concepts in reading ability was studied by Murphy (36, p.21) by comparison of the concepts of ten good and ten poor readers in completeness, organization, clarity, and accuracy. A definite relationship was found between reading ability and the last three of these, but not between reading ability and completeness or richness of concepts. Murphy believed the apparent lack of relationship was due to his technique rather than to a real absence of relationship.

There is no easy (12, p.338) road to the acquisition of vocabulary. Anyone who has studied a foreign language knows that few words are learned casually. The only sure way of learning a word is to isolate it, analyze it, study it, use it, and occasionally review it. Such drill can sometimes be made interesting, sometimes not. If it can be, so much the better; but the sugar-coating is not essential. In the lower school grades, a drill method is sometimes used because the teachers know that the children must know the words very thoroughly; but, in grade after grade, many teachers avoid word drill -- and all other drill -- merely because it appears to be monotonous.

Usually a child (15, p.278) is said to have a "specific" reading disability or to be seriously retarded in reading when his reading achievement is a year or more below his mental age. Dull children cannot work up to grade standards when they are mentally immature for their grades, yet any child may be expected to do as well as his mental age allows. Of each four children (15, p.278) falling behind in reading, however, one is likely to be of normal or superior mental age for his grade.

In learning to read (34, p.109), over-emphasis on speed of reading may develop habits which impede progress in reading. The child may become breathless and excited, and reading errors of all kinds may increase, particularly

omissions of sounds and words. Mannerisms (34, p.109) to gain time appear, such as clearing the throat between words, inserting "ah", repeating portions of sentences before hard words while the words are studied under cover of the repetition. Many substitutions (34, p.109) and illogical words, guessed hurriedly from context, appear. The child fails to give an accurate account of the content after reading. Over-emphasis on (34, p.109) some methods of word-recognition, too, may develop habits which impede progress in reading. Overstress of contextual cues (34, p.109) to new words sometimes produces improvised reading or picture reading, substitutions, additions of words, and omissions of words. Too great emphasis on some systems of phonetic analysis, such as explosive sounding or "guh" for "g", "puh" for "p", prevents sound-blending. Phonetic systems of (34, p.109) rhyming, such as "cat", "hat", "sat", may stimulate reversals if the child looks first at the ending to "identify the family" and then makes a regressive movement to the beginning of the word; but both of these are easily corrected by an alert teacher.

There is no one best way (15, p.1) to teach reading. Despite a large number of publications on the teaching of reading -- professional books, teachers' manuals, national committee reports, and research studies -- no one has yet discovered a definite series of steps which a teacher may

follow with the assurance that all pupils will grow in reading ability in the most efficient manner. It is (14, p.1) unlikely that research will ever discover a single method which will be the most efficient one for all pupils and all teachers. Each teacher (44, p.496) must have a number and variety of procedures to use with each pupil or group that is learning to read. As the attention changes, so must the ways of instructing the pupil change. The teacher should choose suitable material for individual pupils and take the responsibility for having variety among her selections so that their interest will, if possible, be maintained. If the teacher has the pupil's interest, she will give him encouragement more effectively, and make the experience of learning to read a happy one; but, just as one cannot (1, p.89) improve his tennis game by playing only against opponents he can readily beat, so one cannot improve his skill in reading unless he works on something that taxes his effort and demands new resources. The balance between building self-confidence and better reading habits is a very real one which requires sensitiveness on the part of the teacher in order that she may know when to encourage the child with familiar material and when to urge him forward with new. For older readers (1, p.1), it follows that in proportion as the great books have fallen from their traditional places as major sources

of learning, it has become less and less possible to teach students how to read. One cannot teach them how to read well if, for the most part, they are not called upon to use their skill in its highest forms.

From time to time (59, p.86) (5, p.402), various phonetic methods of teaching reading have been advocated for use with poor readers. Phonetic methods have been made basic in the highly systematized method developed by Monroe and used in her carefully planned therapeutic measures for the correction of reading disabilities at the Institute of Juvenile Research in Chicago and, later, in her work with public-school children. The theoretical (59, p.86) basis of this method is different from that of Fernald, but the practice is somewhat similar. In Monroe's method, word elements are blended into word-wholes in a presentation of simple phonetic elements which aim to help the child to perceive and to pronounce words. After a basic vocabulary has been acquired, the children read from primers or first readers. The first step involves teaching the elementary sounds from cards on which the pictures of several objects beginning with the same consonant or vowel are mounted. Words (59, p.86-7) are usually selected which contain a vowel immediately after the consonant. By repeating these exercises, the child finally masters the consonants. Similarly, letter-object

cards, devised to present the vowels, are introduced. After the elementary letter sounds are acquired, drills are used to foster discrimination of like and unlike consonants and vowel sounds. Later, like and unlike sounds of increasing degrees of difficulty are slowly introduced. When unusual difficulty is experienced by a child in retaining these associations, manual tracing is introduced as a reinforcement.

About 1920 (59, p.84-5) the kinaesthetic method or manual-tracing method was widely recognized and recommended for its help in eliminating the difficulties of children who, after several years of school experience, could recognize few or no words. Fernald and Keller (18, p.355-77) were able to teach many seemingly hopeless non-readers to read by having them trace with their fingers the various letters and the commonest words as they were cut out of sandpaper or sheet-metal, corduroy and other kinds of cloth, or painted on glass or wood, raised in relief or carved into panels of wood by woodcarving, and many similar ingenious devices. Kinaesthetic (15, p.180) (34, p.116) methods usually involve elaborate exercises and devices, such as tracing, writing on the blackboard with the eyes closed as the teacher guides the hand; writing in the air with the eyes closed; and other dramatic procedures.

It seems to be necessary (18, p.376) for the seriously handicapped non-reader to develop certain kinaesthetic backgrounds before he can perceive the visual sensations for which the printed words form the stimulus. Even the associations between the spoken and the printed word seem not to be fixed without the kinaesthetic links. In all but one of the six cases reported (18, p.355), progress took place in four distinct stages: (a) learning to write by tracing accompanied by articulation; (b) associating the written with the printed word during which stage the child comes to recognize words which have been written by the teacher and traced and pronounced by the child; (c) writing a new word from memory after looking at the printed copy and repeating it to himself. In this stage, the child may be unable to recognize new words if he has not traced or written them but rarely fails if he has; and (d) the ability to pronounce new words if they resemble words already learned. The end of this stage was normal ability to read. Progress under this method varied directly with intelligence for these confirmed non-readers. The more intelligent required less time spent in tracing. The motor tendency was obvious even after reading skill was acquired, and the children continued to make slight movements of the hands and to articulate when they came to difficult words.

In teaching the non-verbal children to read by the kinaesthetic method, the procedure with the individual involved the following steps: The child (59) mentioned a word that he wanted to learn. This word was written in large script on cardboard, or cut out of varying kinds of material. The child looked at the word, said it, and traced it many times. When he was sure that he had learned the word, he attempted to write it -- saying the syllables as he wrote. The model was not before him at this time. After he had mastered a few words, the first word was then shown to him in print. If, at this point he failed to recognize it, he repeated the entire process. By such repetitions, he mastered his first few words.

When the child requested that he be allowed to learn sentences, he was taught the words of a sentence as before and thereafter wrote the sentence from memory as many times as he wished. Sentences acquired in this manner were then printed on cardboard or were typed. These sentences and others were read by the child and the words in these sentences were repeated in various other sentence forms from day to day. Later, the child selected a book which he wished to read. Before he read a paragraph, each word which he had already learned was exposed by means of a slit-cardboard device and, if he could not read the word, it was pronounced for him. He said and wrote the

word without looking at the copy. If he experienced difficulty or confusion in writing the word after he had looked at it in print, he was again given the script form from which he learned it in his first contacts with the word.

After the words in the new paragraph were mastered, the slits were adjusted to include phrases. Phrases were exposed repeatedly until they were recognized quickly. There, the exposure time was decreased until it was insufficient for the distinct reading of each word. An entire paragraph was then presented. The child was told to read the paragraph to himself and to describe its contents. Finally, he was encouraged to read to himself. Unusual success in teaching reading in this way was reported by Fernald and her students.

While Gates (20) and Witty (58) have shown that deaf children can learn to read without using these basic kinaesthetic-oral devices, there is a great deal of difference in teaching reading to definitely established non-readers and to deaf children. These writers claim that these and other examples of learning wherein the kinaesthetic and oral elements are incidental or absent lead one to question the validity of Fernald's statement that "it seems necessary for the child to develop a certain kinaesthetic background before he can apperceive the visual

sensations for which the printed words form the stimulus". It would seem that these writers (20) (58) have confused the issue.

They (20) (58) wrote, further, that reading as a meaningful act involves perceiving words in patterns in which inter-dependent relationships of sensory organs and the entire nervous system occur; hence, it seems to them needless -- as well as a psychologically mistaken over-simplification -- to try to isolate so precisely the steps in learning to read or to state the order in which various sensory stimuli should be presented and that the success sometimes achieved when the Fernald method is employed is probably traceable to the better teacher-pupil relationships which result from the unusual attention accorded the learner and from the provision of attainable goals for him. They (20) (59, p.85-6) admit, however, that this technique requires children to give intensive, focalized attention to words and their parts; whereas poor readers frequently perceive these elements only vaguely and casually at best.

In some instances, then, Gates and Witty admit that increased clarity in perception takes place under the Fernald methods. While they claim that undesirable concomitants resulting from the unnecessary confusion of print and script, the artificiality of the training

devices, and the barrenness of the content probably offset any gains accruing from the increased self-confidence which the child may develop from his systematically successful experiences with words and their elements, they have not yet disproved the considerable success of Fernald and her students in the teaching of non-readers to read, often after other methods and other teachers have failed.

Tinker (49, p.381) has presented a large amount of evidence that eye-movement patterns do not cause, but merely reflect, efficient or poor performance, as the case may be. Inefficient eye-movement habits (52, p.1-10) are symptoms rather than causes of reading disability and are readily eliminated as reading efficiency improves; therefore, eye-movement measurement and specific training of eye-movements are unnecessary in the improvement of reading skill. The conclusion so often advanced that tachistoscopic training of college freshmen (41, p.13) (52, p.10) (59, p.209) in eye-movement-pacing results in improved reading (41, p.13) efficiency is, therefore, probably misleading. After careful evaluation of many studies, however, Tinker (49, p.381-7) wrote that there is no evidence that training or pacing of eye-movement develops, per se, effective motor habits which result in improved reading ability. This conclusion should

discourage large amounts of time to be spent in remedial efforts consisting of drill and practice with flash cards, tachistoscopes, mirrorscopes, and highly mechanized devices such as the Metron-O-Scope, the sliding slate, or the eye-camera. These devices often have the valuable effect of stimulating attention, interest, and effort on the parts of poor readers and increase their reading ability; but only indirectly and not directly.

Convincing results negating the value of eye-movement training were reported also by Clark (11, p.538). An analysis of the results of a pacing experiment reported by Anderson (2, p.57-60) showed clearly that the reader is not forced by the nature of the exercises into making the rhythm of the eye-movements desired. In some cases, he (2) found greater irregularity during such practice than was shown in uncontrolled reading. Eurich (16, p.122) found that the validity of photographic eye-movement records could not be established with any of the following: The Minnesota Reading Examination for College Students, The Minnesota Speed of Reading Tests, The Stanford Achievement Test, or college grades.

On the other hand (19, p.693-8), a study concerned with the effects on the various types of eye-movements from a series of speed drills with the Metron-O-Scope claimed the results to be very successful. Others have

claimed similar results. It is more probable, however, that any improvement in reading which may have resulted from the use of these or similar devices must be explained on some other basis than that of the control exerted by the exercises on eye-movements as such. Aroused attention, greater alertness, better effort, and greater interest might well explain any improvement in reading results obtained.

Educators (56, preface) have long recognized that poor reading ability has been the basic cause for many academic failures. The recognition of this fact occurred first in the elementary schools where reading was considered a fundamental part of the curriculum. In more recent decades, poor reading ability has been recognized as the cause of many individual scholastic failures at both the high school and the college academic levels.

While the comparative inability of high school pupils to read was discussed earlier in this thesis, the inability in reading of college and even graduate students deserves consideration. It is only recently (55, p.4-5) that colleges and universities have acknowledged this reading problem and have formulated plans for dealing with it. The first "Methods of Study" class at the college level of which the writer knows was established in 1923 (30, p.88). Formerly educators ignored the problem.

They assumed (55, p.4-5) that students who had been admitted into colleges or universities possessed adequate reading skills. If the students did not possess or acquire such skills, they fell by the academic wayside. With the greatly increased college and university enrollments, the number of poor readers became too great to be ignored although it is true that the majority of colleges and universities have, at present, taken no steps or only half-hearted steps in the establishment of Methods of Study classes or classes in remedial reading, remedial mathematics, remedial English, vocabulary building, and similar courses (30, p.90-1).

While it may be true (8, p.3) that "by the sixth grade of the elementary school, children can master the basic factors of the reading process so well that, for material within their range of experience and within their vocabulary, they can read with as much speed and with as full understanding as adults can read the same (comparable) kind of material"; the fact remains that many students who have been admitted to colleges and universities cannot read satisfactorily well.

Strang reported (46, p.38-41) that one-third of four-hundred-and-thirty-seven college freshmen were inferior in reading composition to the average high school freshman.

Horning (25, p.13), in a study of the reading disabilities of university freshmen as shown by an analysis of their partial scores on a comprehensive entrance examination, drew several conclusions. One of these was that of the students who were in the lowest quintile of the reading comprehension examinations, only a few people placed high in language usage, mathematics, following directions and general information parts of the general college entrance test. Those students who made the poorest scores in the reading comprehension examination made poorest showings in the other phases of the examination. The rankings tended to prove that the individual who is slow in comprehending the printed page has difficulty in achieving success in other subjects of the curriculum.

A tabulation (25, p.14) presenting the typical errors of this group in reading ranked them according to frequency of occurrence in the following order:

1. Inability to isolate the several elements of an involved statement,
2. Inability to grasp the full meaning of the question as stated,
3. Inability to select the best one from among several possible answers,
4. Inability to associate related elements,
5. Inability to follow a thread of thought through a maze of detail,

6. Failure to grasp from given explanations the significance of concepts essential to the understanding of the context presented later, and

7. Careless, irrational, or impossible answers, due possibly to some peculiar individual experience.

The vocabularies of many college and university students are also so poor that they are distinct handicaps to scholastic success. A study (47, p.213-5) was conducted on a group of more than 2,000 starting freshmen at one of the large universities to find out whether or not one could predict the possible college success from a vocabulary test that was part of the placement test for English. The conclusion drawn from the grades of all of these students was that those who had the best vocabularies at the beginning of the freshman year did better work academically. The weaker the vocabulary, the lower the grades received in almost all cases. Bernard (4, p.495) found that, for 168 university students taking a course in mental hygiene, vocabulary test scores were better indicators of college success than any other single measure. Teachers (4, p.496) would do well to consider the advisability of giving more specific attention to vocabulary building instead of trusting that development will be achieved through concomitant learning. Better vocabularies (4, p.495) will increase not only the students'

comprehensions of what they read but make possible a more refined and accurate expression of their ideas and knowledge. In all of these ways (4, p.494), students and others may broaden their concepts in such a way as to improve the quality of their thinking.

McGann (31, p.183-6) and others have shown that vocabulary training can be given along with a remedial reading program which stresses study assignments for the improvement of reading, note-taking, and outlining; and result in marked improvement in all of these skills.

An experiment was performed by Matthews (29, p.499-505) to find what effect training in reading would have on performance in beginning rhetoric courses. The preliminary results showed that students who do inferior work in rhetoric have poor reading abilities. Two groups of students (29, p.499-505) who were equal in scholastic aptitude but who had obtained "B's" in rhetoric or "D's" in rhetoric were compared in reading ability. The latter group was inferior in rate of reading and markedly inferior in comprehension. Experimental classes in rhetoric in which the students were given intensive training in reading as well as the regular work in composition were held. The members of these experimental classes surpassed the regular classes in both reading skill and in composition at the end of the experiment.

Hunnicutt (26, p.377-81) has described a much larger program for the improvement of reading skill in a university. This program enrolled about a thousand students a year. Most of the students were freshmen, but members of other classes -- even graduate students and students in the schools of law and medicine -- were enrolled. Each section was limited to fifteen members. These cooperated in studying different methods of improving their reading. Some use was made of film strips, flash cards, and of mechanical equipment; but much more use was made of short mimeographed material for the informal measurement of speed and comprehension in reading. The students usually wanted help in vocabulary building and in increasing their concentration of attention. According to Hunnicutt (26, p.381), the results of this program were gratifying.

Considerable attention has been given to the effects of good or poor reading ability on standardized tests requiring the use of language, in both the measurement of intelligence and of the command of school subjects and in knowledge of right-and-wrong.

About the college level, Peixotto (39, p.411) wrote that it seemed evident from the results of her study that reading efficiency is an important factor in scores achieved on a verbal scholastic aptitude (mental) test. Her conclusion that it is possible to use these scores as a

preliminary screening device for students who need remedial reading courses in college needs further elaboration and support. At lower age levels, considerable influence upon the mental test scores of good or of poor readers who took mental tests based upon the use of language or reading was found when these scores were compared with those obtained by these same children on mental tests which required little or no reading (14, p.412-6). The effects of strenuous training in reading between two mental tests of the verbal variety on the same group of children was that of increasing the scores on the second mental test (23, p.41) (10, p.439). The effects of reading ability on subject-matter tests is obvious.

Kohs (28, p.1-15) worked out an ethical discrimination test of the pencil-and-paper variety. It consisted largely of the interpretation of proverbs and of rating several groups of offenses as more or as less serious. Raubenheimer (40) and Cady (9) also performed a similar experiment with similar material. All three found that these paper-and-pencil verbal tests were fair tests of intelligence in that the more intelligent delinquent marked the choices he thought would make the best impression while the duller non-delinquent who could not grasp the material as well might mark any of the choices in the multiple-choice statements and appear to be more

delinquent than even the confirmed delinquents.

During the last three or four decades numerous standardized tests of reading ability have been developed. Among the first of these were the single-page tests, each based upon selected passages in the elementary readers of the day. The pupils read the selected passage and were timed with a stop watch on the time used. At the same time, the teacher made as much note as possible of the amount of lip-movement of the pupils while they read. Immediately afterward, the pupils wrote as much of the story; e.g., "The Grasshoppers", as they could remember. When this was completed, they turned the page over and answered as many of the questions there as they could without referring to their written material on the other side of the page or to the printed copy of the story itself. The test took no account of the varying degrees of familiarity which the pupils might have had with the selection before the test was given. Obviously, the timing would be poor, as well. The method of scoring the test was quite subjective, and the norms would be considered rather primitive today; but this test was an initial step at objectivity in measuring reading skill. In fact, the tests in current use do not depart widely from this general plan. The later tests do not require the writing of the material which has been read to the pupils orally or

which the pupils may read for themselves. The tester is no longer asked to estimate the amount of lip-movement. In the current test-booklets, short simple paragraphs are printed. Beneath each set of paragraphs from two to ten questions are printed. These may require written answers, or they may require simply the checking of the one, two, or three parts of five-part multiple-choice items which are correct according to the material contained in the paragraph above. These answers may even be marked on answer sheets which are not parts of the test booklets at all. This method permits the answer sheets to be scored by machine. It is also more economical in terms of cost of test booklets. It also results in slightly lower scores. Such tests usually yield three or even four scores. If there is a vocabulary sub-test, it includes a column of words each of which is followed by, usually, five words from among which the student chooses what he believes to be the most nearly equivalent word. The score from this sub-test is usually the number of words correctly defined. The paragraph-question or multiple-choice answer part of the test usually yields two scores, a rate score and a comprehension score. The former is based upon the number of answers given, without regard to their correctness. The latter is based on the number of correct answers. A fourth score frequently consists of the sum of

these three scores but usually with its own table of norms which yields an index of general reading ability.

The comparative scores, either in terms of grade-level of the reader's accomplishment or in percentile standing among his own group, often have stimulating effects on the reader's performance through increase of effort and attention. With the very poor reader, of course, the result may be discouragement or a rash effort which results in poorer performance. These may be alleviated by the more able teachers and, in any event, are part of life as it is.

Among the more widely used of the current reading tests are:

Elementary School

Burgess Silent Reading Tests
Chapman-Cook Speed of Reading Tests
Chapman-Holzinger Unspeeded Reading Comprehension
Chapman Unspeeded Reading Comprehension
Detroit Reading Tests
Durrell-Sullivan Reading Capacity and Achievement
Gates Reading Survey for Grades 3-10
Haggerty Reading Examination
Iowa Silent Reading Test
Monroe Silent Reading Test
Pressy Diagnostic Reading Test
Public School Achievement Test in Reading
Sangren-Woody Reading Tests
Shank Test of Reading Comprehension, Form 1 and 2
Stanford Achievement Test (Reading Sections)
    Advanced Form, grades 4 to 9, inclusive
Thorndike-McCall Reading Scales, grades 2 to 8
Traxler Silent Reading Test, First Series
Unit Scales of Attainment in Reading,
    Divisions 1, 2, and 3
Williams Reading Test for Grades, 4 to 9

High School

Co-operative Reading Test
Iowa Silent Reading Test, Advanced Form
Nelson-Denny Reading Test
Poley Precis Test
Schrammel-Gray High School Reading Test
Shank Test of Reading Comprehension, Form 3
Thorndike-McCall Reading Scales, grades 9 to 12
Traxler High School Reading Test, First and Second Series
Unit Scales of Attainment in Reading, Division 4
Whipple High School Reading Test

College or University

Co-operative Reading Test
Iowa Silent Reading Test
Nelson-Denny Reading Test
Schrammel-Gray College Reading Test
Thorndike Reading Test
Whipple College Reading Test

Other tests of vocabulary knowledge and of knowledge of literature are available.

From the material of the brief survey of the problems of learning to read and of teaching others to read, one may readily understand that reading is neither a single nor a simple skill. Perhaps one should wonder not so much that there are non-readers or poor readers as that the more skillful readers achieve the results which they do.

CHAPTER III

A STUDY OF THE READING ABILITIES OF ONE HUNDRED AND FOUR COLLEGE FRESHMEN

During the winter quarter of 1948-1949, the writer gave reading tests at the beginning and at the end of the quarter to four classes in "Methods of Study" at Oregon State College. The results include the reading scores of the one-hundred-four students who took both tests. In three of these classes, the Co-operative Reading Test C-2, Form T was used. In the third class, the Nelson-Denny Reading Test was used. In order to make the results comparable, the scores were converted into percentile ratings from the tables accompanying each test. While these percentile scores may be somewhat less accurate than the actual scores, they are -- without much question -- accurate enough for the study of the reading abilities of this group.

This group of students was chosen because they were predominantly freshmen who had been advised to take the course in "Methods of Study" by the counselors in the various schools of the College because (a) they had made low grades during the preceding quarter, (b) they had shown by their tests or in other ways that they had poor habits of study and were poor readers, or (c) both. As a group,

they were average in the college scholastic aptitude test -- the American Council on Education Psychological Examination for College Freshmen. Some were in the highest deciles on the College norms, some were in the lowest deciles; but they presented a fair cross-section of the entire College freshman group, although rather heavily weighted toward the lower end. The College norms have, for years, been parallel to the national norms for this examination, except that the numbers at both extremes have been slightly smaller on the College norms than on the national norms.

TABLE I shows the distribution of the American Council on Education Psychological Test scores for this group by deciles.

TABLE I

DISTRIBUTION OF ACE TEST DECILES

Deciles	Number	Per Cent Of Total
10	1	1
9	4	4
8	1	1
7	6	6
6	7	7
5	13	12.5
4	13	12.5
3	13	12.5
2	19	18
1	27	26
	104	100.5

Since there are 104 students included in this study, there should have been approximately ten students and ten per cent of the group in each decile if this group were representative of the College and the national norms. A comparison of this normal distribution and the distribution for this group shows eighty-five members or 81.5% of this group to be in the lower half. Every decile from decile five to decile one, inclusive, contains more than ten scores and ten per cent of the total number of scores. While these students were below college average in

scholastic aptitude, there is no necessary reason to believe that they are incapable of completing a college course, although this will assuredly require courage and tenacity and, probably, two or three quarters beyond the usual twelve for the least well-endowed members of the group. It means hard study on a lighter scholastic load, but it cannot only be done but can be done profitably for the individual and the institution.

TABLE II shows a similar distribution of this group in terms of grades earned by them as high school pupils. The actual grades earned by individual students are weighted according to a formula developed by Oregon State College and a single numerical score is derived. These scores have, over the years, been divided into decile groups according to the entire entering-freshman class results. The scores of this group in terms of high school grades received show them to have received better grades than their college aptitude scores would have indicated. This is taken to mean that, while their aptitudes were generally below average, their industry while they were in high school was above that of the high school average.

TABLE II

DISTRIBUTION OF HIGH SCHOOL GRADE DECILES

Deciles	Number	Per Cent Of Total
10	1	1
9	4	4
8	9	9
7	13	12.5
6	12	11.5
5	14	13
4	13	12.5
3	13	12.5
2	15	14
1	10	10
	104	100

Again, there would have been approximately ten students and ten per cent of the group in each decile if this distribution had conformed to the College distribution. While the distribution is skewed a little toward the lower end, only sixty-five individuals or sixty-two per cent are in the lower half. This may be compared with the eighty-five members and 81.5% in the lower half in scholastic aptitude, showing that they had in general rather commendable industry and persistence or good family backing while in high school.

TABLE III shows the distribution of this group on the Oregon State College English Placement Test according to the norms for the 1,430 freshmen who entered the College in the autumn of 1948-1949. This test is largely a locally-developed test, although it includes a nationally standardized test of reading ability. It contains also locally-devised tests of knowledge of grammar, language usage, punctuation, composition, and spelling. The scores are used in the assignment of the entering freshmen to classes in English Composition 111, 112, or 113, or to English K, the sub-freshman course in English composition or the student-named "Bonehead English". This material is included here because it yields information about this group's ability to read and to express themselves in desirable language.

TABLE III

DISTRIBUTION OF ENGLISH DECILES

Deciles	Number	Per Cent Of Total
10	2	2
9	3	3
8	5	5
7	10	10
6	14	13
5	10	10
4	11	10.5
3	12	11.5
2	15	14
1	22	21
	104	100

If the distribution of this group had conformed to the distribution of the entering-freshman class as a whole, there would have been approximately ten members and ten per cent of the group in each decile. This group was again skewed toward the lower end, showing that their use of English was sub-standard for even their own freshman group. Seventy members of this group or sixty-seven per cent were in the lower five deciles. This may be compared with the sixty-five students in the lower half in high school grades and the eighty-five in the lower half in

scholastic aptitude.

The group being studied here may be said to be quite limited in scholastic aptitude, rather limited in knowledge of English, and somewhat limited in initiative and industry. The "Methods of Study" courses were established and these students were encouraged to enroll in them to correct such parts of the above as could be corrected in one three-hour course that continued for one college quarter only. If funds and personnel had been available for supplementary laboratory sections and for individual work with these students, more could have been accomplished. As it was, such time and tools as were available were used.

In one of the four classes, about twelve clock-hours of time were used with a tachistoscope which threw its image on a screen for group study by the whole class and a sliding slate which could be used with three or four students at a time. Since this amount of time is small and since the results in terms of improvement in reading ability were above those of one of the other sections and below those of two others, no special study concerning it has been included in this thesis.

The experimental part of this thesis was simple, but it was designed to answer a question which had not been answered before; i.e., whether or not these "Methods of

Study" courses, conducted as they were and had been over several years, brought about any improvement in the reading abilities of the students enrolled in them.

The Co-operative Reading Test C-2, Higher Level, Form T, was given in three of these classes within the first two weeks of the winter quarter and the Nelson-Denny Reading Test was similarly given to a fourth group because the instructor of that class had already gathered some data on one test a quarter based on the use of this test. In order to make the results of the two kinds of tests comparable, the scores were converted into percentile scores based on the national norms.

Both the Co-operative Reading Test and the Nelson-Denny Reading Test yield sub-scores in terms of vocabulary, comprehension, and totals or general reading ability scores. The Co-operative Reading Test yields a speed or rate score as well, but the Nelson-Denny Test does not.

TABLE IV shows a tabulation of the vocabulary scores of this group in terms of the vigintiles or groups of five per cent each in which their percentile scores placed them on the national norms of either the Nelson-Denny or the Co-operative Reading Test. This distribution was used in the belief that it would show more details of the distribution than a decile distribution would and would not be as bulky and scattered as a percentile distribution would be for

this small number, 104. Included with the table are the mean and the standard deviation of this group, based on their percentile scores.

TABLE IV

DISTRIBUTION OF VOCABULARY SCORES
FROM THE FIRST TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	0	0	46-50	8	8
91-95	4	4	41-45	8	8
86-90	3	3	36-40	5	5
81-85	2	2	31-35	9	9
76-80	0	0	26-30	8	8
71-75	6	5	21-25	10	9
66-70	1	1	16-20	15	14
61-65	3	3	11-15	3	3
56-60	6	5	6-10	5	5
51-55	7	7	1- 5	1	1
				104	100

M: 40.5
S.D: 23.8

Each of these groups should have had, if the distribution had been normal, approximately five individual scores and five per cent of the group of 104 scores in it. As may be seen, the lower vigintiles contain the larger

numbers of scores. Seventy-two of the 104 scores, or sixty-nine per cent, are in the lower half of the vigintiles. The mean score of 40.5 (percentile score) is ten percentile points below the 50.5 or theoretical mean percentile score. The standard deviation of 23.8 percentile scores shows that approximately two-thirds of the group of scores, or sixty-nine, should fall between the percentile scores of 16.7 and 64.3, although 76 actually do. This difference between the theoretical sixty-seven per cent and the actual seventy-three per cent is due to the small numbers involved and to a sampling which is not representative of the freshman student population as a whole.

The conclusion that this group was, as a whole, somewhat weak in vocabulary at the beginning of the winter quarter and that many of them were decidedly weak in vocabulary is rather obvious.

TABLE V shows the distribution of this group in terms of comprehension scores on material read. As in TABLE IV, each of the groups in TABLE V should have had approximately five scores and five per cent of the scores in it if the distribution had been normal in conformity with the national norms.

TABLE V

DISTRIBUTION OF THE COMPREHENSION SCORES
FROM THE FIRST TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	0	0	46-50	10	9
91-95	1	1	41-45	7	7
86-90	2	2	36-40	4	4
81-85	2	2	31-35	14	13
76-80	4	4	26-30	7	7
71-75	5	5	21-25	5	5
66-70	6	5	16-20	7	7
61-65	2	2	11-15	6	5
56-60	6	6	6-10	4	4
51-55	7	7	1- 5	5	5
				104	100

M: 41.5
S.D: 22.6

It may be seen by inspection that the middle and lower vigintiles contain larger numbers than the higher vigintiles. Sixty-nine of the 104 scores in this table, or sixty-six per cent, lie in the lower half of the distribution. The mean score of this group is 41.5, or nine percentile score points below the average for the national norms. The standard deviation of 22.6 percentile scores shows that two-thirds, or sixty-nine of the group should

be between scores 64.1 and 18.9. Sixty-seven of the scores actually do.

It is apparent that this group, as a whole, is slightly below average in comprehension of material read and that some members of the group are far below normal even for beginning college freshmen. They are, however, more skillful in comprehension than in vocabulary knowledge.

TABLE VI shows the distribution of the scores on rate or speed of reading for the three classes who were given the Co-operative Reading Test. The Nelson-Denny Test does not yield a score for rate of reading. Inspection of this table shows that most of the students were slower than the average freshman college student in rate of reading. Fifty-nine members of this group of eighty students, or nearly seventy-four per cent, were in the lower half of the distribution on the national norms.

TABLE VI

DISTRIBUTION OF THE RATE OF READING SCORES FROM THE FIRST TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	1	1	46-50	8	10
91-95	1	1	41-45	3	4
86-90	1	1	36-40	7	9
81-85	1	1	31-35	5	6
76-80	2	2	26-30	9	11
71-75	3	4	21-25	3	4
66-70	2	3	16-20	11	14
61-65	1	1	11-15	6	8
56-60	3	4	6-10	2	2
51-55	6	8	1- 5	5	6
				80	100

M: 36.5
S.D: 22.8

As in the two prior tables, one-twentieth of the group or in this table four scores or five per cent of the whole group should lie in each vigintile if the group had conformed to the normal distribution of the nation-wide scores. Actually, the scores are much lower than this. This is shown in the mean, as well, which is 36.5 instead of 50.5 or fourteen percentile score points below the average. The standard deviation from this table is

somewhat smaller than in the prior two tables, which shows that the scores are less widely dispersed.

It is obvious that this group is poor in rate of reading in comparison with other college freshman groups over the nation.

TABLE VII shows the distribution of the total scores for this group on the first test given during the early weeks of the quarter. This is not an average of the three partial scores, shown in TABLES IV, V, and VI, but has a table of distribution of its own. This is based on nation-wide scores.

TABLE VII

TOTAL SCORES FROM THE FIRST TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	0	0	46-50	7	7
91-95	1	1	41-45	10	9
86-90	3	3	36-40	11	10
81-85	2	2	31-35	6	5
76-80	3	3	26-30	8	8
71-75	2	2	21-25	15	14
66-70	3	3	16-20	8	9
61-65	7	7	11-15	6	5
56-60	3	3	6-10	4	4
51-55	3	3	1- 5	2	2
				104	100

M: 40.3
S.D: 22.6

Inspection of TABLE VII shows the total scores of this group to be somewhat low. This is to be expected, since the scores in all of the partial or sub-tests were likewise somewhat low. Seventy-seven members or approximately sixty-four per cent of the members of this group were below the freshman average in total reading ability or the 50.5 percentile. The mean percentile score for these 104 freshmen was 40.3; the standard deviation 22.6. It is apparent that they are only fair in total reading

ability in comparison with other college freshmen over the nation.

The end-of-the-quarter or second tests were given within the last two weeks of the quarter. Again, three of the classes in "Methods of Study" were given the Co-operative Reading Test C-2, Form T; and the one class, which had taken the Nelson-Denny Test before, took it again.

During the quarter, one class had had some experience with a group tachistoscope for the whole class and with a sliding slate in small groups. Since the reading scores of this group were so closely similar to the reading scores of the other groups, no distinction has been made among the scores. The members of the other classes studied about reading, but were given no special training in reading except as they applied the principles learned for themselves and as they were taught principles of greater industry in their study habits.

TABLE VIII shows the distribution of the percentile scores of these 104 "Methods of Study" freshmen on the vocabulary parts of the two tests given at the end of the quarter. Inspection shows that, while the group's ability in vocabulary was still somewhat low, it was a little higher than it had been in the first test. No scores were in the twentieth vigintile, however, where

approximately five scores and five per cent of the group would have been if this had been a standard group in freshman vocabulary knowledge.

TABLE VIII

VOCABULARY SCORES FROM THE SECOND TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	0	0	46-50	11	11
91-95	3	3	41-45	8	8
86-90	1	1	36-40	4	4
81-85	7	7	31-35	9	8
76-80	2	2	26-30	6	5
71-75	5	5	21-25	8	8
66-70	2	2	16-20	8	8
61-65	7	6	11-15	5	5
56-60	7	6	6-10	3	3
51-55	5	5	1- 5	3	3
				104	100

M: 45.3
S.D: 24.4

Sixty-five out of these 104 scores, or sixty-two per cent, were in the lower half of the table where only fifty-two would have been if the group had been average or normal in the distribution as shown on this form of table. The mean percentile score for this group on this

second test was 45.3, which may be compared with the 50.5 which would have been average. The range of the middle two-thirds extends from 69.7 to 20.9, and includes seventy-five of the scores instead of sixty-nine, thus showing the numbers included in the table to be small and the distribution to be skewed. The closeness of the mean of these figures -- 45.3 -- to the theoretical mean -- 50.5 -- shows this group, as a whole, to be about average in vocabulary knowledge although the ability of at least a third of the group is distressingly poor. They showed an average improvement of 4.8 percentile scores, however.

TABLE IX shows the distribution of the comprehension scores on the second or end-of-the-quarter test. For the first time, scores on any of the sub-tests for this group are to be found in the twentieth vigintile. Fifty-five scores in this test are in the lower half of the distribution. This may be compared with the sixty-nine in the lower half in the first test of reading comprehension and with the fifty-two who would have been in the lower half in a normal distribution. The mean score for this group on the second test is 49.3, in contrast with the score of 41.5 on the first test. The difference between the mean of this group and the theoretical mean is 1.2 score points, which may be taken to mean that this group is

approximately average in ability in reading comprehension in comparison with other college freshmen.

Since the instructors of these classes emphasized comprehension (and vocabulary) much more than speed of reading, this gain in comprehension score was gratifying to them. The much smaller gain in vocabulary score was not as pleasing to them although even this relatively small gain in percentile points may be taken to mean an extensive gain in vocabulary knowledge, because the vocabulary test is a sampling only.

TABLE IX

COMPREHENSION SCORES FROM THE SECOND TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	2	2	46-50	27	26
91-95	2	2	41-45	2	2
86-90	1	1	36-40	2	2
81-85	1	1	31-35	8	8
76-80	6	5	26-30	4	4
71-75	4	4	21-25	2	2
66-70	8	8	16-20	5	5
61-65	0	0	11-15	3	3
56-60	10	9	6-10	0	0
51-55	15	14	1- 5	2	2
				104	100

M: 49.3
S.D: 19.4

TABLE X shows the distribution of the percentile scores of this group in rate of reading. For the second time in this study, members of the group had scores in the twentieth vigintile and, for the first time, the mean score of the group was above the theoretical mean, although by a small amount only.

TABLE X

RATE OF READING SCORES FROM THE SECOND TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	2	2	46-50	14	19
91-95	3	4	41-45	2	2
86-90	3	4	36-40	9	11
81-85	2	2	31-35	5	6
76-80	5	6	26-30	4	5
71-75	4	5	21-25	2	2
66-70	6	8	16-20	3	4
61-65	3	4	11-15	0	0
56-60	8	10	6-10	0	0
51-55	3	4	1- 5	2	2
				80	100

M: 52.5
S.D: 22.0

Only forty-one of the eighty rate-of-reading scores were in the lower half of the distribution in this second

test -- in comparison with fifty-nine on the first test. The mean percentile score on the second test was 52.5. This may be compared with the theoretical mean of 50.5 and the mean of 36.5 for this group on the first test.

While the instructors of these classes de-emphasized rate of reading in favor of comprehension and vocabulary, these students made an extensive gain in rate. This was probably due to better attention and greater effort as well as to the probability that rate is more easily improvable than either vocabulary or comprehension. The basic text, also, placed considerable emphasis on rate of reading.

TABLE XI shows the distribution of the total reading scores for this group on the second or end-of-the-quarter test. For the third time, at least one score was in the twentieth vigintile; and for the second time, the mean percentile score of this group was approximately equal to the theoretical mean score for college freshmen. In this distribution, only slightly more than half of the scores, or fifty-seven, were in the lower half of the normal distribution -- in contrast with seventy-seven on the first test. The mean percentile score for this group on the first test was 40.3, whereas it was 49.5 on the second. In other words, the over-all reading ability of this group had increased 9.2 percentile-score points during the

quarter. This compares favorably with the gains made by similar groups that were cited in the literature who had had practice in reading by the laboratory method although this writer believes strongly in the laboratory method of teaching reading at all school levels because it allows more individual attention, gives attention to individual differences, permits better acquaintance with the students, and allows for counseling in educational, vocational, and emotional and personal traits.

TABLE XI is shown below.

TABLE XI

TOTAL SCORES FROM THE SECOND TEST

Per Cent Scores	Number	Per Cent	Per Cent Scores	Number	Per Cent
96-100	1	1	46-50	10	9
91-95	3	3	41-45	12	11
86-90	3	3	36-40	8	8
81-85	2	2	31-35	6	6
76-80	6	6	26-30	6	6
71-75	3	3	21-25	5	5
66-70	5	5	16-20	5	5
61-65	8	8	11-15	3	3
56-60	10	9	6-10	1	1
51-55	6	5	1- 5	1	1
				104	100

M: 49.5
S.D: 21.8

In TABLE XII are shown the mean scores, the standard deviations, and the gains in mean scores on the second over the first test in terms of percentile scores. It may be seen that these students made gains in each of the subtests and in the total test of reading ability. The gains are small but, as far as they go, represent real improvement. While some of the gain may be discounted as due to practice effect in the structure and directions of the tests, the tests were given with an interval of nine weeks between their administrations.

TABLE XII

A COMPARISON OF THE SCORES MADE ON THE FIRST AND THE SECOND TESTS

	First Test		Second Test		Gains In Means
	Means	S.D.	Means	S.D.	
Vocabulary	40.50	23.80	45.30	24.40	4.80
Comprehension	41.46	22.60	49.34	19.40	7.88
Rate	36.50	22.80	52.50	22.00	16.00
Total	40.30	22.60	49.54	21.80	9.24

Inspection of TABLE XII shows that the largest gain in score made by this group was in rate of reading. In the first test, this was the lowest score; in the second, it was the highest. This large gain in rate was made in spite of the greater emphasis which was placed on

vocabulary and comprehension in comparison with rate by the instructors of the four sections, although the basic text placed considerable emphasis on rate. It is probable that the improvement in rate was due, in part, to the greater ease of improvement in this phase and, in part, to its greater immediate susceptibility to the influences of increased effort and attention. The more-or-less current hysteria for speed may have played a part and the spectacularity of the probable results may have entered in.

The second largest gain was in the total score. This was the second lowest in the first test and second highest in the later test. It amounts to 9.24 percentile points, or almost ten per cent of the theoretical distribution. Although this is a considerable gain, it leaves the group slightly, or negligibly, below the mean in reading ability in comparison with other college freshman groups. This is, without much doubt, a handicap to the members of this group in all of their courses. It may be compensated for longer periods of study than are desirable for other students on the same amount of material and greater effort in study. It may mean that lighter scholastic loads should be carried over a larger number of quarters, with an equal or greater amount of study on these lighter loads during each quarter. Other emphases in the course which may have affected not only the reading ability of these students

but their scholastic averages were (a) not only better methods of work but WORK in all aspects of scholarship as well as on other student activities to the exclusion, as far as possible, of wasted time, (b) the frequent and diligent use of the dictionary, (c) the careful and wide use of outlines, (d) exactness and brevity of statements, as far as possible, (e) the importance of good notes, (f) the importance of comprehension or understanding in contrast with memory, (g) the use of cards when memorization is necessary, and (h) the value of both short-time and long-time individual goals.

The third largest gain in the second test over the first was in comprehension. This amounted to almost eight percentile-score points -- from 41.46 to 49.34. Unquestionably, comprehension was the reading ability most emphasized in these classes, but comprehension is an ability that is built up slowly, especially after years of poor and superficial habits of study and of reading. Comprehension is inseparable from thought, and most of these students had not done much in the past in the way of thought along scholastic lines.

The smallest gain for this group in the second test in comparison with the first was in vocabulary. The respective means were 40.5 and 45.3, showing a gain of almost five percentile-score points. In terms of new

words learned, this is a worth-while gain; but in terms of word-knowledge, these students are below the average of other college freshman groups. It is hoped by the instructors of these classes that the impetus given to these students in building up their vocabularies will be continued in the future.

It should be pointed out that such improvement in reading habits and skills as these students made was the result of study of the principles of reading and of emphasis on the importance of work or effort by the students themselves. The satisfaction that comes from work well done was stressed repeatedly. The laboratory method would have been used with these people if a sufficient amount of personnel had been available. This writer believes that the best method of teaching methods of study, which is very largely a matter of reading skill at the college level, is a combination of the classroom and the laboratory methods. Stimulation and competition can be developed in the former. Particular weaknesses can be corrected, individual attention and encouragement can be given to these self-doubtful students, and counseling on many things can be talked over in the latter. This last, in the hands of a skillful instructor, is one of the most valuable phases of any course because these students, as a rule, need so very much counseling about so many things

and so much encouragement to do the correct and profitable things if they are to continue their scholastic programs successfully and to become as capable people as they have the potentialities of being. This, the writer believes, is probably the basic axiom in the description of successful education.

CHAPTER IV

SUMMARY

It is estimated that there were ten million illiterates in the United States in 1948. An illiterate may be defined as a person fourteen or more years of age who cannot read with the skill of the average fourth-grade pupil. While many of these illiterates are to be found in the various foreign-language communities, not all of them are -- by any means. They may be found in the large cities, the towns, the villages, and rural areas. In some, the school facilities are practically non-existent; in some, the best of schools are available.

Educational training cannot be forced on people, but even these illiterates learn eagerly in the "moonlight schools" or under Army or Navy auspices when they realize the importance of the skills which are known as "education". The feeble-minded and some of the insane cannot, of course, be educated beyond the primary school -- if they can be brought along that far.

The purpose of learning to read is the gaining of information from the printed page. Reading is not a single skill, but a group of skills involving not only the eyes but the organs of speech and, more especially, the brain. To be effective, reading must be an active

form of inquiry and of thought. Silent reading ability may be divided into rate of reading and comprehension. While a great deal has been written about rate of reading, within reasonable limits comprehension is by far the more important. The most satisfactory balance between the two will vary not only with the individual reader but with the type of material being read. Under conditions of effortful attention, the two will tend to progress together toward a satisfactory balance.

The mechanics of reading are widely known. The eyes move along the lines of print with alternate movements and haltings or fixations. The latter occupy about ninety-five per cent of the reading time. Only when the eye is at rest can it see or discern. With poor readers, the fixations are longer as more time is required not only for the mechanics of comprehension of the written symbols but for the comprehension of the ideas presented. With the more skillful readers, the eye-movements are not only swifter and better controlled, but include a larger number of words at each fixation. By reason of his larger background knowledge, the skillful reader is likely to obtain more ideas from the material read and to make more associations between the material read and his own background knowledge. He is likely to be more receptive to new ideas, more impatient with

incorrect ideas, and more systematic in his thinking about the new ideas.

Visual defects affect the ability to read, but many of these defects are correctible. The effects of even those which are not can often be largely overcome by care of the eyes in reading and the carefulness with which what reading is done is performed. A considerable amount of reading disability is psychological rather than physiological. Fear of the reading situation, stuttering and its probable emotional cause and the effects of the latter in the word-association area in the brain, and tonal deafness frequently affect the reading skill of both younger and older readers. Lack of control of attention also is a part of this factor. Poor vocabulary background is quite important, as well. Some "non-readers", or children who are bright enough to learn to read within the time they have been taught, learn to read through the kinaesthetic or tracing method. Whether the improvement in reading skill that usually results is due to the kinaesthetic method or to the more capable and sympathetic teaching cannot be answered by this writer.

The disturbing lack of reading skill to be found at both the high school and the college levels is due to many causes. Poor training in reading in general, poor vocabulary backgrounds, comparative indifference to

learning of new ideas, laziness, and in some cases timidity are the more common causes. Until recently, neither high school nor colleges made much effort to correct this situation. In some high schools in recent years, considerable emphasis has been placed upon study as an art. "Methods of Study" courses have been established in quite a few high schools and colleges in the last two decades to teach the students to study and, especially, to teach them to read and to acquire better vocabularies. As a result, a considerable number of students have been retained in school who would have otherwise dropped out from discouragement over low grades.

In the original part of this thesis, it was found that the 104 members of the four classes in "Methods of Study" who were practically all college freshmen and who were given reading tests near the beginning and the end of a quarter improved in reading skill approximately ten per cent as a whole. The greatest gain was in rate of reading, the next greatest in total score, the next greatest in comprehension, and the least in vocabulary. These gains were made under classroom instruction and by personal initiative only and without benefit of any appreciable amount of laboratory instruction. It is the belief of the writer, however, that laboratory instruction is a valuable method of teaching reading, of giving

counseling on many subjects, and of individual encouragement and instruction. Probably the best method of teaching reading is a combination of the classroom and the laboratory methods. While these students were not better than average readers for college freshmen, as a group, at the end of the quarter, it is the belief of the writer that they are considerably better readers than they would have been without this training.

BIBLIOGRAPHY

1. Adler, Mortimer. How to Read a Book. New York, Simon and Schuster, 1940. Pp. 398.

2. Anderson, I. H. Research on the Psychology of Reading. Journal of Exceptional Children, 1938, (January, extra issue), 4, 57-60.

3. Bell, John E. Emotional Factors in the Treatment of Reading Difficulties. Journal of Consulting Psychology, 1945, 9, 125-131.

4. Bernard, Harold W. Some Relationships of Vocabulary to Low Scholarship. School and Society, 1940, 51, 465-496.

5. Bond, Guy L. The Auditory and Speech Characteristics of Poor Readers. New York, Bureau of Publications, Teachers College, Columbia University, 1935. Pp. 48.

6. Brooks, Fowler D. Applied Psychology. New York, Appleton, 1926. Pp. 278.

7. Brown, James I. What About a College Reading Course? School and Society, 1948, 67, 187-390.

8. Buswell, Guy T. Remedial Reading at the College and Adult Levels. Chicago, University of Chicago Bureau of Publications, 1939. Pp. 72.

9. Cady, H. M. The Estimation of Juvenile Incorrigibility. Journal of Delinquency Monographs, 1923, 2. Pp. 126.

10. Casey, M. L., Davidson, H. P., and Harter, D. I. Three Studies on the Effect of Training in Similar and Identical Material Upon Stanford-Binet Test Scores. 27th Yearbook, National Society for the Study of Education, 1928, Part I, 431-439. Bloomington (Illinois), Public School Publishing Co.

11. Clark, Brant. The Effect of the Binocular Imbalance on the Behavior of the Eyes During Reading. Journal of Educational Psychology, 1935, 26, 530-538.

12. Cole, Luella B. The Improvement of Reading. New York, Farrar-Rinehart, 1938. Pp. 338.

13. Donahue, Ellen K. Reading Disabilities. American Journal of Orthopsychiatry, 1947, 17, 393-396.

14. Durrell, Donald D. The Influence of Reading Ability on Intelligence Measures. Journal of Educational Psychology, 1933, 24, 412-416.

15. Durrell, Donald D. Improvement of Basic Reading Abilities. Yonkers-on-Hudson, World Book, 1940. Pp. 407.

16. Eurich, Alvin C. The Reliability and Validity of Photographic Eye-Movement Records. Journal of Educational Psychology, 1933, 24, 118-122.

17. Fendrick, Paul. Visual Characteristics of Poor Readers. New York, Teacher's College Contributions to Education, No. 656, Teachers College, Columbia University, 1935. Pp. 54.

18. Fernald, Grace and Keller, Helen. The Development of Kinaesthetic Factors in Word Recognition in the Case of Non-readers. Journal of Educational Research, 1921, 4, 355-377.

19. Garver, F. M. and Matthews, R. D. An Analysis of the Results of Speed Drills with the Metron-O-Scope to Increased Reading Rate. Journal of Educational Psychology, 1939, 30, 693-698.

20. Gates, Arthur I. and Bennett, Chester C. Reversal Tendencies in Reading. New York, Bureau of Publications, Teachers College, Columbia University, 1933. Pp. 33.

21. Good, Gaile H. Relationship of Fusion Weakness to Reading Disability. Journal of Experimental Education, 1939, 8, 115-121.

22. Gray, William S. Reading and Pupil Development. Chicago, University of Chicago Bureau of Publications, 1940. Pp. 355.

23. Hawthorne, J. W. The Effect of Improvement in Reading Ability on Intelligence Test Scores. Journal of Educational Psychology, 1935, 26, 31-51.

24. Henry, George H. Can Your Child Really Read? Harper's Monthly Magazine, 1946, 192, 72-76.

25. Horning, Floy M. Diagnostic Study of Difficulties in Reading Comprehension. Unpublished Master's Thesis, University of Southern California, Los Angeles, 1927. Pp. 64.

26. Hunnicutt, C. W. A Functional Program in Reading Education. School and Society, 1948, 67, 377-381.

27. Jasper, H. H. and Murray, E. A Study of Eye-Movements of Stutterers During Oral Reading. Journal of Experimental Psychology, 1932, 15, 528-538.

28. Kohs, Samuel C. An Ethical Discrimination Test. Journal of Delinquency, 1922, 7, 1-15.

29. Matthews, Ernst G., Larsen, Robert P. and Butler, Gibbon. Experimental Investigation of the Relation Between Reading Training and Achievement in College Composition Classes. Journal of Educational Research, 1945, 38, 499-505.

30. McFadden, Gilbert C. F. The Development of Methods of Study Courses in State Colleges. Unpublished Master's Thesis, Oregon State College, Corvallis, 1949. Pp. 131.

31. McGann, Mary. Improving the Scholarship of College Freshmen with Remedial Reading Instruction. Journal of Educational Psychology, 1948, 39, 183-186.

32. Miles, Isodora W. An Experiment in Vocabulary Building in a High School. School and Society, 1945, 61, 225-286.

33. Missildine, W. H. The Emotional Background of Thirty Children with Reading Disabilities with Emphasis on Its Coercive Elements. The Nervous Child, 1946, 5, 263-272.

34. Monroe, Marion. Children Who Cannot Read. Chicago, University of Chicago Press, 1932. Pp. 204.

35. Monroe, Marion and Backus, Bertie. Remedial Reading. Boston, Houghton-Mifflin, 1937. Pp. 171.

36. Murphy, Paul G. The Role of the Concept in Reading Ability. Psychological Monographs, 1933, 44, No. 199, 21-73.

37. Orton, Samuel T. Specific Reading Disability -- Strephosymbolia. Journal of the American Medical Association, 1928, 90, 1095-1099.

38. Patterson, Samuel. Teaching the Child to Read. New York, Doubleday, Doran, 1930. Pp. 524.

39. Peixotto, Helen E. The Relationship of College Board Examination Scores and Reading Scores for College Freshmen. Journal of Applied Psychology, 1946, 30, 406-411.

40. Raubenheimer, Albert S. An Experimental Study of Some Behavior Traits of the Potentially Delinquent Boy. Psychological Monographs, 1925, 34, No. 159. Pp. 107.

41. Robinson, H. M. Why Pupils Fail in Reading. Chicago, University of Chicago Bureau of Publications, 1946. Pp. 257.

42. Schneck, M. G. Involuntary Tongue Movements Under Varying Stimuli. Proceedings of the Iowa Academy of Science, 1925, 32, 385-391.

43. Stewart, Cora W. Moonlight Schools. New York, Dutton, 1922. Pp. 194.

44. Stewart, Dorothy H. Suggestions for Correcting Reading Difficulties. Educational Administration and Supervision, 1946, 32, 493-500.

45. Stone, Clarence R. Better Primary Reading. St. Louis, Webster Publishing, 1936. Pp. 520.

46. Strang, Ruth. Problems in the Importance of Reading in High School and College. Lancaster (Pennsylvania) Science Press, 1938. Pp. 390.

47. Templemen, William D. Vocabulary and Success in College. Journal of Higher Education, 1942, 13, 213-215.

48. Tiffin, Joseph. Simultaneous Records of Eye-Movements and the Voice in Oral Reading. Science, 1934, 80, 430-431.

49. Tinker, Miles A. Use and Limitations of Eye-Movement Measures of Reading. Psychological Review, 1933, 40, 381-387.

50. Tinker, Miles A. Remedial Methods for Non-Readers. School and Society, 1934, 40, 524-526.

51. Tinker, Miles A. The Relation of Speed to Comprehension in Reading. School and Society, 1932, 36, 158-160.

52. Tinker, Miles A. Time Relations for Eye-Movement Measures in Reading. Journal of Educational Psychology, 1947, 38, 1-10.

53. Traxler, Arthur E. The Relation Between Rate of Reading and Speed of Association. Journal of Educational Psychology, 1934, 25, 357-365.

54. Traxler, Arthur E. Reading and Secondary School Achievement. Educational Research Bulletin, 1946, No. 45, 59-63.

55. Triggs, Frances O. Remedial Reading, The Diagnosis and Correction of Reading Difficulties at the College Level. Minneapolis, University of Minnesota Press, 1945. Pp. 219.

56. Wilking, Vincent and Webster, Robert. A College Developmental Manual. New York, Houghton Mifflin, 1943. Pp. 363.

57. Witty, Paul A. The Conquest of Illiteracy. School and Society, 1945, 62, 1-3.

58. Witty, Paul A. Reading Problems in the Secondary School. School and Society, 1947, 65, 113-116.

59. Witty, Paul and Kopel, David. Reading and the Educative Process. New York, Ginn, 1939. Pp. 374.