

A STUDY OF RETARDED READERS IN SPECIAL
READING CLASSES COMPARED WITH
RETARDED READERS IN
REGULAR CLASSES

By

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PREFACE

This study was conducted at the West Junior High School in Ponca City, Oklahoma. Its purpose was to determine if the retarded reader could make more progress when special reading instruction was provided in small classes as compared to the retarded reader following the regular curriculum. No attempt was made to provide any help other than special instruction with appropriate materials.

A survey of literature indicated that large gains in reading level could be made in short periods of time. The author was interested to see if a class of this nature could be of value to the Ponca City School System at the junior high level.

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CHAPTER I

THE PROBLEM

Introduction

In this age of space, of automation and cybernation, reading skills have become increasingly more important to our national security and economic productivity. At the beginning of this century, a skill learned could be counted on as a source of livelihood for the worker's entire working life. Now, because of the rapid rate of innovation, a skill learned by a youth may become obsolete within ten years. According to calculations made by the United States Department of Labor as reported by Morman (1964), "Expected lifetime job changes at age 20 are estimated at six, at age 40--two, and at age 50--one."

Theobald (1964) writes that we are entering into a new social order; that we are leaving the industrial age which combined human skills and machines to enter a cybernated productive system based on machine power and machine skill. Educators today know that they can no longer be content to send students into the labor world with only manual skills. They must have the ability to retrain themselves quickly and adequately for specialized jobs. This requires command of the fundamental processes of learning (reading, writing and oral communications). The importance in the accumulation of facts must be superseded by educating the individual in the arts of independent study and learning.

Teachers, instead of providing set answers about specific areas of information (which can probably be done just as well, if not better, by books, films and programmed instruction) should teach their students the arts and skills of inquiry, of asking the appropriate and perplexing question, of discourse and dialouge and of independent study and learning. (Liverright, 1964).

Research shows that the greatest single factor causing dropouts is the inability to read well enough to work at a given grade level. The dropout has been severely handicapped in the labor market in the past, but will be even more handicapped in the technological world of the future. Of necessity, he must be considered in the educational program. If we accept the findings of research in this area, provisions must be made in the curriculum to do everything possible to improve the reading skills of the retarded reader who is a potential dropout and in turn a candidate for one of the permanently unemployed of the future.

Reading, by its very nature, becomes a lifelong learning process where skills must be continually developed.

Learning to read is a lifelong process. From birth to old age, each period of life makes its contribution to the development of reading abilities, interests, and attitudes. Reading ability, as a part of the individual's total development, increases with his growth in interests and general ability and with the challenge of increasingly complex and difficult reading tasks at each successive educational level. (McCullough, Strang and Traxler, 1946).

Until recently, the teaching of reading has been considered the job of the elementary school. It was thought that reading skills beyond the first few years would develop incidentally while pursuing other courses in the curriculum. Research indicates that this is not enough to develop adequate competence in needed reading skills.

Until comparatively recent years the teaching of reading skills was considered the responsibility of primary teachers. That it is impossible to complete such instruction in the first

three grades became evident as investigations were made into (1) the nature of the reading process and the developmental skills involved, (2) the skills lacking in reading of middlegrade and junior high school pupils, (3) the course of child development. Taken together, the results of these studies showed that the primary child is too immature to acquire the most advanced types of skills and that certain skills must be introduced and mastered in the middle and upper grades at the earliest. (Bamman, Hogan and Green, 1963).

Investigators have researched the effects of systematic remedial instruction in reading. They have found that special instruction in reading skills causes more rapid growth in reading achievement than does incidental and unsystematic help.

Studies have shown that the student whose reading instruction was terminated at the end of elementary school was no better reader at the end of senior high school than he was when he entered high school. Wide reading alone will not necessarily result in reading improvement. The student who reads widely and concentrates on a particular skill, however, can improve his reading. The direction and assistance of a competent teacher will insure maximum improvement. Hence it is very important that planned, sequential, directed reading lessons be continued throughout the junior and senior high school. (Massey and Moore, 1963).

Studies have also shown that provisions for special reading instruction tended to decrease the percentage of dropouts in the school population. Students felt that the schools were trying to help them and many of these studies show definite changes in attitude of the retarded reader toward school.

The past practice in most school systems of terminating special help in reading at the close of the sixth grade is not meeting the needs of students who are expected to read increasingly difficult and varied materials without receiving help in the techniques of reading these materials. The prevalence of drop-out in the tenth grade points to the need for special help in reading between the sixth and tenth grades. (Penty, 1963).

Reading involves fundamental skills and without adequate competence in these skills, no student can be expected to approach his potential in any subject area in the school. If he is to benefit

from the curriculum he pursues to help prepare him for the world in which he lives and works, he must have the opportunity to improve these skills. Administrators and supervisors have definite responsibilities toward making this instruction available to those who need special help. Writing about the responsibilities of administrators and supervisors, Wilste (1961) states:

He knows that reading instruction does not stop in the third grade--or the sixth--or the ninth. Reading is a gradual process of growth. Therefore, the school administrator must be alert to the need of reading improvement at all levels, including the junior and senior high schools. The program should be designed so as to stretch the ability of the best readers as well as to remedy the defects of the poorest. While remedial classes may be necessary for the children whose abilities are found to be so low as to require special attention, the reading program should also challenge reading ability of students in all areas and at all levels.

Research has shown the need for special help in reading. Administrators, supervisors, teachers, and all those charged with the responsibility of curriculum building should make every effort possible to supply such help.

Statement of the Problem

Research has shown the need for improving the reading skills of the retarded reader as well as the need for developing the skills of the more able student. Educators have expressed the need for special reading classes on both the junior high and the senior high school level. Most administrators and school systems are faced with a shortage of reading specialists and trained reading teachers as well as limited finances for making special reading classes a part of the curriculum. As a result, most junior high schools do not provide for adequate programs for continuous development of reading skills.

The problem of this study is to determine whether or not there will be a significant difference in the reading levels of seventh grade retarded readers when these students are given special instruction in small remedial reading classes. A secondary purpose is to determine if there will be significant changes in the attitudes of these readers toward English instruction.

Purpose of the Study

Much has been written relating to the causes of reading retardation. Some research has been done on the junior high level showing remarkable gains in reading levels for those participating in special reading classes. However, comparative research in this field of study appears to be limited.

The purpose of this study is to compare retarded reader gains made in special reading classes with retarded reader gains in the regular classes of the Ponca City West Junior High School. The information gained through this study could be used as a guide for establishing special reading classes on the junior high school level in the Ponca City School System.

Limitations of the Study

This study of necessity is limited to a small population. From the statistical viewpoint, it would have been desirable to have had much larger samples from a larger population, but from the practical point of view and financial limitations, larger samples could not be used. This study is confined to one school and to the gains made in reading levels for a period of twenty-seven weeks. Inferences must

be limited to the population sampled.

Scope of the Study

The population from which the samples were taken for this study included all seventh grade retarded readers entering the Ponca City West Junior High School in the fall semester of 1965. The Stanford Achievement Test, Intermediate II, Reading Test (Form X) was administered to all sixth grade students in the Ponca City School System in May of 1965 and the retarded population was determined from these scores.

Ponca City is a town of 30,000 located in North Central Oklahoma. It is a progressive agricultural community with two major oil refineries, the Continental Oil Company and the Cities Service Oil Company. Most of the parents of students used in this study are paid average salaries although some are paid below average and a few above average.

The Ponca City School System is organized on the 6-3-3 plan. A semi-platoon plan of organization is used in the elementary schools. Science, library, art, music, and physical education are taught in the platoon. The other subjects are taught in the homeroom which consists of one-half of the day. Most of the students used in this study are products of this system. The Junior High Schools are departmentalized.

Definition of Terms

For clarification, some terms are defined as they are used in this study.

Retarded Reader. For the purposes of this study, any student

reading below his grade level, as shown by his score on the Stanford Achievement Test, Intermediate II, Reading Test (Form X).

Special Reading Classes. Classes with a maximum of fifteen retarded readers with emphasis placed upon the instruction of reading skills. The classes met three times a week for the first and third nine week periods and twice a week for the second nine week period. Each class period was fifty-five minutes and was taught by the same teacher.

Regular Classes. Classes scheduled in the regular departmentalized program for all seventh grade students.

Population. All seventh grade retarded readers enrolling for the first time in the West Junior High School in Ponca City.

Group A. Group A was placed in the special reading classes.

Group B. Group B followed the regular program for seventh grade students.

Gates Reading Survey. Forms 1 and 2 were used in this study. Each test consists of three parts; speed and accuracy (36 items), vocabulary test (65 items), and level of comprehension (21 passages). The survey is published by the Teachers College, Columbia University.

Stanford Achievement Test, Intermediate II, Reading Test (form X). This test consists of two parts, word meaning (48 items) and paragraph meaning (64 passages). It is published by Harcourt, Brace and World, Inc.

Otis Self-Administering Test of Mental Ability, Intermediate Examination: Form A (grades 4-9). This test consists of seventy-five items. It is published by Harcourt, Brace and World, Inc.

Personality Adjustment Scale. A scale consisting of five items used in the study reported by Carla S. Turner, (1961).

t-Test. A test used to compare two means. t is the ratio of a deviation from the mean, in a distribution of sample statistics, to the standard error of that distribution. The test makes it possible to contrast the significance of the difference of mean scores. The test can only deal with two mean scores at one time and with one independent variable. The test deals with parametric measurement of interval size and normal distribution.

Chi Square. χ^2 is a method of comparing observed or obtained results with those to be expected theoretically on some hypothesis.

The Sign Test. A test used with two related samples to establish that two conditions are different. It uses plus and minus signs rather than quantitative data and is a nonparametric technique where the only assumption made is that the variable under consideration has a continuous distribution.

The Analysis of Covariance. A statistical technique developed to allow the investigator to attain a measure of control over individual differences. It is frequently used in testing hypotheses pertaining to differences in academic achievement. Adjustment for initial differences in variables and a method of adjusting scores are provided by this technique.

Hypotheses to be Tested

In this study, the following hypotheses will be tested:

1. There will be a difference in the gain of reading speed and accuracy made by Groups A and B. $P < .05$.
2. There will be a difference in the vocabulary improvement made by Groups A and B. $P < .05$.

3. There will be a difference in comprehension gains made by Groups A and B. $P < .05$.

4. There will be a difference in the gain in overall reading skills made by Groups A and B. $P < .05$.

5. There will be a difference in the personality adjustment made by Groups A and B. $P < .05$.

Summary

The world in which we live today is a reading world. Reading skills are invaluable in school, in business, and in recreational activities. Even our individual safety depends upon our ability to read, but more important, if we are to be responsible citizens in our democratic society, we must be able to read critically and intelligently. Yet even in our own country where the aim is to educate everyone to his highest individual potential, we still have many students who are not learning the reading skills necessary to read with enough competence to cope with the everyday problems of life. Administrators, supervisors, teachers, and others charged with curriculum development must provide every possible facility to help students improve reading skills.

This study is to determine whether or not a significant difference in reading skills can be shown through the use of special small reading classes for selected pupils. It will also be concerned with significant changes in personality adjustment.

CHAPTER II

REVIEW OF RELATED LITERATURE

Much research has been done in the field of reading, yet little research has been reported using comparative techniques on the secondary level. The term "retarded reader" carries many different connotations to students, parents, teachers, and writers. There are many causes of reading retardation which was explored in this paper. Many different types of developmental, corrective, and remedial programs have been placed in different school systems to improve the reading ability of both elementary and secondary school students. Some of these are reviewed.

The Retarded Reader

A stigma has become associated or attached to the term "retarded" as many associate it directly with mental retardation. Parents are frightened and children embarrassed when the word "retarded" is mentioned concerning the progress of the child in reading. Even the word remedial has come to have a tainted meaning and many writers are now using the word corrective when referring to programs for helping the slow learner.

Different people see the reader as being retarded in many ways. Many look to the I.Q. score for expected reading proficiency. To some, if a youngster is reading in a book on a lower grade level than

other youngsters in the class, he is a retarded reader. If he is not in the top reading group, he may be seen by some as being retarded. Some compare the student's score with national norms through a variety of reading tests to determine the level of reading and use this as the determining factor for showing reading retardation. Others just say he is not "reading up to his ability." In the thinking of some, if the student cannot read well enough to meet the demands placed upon him, he is a retarded reader. Since most adults are thought to read no higher than the upper intermediate grade level, it is the opinion of some writers that a large majority of our citizens are retarded in reading because of the increasing demands placed upon them.

Bond and Tinker (1957) have worked out a reading expectancy formula for determining the expected reading level of a student. This formula is solved by taking the number of years the child has been in school multiplied by his I.Q. and adding one. This formula might be used as a criterium for determining reading retardation.

The mental ability of a child is most often used in assessing reading expectancy of the child, but care must be exercised when using this measure. One must remember the taking of most I.Q. tests involves reading ability and therefore may give inaccurate measurements. For this reason, individual mental tests are best suited for the retarded reader even though some of the verbal aspects still are present.

The problem of using mental growth as a means of assessing reading expectancy is a complicated one. The use of mental age or grade as the sole criterion of expected attainment in reading is of questionable validity. A more suitable and useful approach would seem to be to depend upon calculations based on years in school and the I.Q. of the child. (Bond and Tinker, 1957).

For the purpose of this study, the retarded reader by definition will be determined from the score made on a standardized test as compared with his grade level.

Causes of Reading Retardation

McKillop (1961) describes reading as a complex perceptual task that involves the ability to make fine visual discriminations. Since it is a complex perceptual task, anything which might interfere with quick accurate perception of symbols may prove a handicap. Poor vision and hearing are examples. Reading is an abstract task which requires seeing relationships not only between word parts but also between ideas. If anything interferes with this task, the student may become fatigued and develop a distaste for the reading process. Reading is an interpersonal experience involving a relationship between the reader and the author. It is essentially a form of communication. Communication may fail because the individual does not know the language or because he does not care to communicate, the material just may not be important to him, or he may be fearful or angry.

Lack of reading skills which produce the retarded reader stem from many causes. At one time, writers tended to place the blame on a single deficiency or a single factor, but research has shown that many complex problems are involved when the youngster does not make expected progress in reading. Most of the research to determine the causes of reading difficulties has centered about three major areas; (1) physical, (2) intellectual, and (3) emotional. Monroe and Backus (1937) classified reading disabilities into five areas; (1) constitutional, (2) intellectual, (3) emotional, (4) educational, and

(5) environmental. Roswell and Natchez (1965) used much the same classification, but say that the investigation of causation is extremely complicated whether considering the causes singly or in combination. They classify the causes as (1) intellectual, (2) physical, (3) social, (4) emotional, and (5) educational.

Obviously, intellect ultimately determines the ability to learn, but estimates of intelligence and achievement should never be considered completely valid or reliable. Since reading is an abstract task, most individuals with low I.Q.'s on individually administered intelligence tests will probably tend to have difficulty in reading, particularly if the teaching method relies heavily upon abstract generalizations. Roswell and Natchez (1964) suggest that quantitative scores should only be used as rough estimates. "They merely suggest the level at which a child may be expected to read." Intelligence is a determinant of reading achievement, but intelligence test scores do not necessarily predict the level of reading achievement.

Research shows that a large percentage of students with serious reading difficulties are of normal or superior intelligence and that they are for some other reason not growing in reading proficiency. It must be remembered also, that intelligence tests to a large extent measure the youngster's reading ability and that even in individual intelligence tests, there are verbal influences which affect the result of the test.

In spite of intemperate attacks by uninformed persons upon the schools and their practices in teaching reading, little has been done to research the educational factors concerned with the teaching of reading. The educational factor includes among other things, the

schools' lack of materials, overcrowded classes and poor teachers.

Some writers are very much concerned with the lack of research in this important area and it has been suggested that this area should be the subject for much future research.

And of all the possible causes of reading difficulties, none has received so little attention in the literature as those related to school influences. Despite the several intemperate attacks by uninformed persons on schools and their practices in teaching reading, no one, so far as I know, has made a careful and thorough study of educational factors and their relations to students' lack of facility in reading. (Karlin, 1964).

A characteristic of reading is that it must be learned. As with other skills, much can be learned about reading without formal instruction; but this learning may prove inefficient and even detrimental toward highly skilled performance. Good teaching is an important factor in acquiring a high degree of reading skill; and conversely, poor teaching can be a severe handicap to the learner. No teacher can teach adequate reading skills without proper training in this area. Many writers are suggesting extensive pre-service preparation for those planning to teach reading. Karlin (1964) says: "Too many teachers have had to rely almost entirely on the teaching manuals that accompany most reading series." Poor teaching in the primary grades will almost inevitably lead to many becoming retarded readers.

This problem will continue to be magnified, if those charged with planning the curricula in junior and senior high schools persist in ignoring the need for reading programs which allow for individual differences. Learning to read is an on-going process and schools must continue to provide opportunities for growth at the secondary level of instruction.

Many youngsters have not learned to read because they have not been taught. A child may have missed a great deal of school,

have changed schools many times, or had many different teachers in any one year. The class may have been too large; the program too poorly organized. In the upper grades many of the more subtle reading skills such as skimming, picking out main ideas, selecting the important points to remember, may never have been demonstrated, analyzed, or practiced. (McKillop, 1961).

When considering physical factors as a cause of reading retardation, those of temporary nature as well as those of a permanent nature must be considered. All teachers should recognize that test results and learning can be affected by such things as a cold, hay fever, lack of sleep and even inadequate clothing. Factors of this nature can be corrected, even though some recurring aspects would have to be recognized.

Defects of a permanent nature are usually listed as follows: visual and hearing losses, motor adjustments, glandular deficiencies, general health, brain damage, congenital word-blindness and lateral dominance. Research investigators are not in agreement about the effects of physical disabilities upon a youngster's performance. There is usually agreement that if a vision or hearing loss is suspected, the pupil should be referred for an examination. Bond and Tinker (1957) suggest that when a child shows sign of becoming a retarded reader, both parents and teachers have a tendency to think of the possibility of visual deficiencies. It is true that a child's eye sight may be so poor that it is practically impossible for him to read. There are a number of less severe eye defects which constitute handicaps to children in the reading situation. When these students try to read, they become uncomfortable, squirmy, fatigued, and distraught to such a degree that they may be able to continue the reading activity for only a short period of time. They may even refuse to read at all.

It is not surprising, therefore, that many studies have concentrated upon this type of disability as a cause for reading retardation. However, investigators themselves and writers who have attempted to evaluate these studies are not in complete agreement concerning the role of visual deficiencies.

Robinson (1947) in summing up the area of physical defects states:

Malnutrition, infections and endocrine disturbances are the three general physical factors mentioned most frequently as possible causes for failure to learn to read. None of the studies gave conclusive evidence that these factors are frequent causes. Eames found that they occur more frequently among poor readers but failed to ascertain their causal relationship.

Ryan (1955) suggests that many poor readers develop due to circumstances beyond their control. During the past decade the United States has witnessed a large migration of its population. As the result, many pupils start a reading program in one school and soon find themselves in another community with an entirely different program. This causes them to miss out on important steps in the developmental processes and they must make educational and emotional adjustments. As a result of being moved to one or more schools, youngsters cannot help but develop some anxieties and insecurity.

It is known that many youngsters have emotional problems which affect their learning. It is not true, however, that all youngsters with emotional problems do not succeed. Diagnosis of these problems are not within the teacher's area of competence. If a student is suspected as having maladjustment, the teacher should always be ready to make a referral to specially trained persons such as a psychologist or psychiatrist. There are numerous psychological factors affecting reading retardation.

The psychological factors that are related to reading retardation are numerous. Sometimes they are easily identified, but at other times they are vague, indefinite, and illusory. These emotional elements function under the surface, frequently in various disguised forms, undermining children's opportunities for successful learning. The effectiveness of psychological problems in halting learning lies in the fact that a child who is preoccupied with fears, anxieties, and guilt feelings cannot concentrate on learning to read. When they are under too much pressure, when their security is threatened, and when they are frustrated, they cannot focus their attention upon academic learning for sustained periods of time. Though they may be physically present in the classroom their thoughts are rarely on the lessons in front of them. (Roswell and Natchez, 1964).

Much emphasis has been placed upon the culturally disadvantaged child in recent years when considering the influence environmental factors have upon the disabled reader. Large cities are showing great concern for the low socio-economic youngster. The Elementary and Secondary Education Act with its new programs and federal monies gives evidence of national concern for the underprivileged. The disadvantaged child may come from the slums of a large city, but certainly is not restricted to this area. Who is the educationally or culturally disadvantaged child?

The answer varies from state to state, from city to city. He lives not only in the central area of our great cities. One southern governor in January of 1964 declared that 20 per cent of the citizens of his state can neither read or write, that 50 per cent of the state's young people fail to complete high school. The disadvantaged child is of no single race or color. Poverty, delinquency, failure to achieve the goals established by the main stream of society are shared by peoples of all colors and national origins.

The disadvantaged individual may derive from a culture which is rich in its own tradition, but which no longer prepares its members for successful participation in society. (Black, 1965).

Riessman (1936) in writing about the characteristics of the disadvantaged says that they are relatively slow, but not stupid; learn better through physical or concrete approach; often appear

anti-intellectual; are superstitious and somewhat religious; come from a male-centered culture, except for Negro subcultures; are inflexible; feel alienated from larger social structure; hold others to blame for their misfortunes; value masculinity; appreciate knowledge for its practical ends, but not for its own sake; are deficient in auditory attention; and read ineffectively and are deficient in communication skills generally. They are frequently crippled in language development and in all forms of communication skills.

Edwards (1956) points out that (1) ever-increasing attention is currently being directed toward the student whose family and community background has not prepared him adequately to come to grips with the typical school curriculum, (2) his lack of readiness leads to frustrations, and (3) he frequently becomes a school dropout.

The culturally deprived child may not have traveled beyond the area of his own neighborhood and experiences he may have had of necessity must originate from this neighborhood. He has had no one to guide him and has not had the opportunity to learn many of the skills of communication. It is also likely that the adults within his family and those of his acquaintance have the same experiential poverty. Language development and the background must also be considered when interpreting an intelligence score. This is particularly true in many homes where English is a second language and in the low socio-economic home.

Riessman (1963) points out that these children have trouble expressing themselves in a school situation and that they are at their best when they can talk about things they have actually seen and done. Fear of failure is a big roadblock to their learning as they are placed in competition with those who have had many more experiences and

training than they have had.

A Survey of Some Junior High Reading Programs

Junior high school reading programs may take many different forms. They may be remedial, corrective, developmental, or any combination of the three. The program may be under the guidance of reading specialists, but more often there is not one available. The instruction may take place with emphasis of teaching reading in each of the disciplines. This of course to a degree must be a part of each subject area. Small classes may be formed to be taught by a reading specialist. More often, a teacher who is interested in this field of work and has had some training will be the teacher. Some school systems make remedial reading a part of the English class with a given amount of time scheduled for developing reading skills. In some schools, a laboratory or workshop course is made available to students as an elective course.

Monroe and Backus (1937) made a study of remedial reading at the junior high school level in Washington, D. C. Two schools were selected for the experiment, the Eliot Junior High School (for white children) and the Randall Junior High School (for colored children). Selections for reading classes were made on the basis of the Metropolitan Reading Test scores. Those children who scored below their reading level were grouped together in sections of English classes. There were 26 children in the low seventh grade level at the Eliot Junior High School.

The remedial work was carried out in two sections of the seventh grade English classes and were taught by the regular English teachers.

Those teachers who had not taught in the elementary school reading program met once each week with the counselors and reading specialists. The group of 26 cases made a median gain of 1.2 years in reading achievement after 14 weeks of special instruction.

The Randall Junior High School was located in the poor section of the city where economic deprivation was prevalent. Thirty-four children were chosen for this study in the same manner as those from the Eliot Junior High School. After 14 weeks of special teaching, the group showed a gain of 0.7 in reading mechanics and 1.3 years in silent reading.

In summarizing the two studies, they suggest that remedial work in reading is effective at the junior high school level under the conditions used in this study. Children working in groups were able to make median gains of from 0.5 to 1.3 years after 14 weeks of remedial work. Individual cases often showed gains of more than two years. In many cases, greater interests in reading and favorable changes in behavior accompanied the gains.

A survey of the reading programs in the Illinois High Schools was made by Baughman (1960). Questionnaires were sent to 269 junior high schools. There were 133 usable returns. Sixty-four per cent of the 133 schools indicated that they provided for special reading instruction. The table which follows shows the programs listed according to the nature of instruction.

TABLE I
READING PROGRAMS IN ILLINOIS HIGH SCHOOLS

Name of Reading Program	Number of Schools
Remedial	23
Developmental	23
Corrective	4
Developmental and Remedial	9
Developmental and Corrective	5
Remedial and Corrective	4
Developmental, Remedial, and Corrective	3
Other	14

It is obvious that only three schools offer all three types of reading instruction. Emphasis on reading instruction for those below grade level is rather new in Illinois. More than 50 per cent of the schools initiated their programs during or after the 1957-58 school year. In 36 schools, special classes met daily; in ten schools they met twice weekly. The others had plans ranging from once a week to ten periods a week. Only 37 per cent of the schools had specially trained teachers to aid or provide the instruction. A variety of instructional materials were used from just textbooks to a number of visual aids including audio-visual equipment. In eleven schools, personnel other than the reading teacher were not involved in the program of instruction. Four schools emphasized that all teachers were reading teachers. Six involved all language arts teachers.

In summary, 86 of the 133 schools reporting offered special reading classes. Most of them based their selection of pupils for special reading instruction on a combination of tests and teacher judgment.

Immaturity was given as the chief cause for poor reading. Baughman's conclusions were that too few Illinois Junior High Schools have comprehensive programs designed to improve the reading skills of all pupils and that there is a need for teachers with special training in reading instruction.

Simmons (1963) studied the reading practices in the five state area of North and South Dakota, Minnesota, Iowa, and Wisconsin as a problem for a doctoral dissertation. The instrument used was a forty-item questionnaire that explored several phases of the high school reading program. The questions were categorized into four areas (1) administrators of the program, (2) nature of the students, (3) general characteristics of the program, and (4) specific practices within the program. A stratified random sample was drawn and 152 schools were surveyed. Of this number, 127 responded to the questionnaire.

Some of the results of this survey were given as follows: (1) more than one-third of the schools stated either flatly or indirectly they had no reading program of any kind; (2) when reading programs were indicated, the majority were reported narrow in scope rigidly administered, and quite limited as to the number of students being served; (3) most of these placed the most emphasis upon the remedial phase of instruction. The methods used in placing students in these classes seemed both haphazard and rigidly controlled. A large number of administrators could be classified as having no formal training in the teaching of reading. Some had fragmentary training, gained as part of a methods course. There were few reading specialists and only one secondary reading teacher was employed in all the schools responding to this survey. The study points up the almost complete lack of

reading instructors whose chief concern is instruction at the high school level. These findings paint a dreary picture of today's secondary reading programs. The concept of expanded scope in high school reading instruction has apparently made very little impact on our present school systems.

As a part of a study of ability grouping programs in Midwestern High Schools, Cawelti (1963) found that twenty-seven out of the forty-two schools studied had some type of reading program. Fifteen of the twenty-seven regarded their programs as essentially remedial as they required special instruction only for those students whose reading ability was below that expected for their grade level. Eight schools had programs which took students voluntarily, regardless of the relationship between reading ability and grade level. The remaining four schools had both remedial and developmental programs. In twenty-one of the high schools the instruction was provided during the regular class period (usually English); in the remaining six schools instruction came during special periods or outside of school hours.

The most common plan provided remedial instruction for a period of nine months; eighteen schools followed this plan. Variations appeared within this procedure from daily instruction to two or three times a week. Seven schools provided instruction for one semester; in the remaining two schools instruction lasted from three to six weeks. All schools with students whose reading abilities were below the expectations for their grade level did not require students to participate in this instruction.

Various materials were used in the special reading instruction. One accelerator was found in eighteen of the twenty-seven schools.

Fourteen schools had at least one S.R.A. Reading Laboratory and five schools used speed improvement films. Only three schools were using a tachistoscope. Various reading materials including commercial periodicals were available.

Administrators frequently said they would like to do more or improve existing programs, but were handicapped by lack of trained personnel and finances.

McCreary (1959) describing the reading program of the Wooster, Ohio Schools states the philosophy of the Wooster Schools is that every child should be given the opportunity to learn to read according to his potential ability. The program was started in the fall of 1950. This report covers a period of nine years. It had its beginning in the elementary schools and was later expanded to include the junior high school. She states that children who are average and above average can show a gain of two or three levels with a few months of individual instruction. If the pupil is slow-learning and his I.Q. is such that he may never bridge the gap between his reading achievement and grade placement, the individual instruction is carried on in the junior high school. In the junior high school reading improvement program, some instruction is done in small groups and some individual instruction is given. The type instruction the student receives depends upon his needs. No special classes are scheduled, but special reading teachers help the classroom teacher. She concludes the needs of all types of children can best be met through partial segregation from the regular classroom. Over a period of nine years, truancy had been reduced to a minimum and many examples can be given of pupils who were greatly retarded at the beginning of the program that have shown great

improvement. Many of these former pupils are now earning their living as useful law-abiding citizens.

Lawson (1963) reports motivation through reading was the objective of the Samuel Gompers Junior High School in Los Angeles. This school enrolled 3,350 pupils. There seemed to be a lack of interest in academic achievement and it was felt this lack of interest stemmed from inability to follow directions and some rather serious reading difficulties. It was decided to devote the full time of two teachers to a program of basic and remedial reading. Classes were scheduled during the school day which numbered from fifteen to twenty pupils.

It was found this experimental program did not meet the needs of the school and the program was expanded to include all of the entering B7 class in September of 1960. It is his opinion if this type of program is to be successful, students must have the desire to read. The program was generally oriented in this direction with the following aims: (1) orienting teachers to the methods, equipment, and enthusiasm of the program; (2) exciting students to read on their own by introducing materials at their individual interest and ability level; (3) developing specific reading skills, such as comprehension, concentration, study skills, phrase reading, purposeful reading, and critical reading (4) diagnosing and evaluating the reading habits of pupils so that their particular problems could be referred to the regular reading classes; and (5) detecting visual deficiencies so they could be referred to the school nurse.

The B7 English/social studies two-period core classes were asked to participate in a six-week portion of the program. The regular teacher took his class to the reading room for one period each day for

six weeks. The reading teacher conducted the class and the core teacher assisted him. Standardized tests showed gains that exceeded expectations. Those with I.Q.'s of 90-100 and retarded one or more years showed the most gain. From a survey of the number of books checked out before the program and after the program, it was found there was an increase of 20 per cent in the circulation of library books. The results of a follow up testing program a semester later showed there was surprising growth during the semester following participation in the program.

Cramer (1963) reported progress in improved reading levels at the Roosevelt Junior High School in Hamilton, Ohio. Through remedial reading classes, a study of 113 students with severe reading retardation showed a median gain of 1.2 years during the initial four week remedial program. Median I.Q. for the group was established at 89. The groups ranged in size from 10 to 24 pupils and met daily. They were given initial individual instruction in the area of mechanical reading skills with emphases placed upon basic phonetic elements and structural analysis.

A slightly different approach to remedial reading in a junior high school is suggested by Wurtz (1960). There was no reading specialist available and the budget for purchase of special reading materials was limited. Twenty-five students were selected on the basis of I.Q. and reading level from tests given in the sixth grade. Five of those selected had an I.Q. of less than 90 with the top limit being 110. Reading retardation was one or more years.

These students were sectioned so that they had sympathetic and understanding teachers in each of the departmental subjects. These

teachers met once a month and all worked to coordinate their activities to improve the reading skills of this group. At the end of the eighth grade, the average I.Q. was 96 and the average pupil had gained three years in reading level in 1.9 school years. Other values seen in the program included: (1) changes in attitude of pupils toward reading, (2) increased oral reading confidence, (3) increased use of the library and (4) the purchase of books from a teenage book club.

He concludes that an effective junior high-school reading program can be developed with limited resources if; (1) there are interested teachers who will work together, (2) the program is a two year one, and (3) an intelligence quotient of 90 be nominal but not a rigid minimum.

Smith (1963) reports one of the most important recent educational trends in Missouri is the extension of reading instruction into the junior high school. A recent study shows more than 80 per cent of the AAA Missouri schools (outside St. Louis and Kansas City) which include grades seven and eight offer some type program of reading instruction. He paraphrases the late William S. Gray's criteria for a sound reading program as follows: (1) has as its purposes to promote the all-round development of students and to promote the needed attitudes, understandings and skills; (2) is an all-school program which involves the support and creative effort of all staff members; (3) is continuous and is structured in accordance with the students' characteristics, interests and needs; (4) is flexible and makes provision for the individual differences of students; (5) provides a wide variety of suitable reading materials; and (6) makes provision for continuous appraisal of the program as a whole and of its various parts.

Using these criteria to evaluate the reading programs of 100 AAA Missouri cooperating schools, only seven were selected as having a sound program. He draws the following conclusions from his study: (1) some type of grouping is necessary, usually small classes; (2) mechanical devices were found to be necessary; (3) a standardized testing program is needed; (4) teachers need professional training and in-service training; (5) all students should be involved in the program; and (6) continuous evaluation is necessary. It is his opinion that the training of personnel, particularly supervisors in instructional problems and procedures, is Missouri's major problem.

Turner (1961) summarizes a research project of special reading instruction conducted in the Sarasota, Florida Junior High School. Students were not admitted to the remedial classes unless the pupil himself requested it. Students allowed to enroll in the five classes were evaluated by I.Q. tests and the Gates Reading Survey Tests. Not more than fifteen pupils were admitted to any one class and the classes met for a fifty-minute period each day for one semester. Special reading materials were made available to the classes and the work of the classes was set up so that approximately 50 per cent of the pupil's time was spent in free reading. The other 50 per cent of his time was spent on materials which seemed most suited to his needs.

The seventy-three pupils participating in the study were divided into seven groups and the results of the study are listed in the following table.

TABLE II

TURNER'S SUMMARY OF THE SEVEN GROUPS

GROUP	I.Q. Range of Group		Changes in Pers. Adj. Oct.-Jan.			No. of Pupils	Aver. Gain of Group-Gates Test Sept.-Jan.
	H-N	Pint.	Up	Same	Down		
GROUP I							
Henmon-Nelson I.Q. 80 or below	67-80	76-108	8	4	1	13	.17 grades
GROUP II							
Pupils with Visual Defects	91-112	91-112	1	2	1	4	.45 grades
GROUP III							
Pupils with Emotional Prob.	79-104	66-118	11	3	1	15	.77 grades
GROUP IV							
Henmon-Nelson I.Q. 81-90	81-90	81-114	5	4	3	12	.82 grades
GROUP V							
Enrichment Choice	103-145	90-126	2	3	1	6	.83 grades
GROUP VI							
One Phase of Reading	97-135	109-120	3	2	2	7	1.2 grades
GROUP VII							
Henmon-Nelson 90 or above General Reading Help Wanted	91-117	71-122	$\frac{7}{37}$	$\frac{6}{24}$	$\frac{3}{12}$	$\frac{16}{73}$	1.34 grades

As can be seen from the table, the students were divided into groups according to their ability, their particular problems or the reason they chose the reading course.

Turner makes the following recommendations based upon this study: (1) students with I.Q.'s of 80 or below should be screened most carefully; (2) special reading classes are not advisable for pupils with specific eye problems as gains for this group will be slight; (3) children with emotional problems desiring help in reading can profit from the permissive atmosphere and smaller classes, but caution should be used to avoid filling the classes with disciplinary problems. Pupils with Henmon-Nelson I.Q.'s 81-90 whose non verbal I.Q.'s are above 90 can apparently raise their reading level up to or nearly equal to their potential level. The group who chose reading simply because they liked to read were a joy to the reading teacher, but care should be used in selections because there are other pupils who are in greater need of the remedial program. Pupils who really desire to improve their reading can accomplish excellent results in one semester. In most cases "average" pupils with I.Q.'s of 90 or better, who really desire to improve their reading ability can make excellent progress in one semester of special reading help in classes of 15 pupils. It is her opinion that these pupils should be given first consideration for admission to these classes. A personality adjustment scale consisting of five items was administered in October and January. It is her belief the most help to the pupils as a whole is the individual attention which aids them in making better personality adjustments. These five items were used in this study and are listed in Appendix E.

Penty (1956) reporting a study of remedial reading in the Battle Creek Public Schools says that the growing desire of adolescents to be like other young people their own age is an incentive to learn to read as well as their classmates. Teaching reading at the junior high level, therefore, can bring rich rewards since most of these students are eager to receive help.

Most of the children selected for this study were two or more years below their grade level. For the most part, they were of average intelligence. Work was done in groups of six students for a period of one hour two days each week. Students were excused from English classes and/or social studies classes as disappointment was frequently expressed when elective classes were missed. Because of the pressure of numbers, only twelve weeks help was permitted many students. Emphasis was placed on the improvement of reading skills and bolstering their self-confidence. Application was made of the SQ3R method. Library reading was encouraged as soon as boys and girls had established independent reading skills and help was given in the selection of books of their interest and at their grade levels. Standardized tests provided objective measurement of reading growth. These were administered at the start and at the end of the twelve week program.

The range of gain in years and months of reading ability made in the twelve weeks by all 318 pupils enrolled in the program over the two-and-a-half-year period was as follows: (1) vocabulary, .0 to 4.6; (2) comprehension, .0 to 4.0; and (3) total, .0 to 4.3. Only 29 students failed to show gains in a twelve-week period. The average gain in years and months of reading ability of the 27 students enrolled in the program each twelve weeks was as follows: (1) vocabulary, .8;

(2) comprehension, 1.2; and (3) total, 1.0. Her conclusions from these data were that junior high school boys and girls can make very good gains in reading ability if individual needs are diagnosed and if the methods and materials used meet their needs.

A Comparative Study

Rasmussen and Dunne (1962) report the results of a study of a corrective reading program conducted at the Walled Lake Junior High School, Walled Lake, Michigan. At the start of the program, teachers handling the corrective classes had not had special reading training in the teaching of remedial classes. Dr. Harry H. Hahn of the Oakland County Reading Clinic assisted in the program by giving demonstrations, acting as a consultant, and assisting with the testing and evaluation. Wayne State University offered a graduate course in the teaching of reading. This course met in the junior high school and enrolled all the teachers participating in this program.

The research was designed to test two hypotheses. Retarded readers with normal intelligence will have (1) a greater improvement in reading skills, and (2) a smaller drop-out rate, as a result of placement in a correctional reading class. The control group comprised of 19 boys and one girl was compared with the correctional group composed of 36 boys and 23 girls. Using students from the correctional group, a matched pairing was made for the control group. They were matched according to intelligence quotient and reading age score obtained at the end of the sixth grade, parent's education, and mean school absences for all grades attended in the junior high school. The matched correctional group and the control group had 19 boys and

one girl in each.

This study spanned three years between the tests of reading skills. Students in the correctional group made more improvement (1.52 mean growth) than those of the control group (1.26 mean growth in reading achievement) but the difference was small and not statistically significant. Clearly then, the first hypothesis was rejected. The second hypothesis was confirmed. Retarded readers do have a smaller drop-out rate as a result of being placed in corrective reading classes.

Summary

Writers, educators, parents, and others do not always have the same conception as to the meaning of the term "retarded reader." Since there is not general agreement on the criteria for defining the retarded reader, it is defined for the purpose of this study as the pupil who is reading below the level of his grade placement as shown by his scores on a standardized test.

There are many reasons listed in the literature which are thought to contribute to reading disability. These are usually categorized under five general headings; physical, mental, social, emotional, and educational. In the past, much of the research has been concentrated upon the physical aspects thought to be the most important causes of a youngster not reading up to his expected potential. Emphasis is now being placed upon the social or culturally deprived student and upon the educational factors involved. Much research is needed in these areas and the new federal support programs should lend added impetus to those interested in researching all the aspects of this important discipline.

Many researchers feel that the causes of retardation must be corrected before progress can be made. In many cases, this involves specially trained personnel, facilities, and financial resources that are not readily available to most school districts. Some writers do suggest that regardless of these many deficiencies, some progress can be made.

The results and conclusions of the research studies indicate that much progress can be achieved in reading level gains over short periods of time, if certain conditions are met. Most writers are in agreement that class sizes should be small (10-15) to allow for individual instruction and to allow a more permissive climate than is possible in the regular classroom. Literature seems to indicate that children with an I.Q. of 80 or less should be excluded or at least be very carefully screened before being placed in a remedial reading class. There is some disagreement concerning the length of time necessary to show significant gains in reading levels, but many writers have shown that substantial gains can be made in periods of from six weeks to one semester. There are those who feel that one or more years are necessary to show significant gains. It should also be pointed out that Rasmussen and Dunne failed to show a significant difference in the gains made by the controlled and correctional groups over a period of three years. Many writers feel that the most important gain shown in special reading classes is the personality adjustment or attitude change on the part of many subjects.

Many studies have been made concerning special reading classes of different kinds in an effort to provide an effective reading program. Much of this research had been concentrated on remedial reading.

Comparative research on the junior and senior high school level that has been reported seems to be limited.

CHAPTER III

PROCEDURES AND INSTRUMENTS

A discussion of the procedures and instruments used are presented in this chapter. The design of the study and methods of selection of the subjects are given. The qualifications and limitations of the special reading teacher are discussed. Materials and classroom procedures used throughout the study are discussed. A description of the instruments used in selection of the subjects and instruments used to evaluate progress is presented.

Design of the Study

Seventy-two seventh grade students of the West Junior High School, Ponca City, Oklahoma, participated in this study. These students were divided into two groups, 38 in Group A and 36 in Group B. Group A was not scheduled for music in order that they could be placed in special reading classes. Group B followed the regularly scheduled program for the seventh grade. The class size for Group A was held to a maximum of fifteen students. The classes met three times a week during the first nine weeks period and two times a week during the second nine weeks with fifty-five minutes allowed for each class period. The study was concluded at the end of twenty-seven weeks which actually allowed for seventy-two class periods of fifty-five minutes. The same teacher taught the three special classes.

Students in both Groups, A and B, were pre-tested with Form 1 of the Gates Reading Survey during the first two days of school. At the end of the twenty-seven week period covered by the study, Groups A and B were post-tested with Form 2 of the Gates Reading Survey. During the third week of school, English teachers were asked to rate the subjects in both groups with the Personality Adjustment Scale used by Turner (1961). Immediately following the twenty-seven week period, the teachers were again asked to rate the students by the same scale without reference to the first rating.

Selection of the Subjects

All sixth grade students in the Ponca City Elementary Schools were given the Otis Self-Administering Tests of Mental Ability, Intermediate Examination, Form A for grades 4-9 by April of 1965. In May of the same year, the Stanford Reading Intermediate Test, Form X was administered to all sixth grade students in the Ponca City Public School System. All students scoring below their grade level on this achievement test were considered to be retarded readers for the purposes of this study.

All retarded readers who were to attend West Junior High School were then paired by sex and matched as nearly as possible by the scores made on the Otis Self-Administering Test of Mental Ability. Following the findings of many studies reviewed, those having I.Q. scores less than 80 were excluded and were not considered for this study. From these pairs, nineteen pairs of boys and eighteen pairs of girls were randomly selected and one from each pair was placed in Group A with the second one of the matched pair placed in Group B.

The Special Reading Teacher

The teacher, Mrs. Grace Wallace, was selected to teach these special reading classes knowing that there would be many slow learners and perhaps some discipline problems. Before joining the faculty at West Junior High School, she had nine years of elementary teaching experience. It has been suggested by some writers that it is desirable for a teacher to have this type experience as a prerequisite for teaching remedial reading in the secondary school.

What particular skills must this teacher of remedial reading possess? Experience has pointed to the desirability of previous experience in the teaching of developmental reading to elementary school children. Many of the students in the remedial program in the secondary school are reading at levels commensurate with the skills of the children in the intermediate grades, and the most severely retarded students may not possess skills above the primary level. At whatever level the skills are found to exist, they can be more easily detected and treated by the teacher who has had experience in teaching skills at those levels. (Bamman, Hogan, and Greene, 1963).

Mrs. Wallace has a masters degree in English from the University of Oklahoma. She is certified to teach elementary work and English in the secondary schools of Oklahoma. She has also done graduate work at Columbia University and has some graduate clinical experience in reading at the University of Oklahoma. She has not, however, been trained as a reading specialist.

An Assumption

As was pointed out in Chapter II, there are many causes of reading disabilities. Because of these disabilities, bad attitudes and poor self-concepts, many writers are of the opinion that little progress can be made toward improving the skills of the retarded reader until

these difficulties have been diagnosed and treated. Lack of professional personnel and finances make this treatment impossible in many school systems; yet the retarded reader is still present in these systems. However, some writers hold that progress can be made regardless of these many difficulties.

Many of the causes for reading disability are quite beyond the reach of the school: Brain damage cannot be repaired. Defective intelligence cannot be made normal. A personal history fraught with rejection, frustration, cruelty, and deprivation cannot be forgotten. Unbalanced, unfit, or unloving parents cannot readily be reformed. Previous frustration and failure which have made reading an object of irrational terror for an individual cannot be forgotten. Circumstances for some nonreading pupils may be such that teachers, counselors, tutors, reading specialists, social workers, and psychiatrists, working singly or in close cooperation, cannot succeed in teaching him to read. But usually despite unfavorable factors in the pupil's life and environment which cannot be overcome, some progress is possible. (Bullock, 1956).

This study is based on the assumption that progress is possible in spite of existing unfavorable factors in the pupils' lives and environments. Therefore, no professional help was used other than the special reading teacher.

Special Materials Used

Within the limitations of the money available, the following materials were selected to be used in this study:

EDL Controlled Reader - material levels, grades 4, 5, and 6
 Readers Digest Skill Builders - grades 3, 4, 5, and 6
 Reading for Meaning - grades 4, 5, and 6 (J. B. Lippincott Company)
 Webster Word Wheels
 SRA Reading Laboratory IIIa
 Gates-Pearson Reading Exercises, Intermediate, RD, FD, and SA
 A Call to Adventure, Lyons Carnahan (Classmate Editions)
 Flash Cards, word recognition and phrases
 New Goals in Reading, The Steck Company
 Progress in Reading, The Steck Company

To make more reading materials available, the teacher encouraged pupils to bring books from home and to make use of the materials in the city library.

Classroom Procedures

As stated above, the study is based on the assumption that progress can be made without the use of outside professional help. The teacher studied the cumulative folders from the elementary schools. Knowing that many problems already mentioned existed and were pertinent to this study, the first few periods were used in an effort to establish a climate where students could be relaxed and comfortable; where they would feel free to express themselves concerning their problems and interests.

After the teacher had developed some desirable rapport with the students, it was necessary to diagnose their individual reading problems and to determine each of their reading levels. Reading disabilities were determined through observation of each student's reading performance using the Reader's Digest materials and the S.R.A. Reading Laboratory, with the teacher checking each pupil's performance. Each student was then placed at the level of reading where it was felt he could achieve some success.

Since most authorities agree that wide and varied reading is one of the best methods of vocabulary development, the pupils were urged to read many books outside the class periods. They were encouraged to bring books from home and make full use of the city library. To help further vocabulary development, each student kept a notebook in which he recorded new words encountered in his reading along with

definitions and meanings of these words. Students were taught dictionary skills and were encouraged to use them as they worked in their notebooks. As often as possible, the teacher listened to each student read orally.

Emphasis was placed upon comprehension from silent reading. If the student failed to attain adequate knowledge of the material, he was asked to reread the passage to find the correct answers. S.R.A. materials and Reader's Digest materials were used throughout the study to evaluate and improve skills. The EDL Controlled Reading Machine ordered for use in these classes did not arrive at the start of the study, but was available for the last twenty-three weeks.

Evaluative Instruments

The Otis Self-Administering Test of Mental Ability, Form A, grades 4 to 9, was used to determine the I.Q. of the population. It is published by Harcourt, Brace and World, Inc. Dr. Arthur S. Otis, who formerly was a specialist with the Advisory Board of the General Staff, United States War Department, is its author. The test consists of 75 items using a wide variety of questions which have been arranged in the order of difficulty according to the number of passes on each item by the students taking the preliminary editions. Reliability was determined by means of correlation between different forms of the same test. The coefficients of correlation of Forms A and B are listed by Otis (1928).

Group I, Form A first, 215 cases, $r = .951 \pm .006$) .948
Group II, Form B first, 212 cases, $r = .943 \pm .007$	

Individual non-verbal I.Q. tests scores would have been more desirable since the scores on Otis Self-Administering Tests of Mental Ability are influenced by the pupil's ability to read. However, since this is the I.Q. score available to the junior high school for all pupils entering the seventh grade, it seemed desirable and practical that these test scores be used in this study.

The Stanford Achievement Test, Intermediate II, Form X, Reading Test, was used to identify the retarded reader as defined in Chapter I. It is published by Harcourt, Brace and World, Inc. and its authors are Truman L. Kelley, Richard Madden, Erick F. Gardner, and Herbert C. Rudman. It is specifically designed to test word meaning and paragraph meaning. The test consists of forty-eight items in word meaning and sixty-four items in paragraphing meaning. The odd-even split-half reliability coefficients, the Kuder Richardson reliability coefficient corrected by the Spearman-Brown Prophecy Formula and the Kuder-Richardson Formula 20 show the correlation of the word meaning test to be .90. The same formulas show the correlation of the paragraph meaning test to be .93 and .92. These values are based on a sample of 1000 from each grade, 5.6 and 6.6, drawn randomly from 76 school systems.

The Gates Reading Survey has been used in many studies and was selected for use with this study because it is recognized as a good indicator of reading ability. Bond (1951) says that it is a good measure of silent reading ability.

The survey is published by the Bureau of Publications, Teachers College, Columbia University with Dr. Arthur I. Gates its author. The survey consists of three sub-tests: speed and accuracy, vocabulary,

and level of comprehension. The speed and accuracy part of the test consists of 36 paragraphs of substantially equal difficulty. The vocabulary sub-test consists of 65 items arranged in order of difficulty. The level of comprehension test is made up of 21 passages arranged in order of increasing difficulty. The raw score of each subject can be converted to grade level and age scores. The average raw score and each sub-test raw score were used in this study.

Three forms of the survey are available. Form 1 was used for the pre-test and Form 2 was used as the post-test in this study. Gates (1960) says that the three forms are equivalent to each other. He lists coefficients in the Supplement Manual for grade 6.8 as: .83 for speed and accuracy, .88 for vocabulary, and .84 for level of comprehension. For grade 8.8 they are listed as: .86 for speed and accuracy, .87 for vocabulary, and .88 for level of comprehension.

The Personality Adjustment Scale reported in Turner's study (1961) was used by the English teachers to rate pupils of both Groups A and B. The subjects were rated at the end of the third week in September and again at the close of the study in March. No reference was made to the first rating. The scale consists of five items which are listed in Appendix E.

Summary

Two groups of seventh grade students were selected from a population of retarded readers as defined in Chapter I. One of these groups was given special reading instruction in small classes and the other group followed the regular curriculum. Both groups were pre-tested and post-tested with different forms of the Gates Reading

Survey. It was pointed out that this study will provide special instruction in small classes with no outside professional help. Classroom procedures and materials were discussed and a brief description of the evaluative instruments used in the study were given. These included the Otis Self-Administering Tests of Mental Ability, the Stanford Achievement Test for Reading, The Gates Reading Survey, and a Personality Adjustment Scale.

CHAPTER IV

ANALYSIS AND STATISTICAL TREATMENT OF DATA

The study was started the second week in September 1965 and was terminated at the end of the third week in March 1966, covering a period of twenty-seven school weeks. The Stanford Reading Test, Form X was used as a basis for the selection of the population of retarded readers. The Gates Reading Survey, Form 1 was used as a pre-test and the Gates Reading Survey, Form 2 was used as the post-test or criterion variable. The raw scores of all tests are listed in Appendixes F through G.

Nineteen boys and eighteen girls were selected for each group, A and B. These were matched by sex and by their scores on the Otis Self-Administering Tests of Mental Ability. In December, one of the girls in Group A moved to East Junior High School in Ponca City. One boy in Group A dropped out of school in November and a boy in Group B moved to Kansas City the latter part of September. This left seventeen girls and seventeen boys in each of Groups A and B, or thirty-four subjects in each of the groups when the study terminated.

Statistical Methods

Analysis of covariance was the statistical technique selected to test hypotheses one through four. This method of testing a hypothesis provides the investigator a means of at least partially controlling

individual differences among members of the groups that might influence their response to the criterion variable. It incorporates elements of both analysis of variance and regression which allows this measure of control of the covariates so that differences of groups compared on the basis of the criterion can be attributed to the treatment being tested. This technique is especially useful when the researcher wishes to test a hypothesis which is concerned with differences in academic achievement. Analysis of covariance was used in this study to control the effects of I.Q., the Stanford Reading Test, and the Gates Reading Survey used as the pre-test.

Chi-square was used to determine whether or not there was a significant difference in personality adjustment between the two groups at the start of the study. It was also used to determine if there was a significant difference in personality adjustment at the termination of the study. This test compares the difference between observed results and the expected results and is a non-parametric technique that can be used with ordinal or nominal measurements.

The sign test was also used to determine if there was a significant difference in personality adjustment in Group A and Group B during the study. This test is also a non-parametric test and is useful with ordinal and nominal measurement.

Testing the Hypotheses

Hypothesis I. There will be a significant difference in reading speed and accuracy made by Groups A and B.

The mean I.Q.'s of both Groups A and B and the mean scores on the Stanford Reading Achievement Test are presented in Table III. The

speed and accuracy scores on the Gates Reading Survey for both groups are also given. These scores which are related to each student's response and could conceivably influence his response to the criterion variable were controlled by using them as covariates in the analysis of covariance. By using them as control variables, possible bias introduced by individual differences are removed in so far as these factors adequately represent the differences in question. The criterion variable is the score measured by Form 2 of the Gates Reading Survey. The information as shown in the table indicates that the group in the special reading classes and the group following the regular program showed some gain. The mean score as shown by the criterion variable was 16.32. The mean I.Q. of the sixty-eight students was 98.46. The mean score of both groups on the Stanford Achievement Reading Test was 51.40 and on Form 1 of the Gates Reading Survey the mean score was 13.27.

TABLE III

SUMS OF THE MEANS OF THE CRITERION AND CONTROL VARIABLES
FOR GROUPS A AND B FOR SPEED AND ACCURACY

		Form 2 Gates Reading Survey Test Scores		Form 1 Gates Reading Survey Test Scores		Stanford Reading Test Scores		Otis I.Q. Scores	
	k	ΣY	\bar{Y}	ΣX_1	\bar{X}	ΣX_2	\bar{X}_2	ΣX_3	\bar{X}_3
Group A	34	556	16.35	449	13.21	1787	52.56	3345	98.38
Group B	34	554	16.29	454	13.35	1708	50.24	3350	98.53
Total	68	1110	16.32	903	13.27	3495	51.40	6695	98.46

All data related to the achievement gain made in speed and accuracy shown by the study are summarized in Table IV. The sums of squares and sums of all possible crossproducts necessary for the computation are shown in this table. These squares and products are for the entire sample and not for an individual group.

TABLE IV
SUMMARY OF EXPERIMENTAL DATA OF SEVENTH GRADE STUDENTS
FOR SPEED AND ACCURACY

Scores	Symbols	Total Groups A and B
Gates - Form 2	$\sum Y^2$	19,474
Gates - Form	$\sum X_1^2$	13,351
Stanford	$\sum X_2^2$	184,261
I.Q.	$\sum X_3^2$	662,545
Crossproducts	$\sum X_1 Y$	15,701
	$\sum X_2 Y$	64,803
	$\sum X_3 Y$	110,467
	$\sum X_1 X_1$	48,365
	$\sum X_2 X_3$	346,033
	$\sum X_1 X_3$	90,673

The deviation values for the sum of squares and sum of cross-products for the total sample, treatment and within subgroups are given in Table V. The values in Tables III and IV were used to compute the data in deviation form. The total sum of squares and the sum of the crossproducts is the sum of the sum of squares and sum of the crossproducts for within subgroups plus the sum of squares and sum of crossproducts for treatment.

Table VI shows the test for significance after the regression equations have been calculated and the adjustments have been made in the deviation form of the sum of squares. The assumptions made here are that all relationships are assumed to be linear and the criterion variable can be predicted from the three control variables. The null hypothesis is assumed to be operational which states there will be no difference in achievement between Group A and Group B. The analysis of covaraince is shown in this table. The F-value of 0.009 is not significant at the .05 level of confidence. Therefore, the null hypothesis could not be rejected. It must be assumed there was no difference in the achievement of Group A and Group B in reading speed and accuracy as a result of the special reading classes.

Since the F-value of the analysis of covariance is insignificant, no adjustment of the means or further testing is in order.

TABLE V
 SUMS OF SQUARES OF CROSSPRODUCTS IN DEVIATION FORM FOR
 GROUPS A AND B FOR SPEED AND ACCURACY

Source of Variation	Σy^2	Σx_1^2	Σx_2^2	Σx_3^2	$\Sigma x_1 y$	$\Sigma x_2 y$
Total	1354.8826	1299.6913	8628.2813	3382.8750	960.8530	1752.2651
Treatment	0.0588	0.3677	91.7793	0.3672	-0.1471	2.3277
Within Subgroups	1354.8237	1229.3236	8536.5020	3381.5078	961.0001	1749.9414

$\Sigma x_3 y$	$\Sigma x_1 x_2$	$\Sigma x_1 x_3$	$\Sigma x_2 x_3$
1180.9707	1944.4561	1167.3389	2499.6914
-0.1475	-5.8091	0.3672	-5.8125
1181.1182	1950.2651	1166.9717	2505.5039

TABLE VI
 TEST OF SIGNIFICANCE OF INFLUENCE OF SPECIAL CLASSES
 FOR SPEED AND ACCURACY

Source of Variation	Degrees of Freedom	Residuals	
		Sum of Squares	Mean Square
Total	64	593.0028	
Within Subgroups	63	592.9156	9.4114
Difference	1	9.0872	

$$F = 0.009$$

$$df = 1,63$$

Hypothesis 2. There will be a difference in the vocabulary improvement made by Groups A and B.

The mean standard scores as measured by Form 1 of the Gates Reading Survey for vocabulary competence are presented in Table VII. The criterion variable is the score of Form 2 on the Gates Reading Survey. Analysis of covariance is used as the test of significance with the scores made on Form 1 of the Gates Reading Survey, vocabulary subtest, scores on the Stanford Reading Test and the I.Q.'s measured by the Otis Self-Administering Test of Mental Ability as the three control variables. In analysis of covariance, the possible bias introduced by individual differences will be removed in so far as the factors adequately represent the differences in question. Both groups showed some improvement in mean standard scores of the pre-test and post-test. The mean scores of both groups on the pre-test was 27.15 and on the post-test the mean score was 30.43.

TABLE VII

SUMS OF THE MEANS OF THE CRITERION AND CONTROL VARIABLES
FOR GROUPS A AND B FOR VOCABULARY

	k	Form 2 Gates Reading Survey Test Scores		Form 1 Gates Reading Survey Test Scores		Stanford Reading Test Scores		Otis I.Q. Scores	
		ΣY	\bar{Y}	ΣX	\bar{X}	ΣX	\bar{X}	ΣX	\bar{X}
Group A	34	1057	31.09	937	27.56	1787	52.56	3345	98.38
Group B	34	1012	29.76	909	26.74	1708	50.24	3350	98.53
Total	68	2069	30.43	1846	27.15	3495	51.40	9995	98.46

A summary of the data obtained on the Gates Reading Survey vocabulary tests is given in Table VIII. The sum of squares and the sum of all possible crossproducts that are necessary for the computation are also shown in the table. These values represent the entire sample and not those of one group.

TABLE VIII
SUMMARY OF EXPERIMENTAL DATA OF SEVENTH GRADE STUDENTS
FOR VOCABULARY

Scores	Symbols	Total Groups A and B
Gates - Form 2	$\sum Y^2$	66,519
Gates - Form 1	$\sum X_1^2$	53,248
Stanford	$\sum X_2^2$	148,261
I.Q.	$\sum X_3^2$	662,545
Crossproducts	$\sum X_1 Y$	58,594
	$\sum X_2 Y$	109,638
	$\sum X_3 Y$	205,146
	$\sum X_1 X_2$	97,803
	$\sum X_2 X_3$	346,033
	$\sum X_1 X_3$	182,990

The deviation values for the sum of the squares and the sum of the crossproducts are given in Table IX. The values in Table VII and Table VIII were used to obtain the sum of squares and the sum of the crossproducts in deviation form for the within subgroups, treatment, and total sample.

Table X demonstrates the test for significance of difference in reading vocabulary due to the special reading instruction after the regression equations have been calculated and adjustment of the sum of squares. The null hypothesis is operational which states that there will be no difference between the two groups. The analysis of covariance is illustrated in this table. The F-value is 0.161 with one and sixty-three degrees of freedom. At the .05 level of significance, this value is not large enough to reject the null after the means of the two groups had been adjusted for individual differences in I.Q.'s, Stanford Reading Scores, and Form 1 of the Gates Reading Survey. It is assumed therefore, that there is no significant difference between Groups A and B in vocabulary improvement due to special reading instruction in small classes.

No further testing or adjusting of the means is in order since the F-value is not significant.

TABLE IX
 SUMS OF SQUARES OF CROSSPRODUCTS IN DEVIATION
 FORM FOR GROUPS A AND B FOR VOCABULARY

Source of Variation	Σy^2	Σx_2^1	Σx_2^2	Σx_3^2	$\Sigma x_1 y$	$\Sigma x_2 y$
Total	3566.6328	3134.5298	8628.2813	3382.8750	2126.7354	3297.4854
Treatment	29.7798	11.5293	91.7793	0.3672	18.5288	52.2783
Within Subgroups	3536.8530	3123.0005	8536.5020	3382.5078	2108.2065	3245.2070

$\Sigma x_3 y$	$\Sigma x_1 x_2$	$\Sigma x_1 x_3$	$\Sigma x_2 x_3$
1440.7813	2924.0303	1240.4414	2499.6914
-3.3068	32.5293	-2.0605	-5.8125
1444.0898	2891.5010	1242.5020	2505.5039

TABLE X
TEST OF SIGNIFICANCE OF INFLUENCE OF SPECIAL CLASSES
ON VOCABULARY

Source of Variation	Residuals		
	Degrees of Freedom	Sum of Squares	Mean Square
Total	64	1796.3883	
Within Subgroups	63	1791.8176	28.4415
Difference	1	4.5707	

$$F = 0.161$$

$$df = 1,63$$

Hypothesis 3. There will be a difference in comprehension gains made by Groups A and B.

The mean scores on level of comprehension as measured by the Gates Reading Survey are given in Table XI. Both Groups A and B showed improvement in the mean standard reading scores. The mean standard score for Form 1 was 21.79 and for Form 2, 24.28. The control variables were scores on Form 1 of the Gates Reading Survey, scores on the Stanford Reading Achievement Test, and I.Q. scores from the Otis Self-Administering Test of Mental Ability. By using these covariates as control variables, the possible bias introduced by individual differences was removed in so far as those factors adequately represented the differences in question.

TABLE XI
 SUMS OF THE MEANS OF THE CRITERION AND CONTROL VARIABLES
 FOR GROUPS A AND B FOR COMPREHENSION

		Form 2 Gates Reading Survey Test Scores		Form 1 Gates Reading Survey Test Scores		Stanford Reading Test Scores		Otis I.Q. Scores	
	k	ΣY	\bar{Y}	ΣX_1	\bar{X}_1	ΣX_2	\bar{X}_2	ΣX_3	\bar{X}_3
Group A	34	862	25.35	754	22.18	1787	52.56	3345	98.38
Group B	34	789	23.21	728	21.41	1708	50.24	3350	98.53
Total	68	1651	24.28	1482	21.79	3495	51.40	6695	98.46

The data as measured by the Gates Reading Survey Tests for level of comprehension is presented in Table XII. The sum of squares and the sum of the crossproducts necessary for the computation of analysis of covariance are listed in the table. These values represent the entire sample and not an individual group.

TABLE XII
SUMMARY OF EXPERIMENTAL DATA OF SEVENTH GRADE STUDENTS
FOR COMPREHENSION

Scores	Symbols	Total Groups A and B
Gates - Form 2	$\sum Y^2$	43,079
Gates - Form 1	$\sum X_1^2$	35,140
Stanford	$\sum X_2^2$	184,261
I.Q.	$\sum X_3^2$	662,545
Crossproducts	$\sum X_1 Y$	37,947
	$\sum X_2 Y$	87,715
	$\sum X_3 Y$	164,107
	$\sum X_1 X_2$	79,041
	$\sum X_2 X_3$	346,033
	$\sum X_1 X_3$	147,469

The data in deviation form obtained on the Gates Reading Survey Tests for level of comprehension are shown in Table XIII. The values shown in Table XI and Table XII were used to compute these deviation forms of the sum of squares and the sum of crossproducts as shown in this table.

The test of significance for level of comprehension as measured by the Gates Reading Survey is shown in Table XIV. These values were calculated from the regression equations and by adjustments of the sum of the squares. The null hypothesis was operational. The analysis of covariance is shown in this table. The F-value was 2.061 with one and sixty-three degrees of freedom. This value is not large enough after the means of the two groups have adjusted for individual differences to reject the null hypothesis at the .05 level of confidence. Therefore, it must be assumed that there was no difference between Groups A and B in level of comprehension as a result of the special reading classes.

Since the F-value is not significant, the adjustment of means and further testing are not in order.

TABLE XIII
 SUMS OF SQUARES OF CROSSPRODUCTS IN DEVIATION
 FORM FOR GROUPS A AND B FOR COMPREHENSION

Source of Variation	$\sum y^2$	$\sum x_1^2$	$\sum x_2^2$	$\sum x_3^2$	$\sum x_1 y$	$\sum x_2 y$
Total	2993.6914	3141.1177	8628.2813	3382.8750	2264.9121	2958.4561
Treatment	87.3677	9.9409	91.7793	0.3672	27.9116	84.8086
Within Subgroups	2915.3237	3131.1768	8536.5020	3382.5078	2237.0005	2873.6475

$\sum x_3 y$	$\sum x_1 x_2$	$\sum x_1 x_3$	$\sum x_2 x_3$
1556.3398	3170.5596	1557.3828	2499.6914
-5.3672	30.2061	-1.9121	-5.8125
1561.7070	3140.3535	1559.2949	2505.5039

TABLE XIV
 TEST OF SIGNIFICANCE OF INFLUENCE OF SPECIAL CLASSES
 ON COMPREHENSION

Source of Variation	Residuals		
	Degrees of Freedom	Sum of Squares	Mean Square
Total	64	1235.9340	
Within Subgroups	63	1196.7749	18.9964
Difference	1	39.1591	

$$F = 2.061$$

$$df = 1,63$$

Hypothesis 4. There will be a difference in the gain of overall reading skills made by Groups A and B.

Since there was no significant difference at the .05 level of confidence in speed and accuracy, vocabulary, and level of comprehension, there could be no significant difference at the .05 level of confidence in the overall reading scores. Further testing of this hypothesis is therefore unnecessary. The assumption must be made that there was no significant difference at the .05 level of confidence in overall reading skills as a result of the special reading classes.

Hypothesis 5. There will be a difference in the personality adjustment made by Groups A and B.

The personality adjustment scores of the subjects in both Groups A and B in September as rated by their English teachers on Turner's (1961) Personality Adjustment Scale are given in Table XV. There were no students among the sixty-eight who were considered to be unusually well-adjusted (rating one). Five in Group A and six in Group B were judged to be above average in cooperation and interest (rating two). Eighteen in Group A and fourteen in Group B were thought to be average in class attitudes and interest in their work (rating three). Nine in each group were considered to be below average in class attitudes and interest in their work (rating four). Two in Group A and five in Group B were judged by their teachers to have emotional difficulties which made them uncooperative in class, showing very little interest in their work (rating five).

TABLE XV
TEACHER RATING OF PERSONALITY ADJUSTMENT
IN SEPTEMBER

Group	1	2	3	4	5
A	0	5	18	9	2
B	0	6	14	9	5

The chi-square test used to determine whether there was a significant difference between the two groups in September is presented in Table XVI. When using the chi-square test, Siegel (1956) recommends that Cochran's suggestion be followed which suggests that less than twenty percent of the cells may have an expected frequency of five with two or more degrees of freedom. In keeping with his suggestion, it was necessary to combine ratings one and two and ratings three and four. The null hypothesis was operational in that there would be no difference in the two groups. The chi-square value of 1.76 was not large enough to reject the null hypothesis. Therefore, it can be assumed there was no significant difference in personality adjustment at the .05 level of confidence between Group A and Group B in September.

TABLE XVI
CHI-SQUARE TEST OF PERSONALITY DIFFERENCE
IN SEPTEMBER

	1 & 2	3	4 & 5	
Group A	5	18	11	34
Group B	6	14	14	34
	11	32	25	68

$$\chi^2 = 1.76$$

$$df = 2$$

The data obtained from the second rating at the end of the third week in March is shown in Table XVII. Teachers had no chance to refer to the previous rating as they were not told in September that there would be a second rating. Four students in Group A and two in Group B were considered to be unusually well adjusted. Nine from Group A and five from Group B were judged to be above average in cooperation and interest. Fourteen from Group A and twelve from Group B were rated as average in cooperation and interest. Three in Group A and thirteen in Group B were considered below average and four from Group A and two from Group B were considered to have emotional problems which made them uncooperative.

TABLE XVII

TEACHER RATING OF PERSONALITY ADJUSTMENT

IN MARCH

Group	1	2	3	4	5
A	4	9	14	3	4
B	2	5	12	13	2

It can be seen from Table XVIII that sixteen students in Group A showed an improvement in personality adjustment, five regressed, and thirteen did not change. In Group B, eleven showed an improvement, seven regressed, and sixteen did not change.

The sign test as demonstrated by Siegel (1956) was used to determine if Group A showed a difference in personality adjustment from September to March. When using the sign test, those subjects showing no change are eliminated. The null hypothesis of no difference is operational. From the table, it can be seen that twenty-one (N) changed in rating. Five changed in the negative direction. This is the smallest number (x) of those making a change. From Table D of Siegel (1956), p for a two-tailed test is equal to .026. The null therefore is rejected at above the .05 level of confidence and it can be assumed that there was a significant difference of personality adjustment in Group A from September to March.

Using the same test for Group B, N is eighteen and x is seven. From Table D, p is equal to .480 for the two-tailed test. The null cannot be rejected and therefore it can be assumed that there was no significant difference in personality adjustment in Group B from September to March.

TABLE XVIII
 CHANGE IN PERSONALITY ADJUSTMENT
 FROM SEPTEMBER TO MARCH

Group	+	-	0
A	16	5	13
B	11	7	16

N = 21)

x = 5) sign test for Group A

p = .026)

N = 18)

x = 7) sign test for Group B

p = .480)

The chi-square test of significance for difference in Groups A and B in March is demonstrated in Table XIX. Chi-square is equal to 4.86 with two degrees of freedom. To reject the null at the .05 level of confidence, chi-square must be equal to or greater than 5.99. For the .1 level of confidence, chi-square must be equal to or larger than 4.60. The null therefore cannot be rejected at the .05 level, but can be rejected above the .1 level of confidence.

TABLE XIX
CHI-SQUARE TEST OF PERSONALITY DIFFERENCE
IN MARCH

	1 & 2	3	4 & 5	
Group A	13	14	7	34
Group B	7	12	15	34
	20	26	22	68

$$\chi^2 = 4.86$$

$$df = 2$$

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The major purpose of this study was to compare gains in reading skills of two groups of seventh grade students who were retarded readers as measured by the Stanford Achievement Reading Test and defined in Chapter I. One group was provided with special reading instruction in small classes while the other group followed the regular curriculum. A secondary objective was to determine if there was a significant change in personality adjustment due to the special reading classes.

Conclusions

On the basis of this study and within the specified limitations, the following conclusions were reached.

1. Both groups, A and B, showed improvement in speed and accuracy. However, the test of significance obtained from analysis of covariance yielded an F-value which was not large enough to reject the null hypothesis of no difference when special instruction was provided in small classes as compared to those in the regular program. It can be assumed that the special instruction provided was not superior to the instruction provided in the regular curriculum for

improving speed and accuracy.

2. Students in both groups, A and B, showed improvement in vocabulary understanding, but the F-value from analysis of covariance was not significant at the .05 level of confidence and the null hypothesis could not be rejected. Therefore, the special reading instruction in small classes did not produce significant gains in vocabulary improvement when compared to the regular curriculum.

3. Both the experimental and control group showed improvement in the level of comprehension. A significant value of F however, was not obtained from analysis of covariance. It must be assumed then that there was no difference in gains achieved in the level of comprehension between the group receiving special instruction in small classes and the group which followed the regular program. Special instruction of reading in small classes did not result in significant gains in level of comprehension.

4. Both groups, A and B showed improvement in overall reading skills as measured by Form 1 and Form 2 of the Gates Reading Survey. Since there were no significant gains in the subtests of speed and accuracy, vocabulary, and level of comprehension, it was impossible to have a significant gain in the overall reading skills. It was assumed then the special instruction in small reading classes did not result in significant gains in overall reading skills.

5. The chi-square test was used to test the data obtained from the personality adjustment scale in September. The null hypothesis of no difference was not rejected which indicated there was no personality difference between the two groups in September. The sign test was applied to the September and March ratings of both groups,

A and B. The null of no difference was rejected for Group A above the .05 level of confidence. It was assumed therefore, there was a personality adjustment change in Group A. The null was not rejected at the .05 level of confidence for Group B and it was assumed there was no personality adjustment change for Group B from September to March. As a further test, chi-square was applied to the data obtained from the March rating and the null of no difference was not rejected at the .05 level of confidence, but could be rejected above the .1 level of confidence. While the two tests were not in agreement as to the level of confidence, it must be assumed there was a difference in personality adjustment toward English instruction from September to March.

Comparison of Study to Past Research

Much research has been reported showing gains in reading skills from special reading classes in comparatively short periods of time. Monroe and Bacus (1937), Wurtz (1960), Turner (1961), and Penty (1956) have reported sizable gains in reading levels in relatively short periods of time. The present study does not tend to support these findings. Rasmussen and Dunne (1962) in a comparative study between a correctional group and a control group over a period of three years did not show a significant difference between the groups in mean growth of reading level. The present study does tend to support these findings.

Wurtz (1960) and Turner (1961) reported improved attitudes in personality as a result of special reading instruction. They felt the greatest help to pupils as a whole came from the individual

attention they received in these classes which helped them make better personality adjustments. The present study tends to support these findings.

Recommendations

The following recommendations are made as a result of this study:

1. More comparative studies in reading should be conducted.
2. More studies should be conducted to determine which retarded readers will profit most from special reading classes.
3. Research is needed to determine the effects of socio-economic background on the improvement shown by retarded readers in special reading programs.
4. More research is needed to determine the effects of special reading classes on attitudes in the different subject areas.
5. Further study should be made using a teacher who has been trained specifically for working with retarded readers at the junior high school level.
6. Supervisors and administrators should work cooperatively to provide opportunities for teachers to research better methods and techniques in teaching retarded readers.

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APPENDIX A
FORM X STANFORD ACHIEVEMENT TEST
INTERMEDIATE II READING TESTS

FORM
X

Stanford Achievement Test

INTERMEDIATE
II

READING
TESTS

TRUMAN L. KELLEY • RICHARD MADDEN • ERIC F. GARDNER • HERBERT C. RUDMAN

If a separate answer sheet is being used, do not make any marks on this test booklet.

NAME _____
last first initial

BOY GIRL GRADE _____ TEACHER _____

SCHOOL _____ DATE OF TESTING _____
year month day

CITY OR TOWN _____ DATE OF BIRTH _____
year month day

STATE _____ AGE _____
years months

GRADE SCORE	PERCENTILE RANK*	STANINE*
Word Meaning		1 2 3 4 5 6 7 8 9
Paragraph Meaning		1 2 3 4 5 6 7 8 9

*Percentile Ranks and Stanines based on tables for Beginning Middle End of grade (check one)



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TEST 1: **Word Meaning**

DIRECTIONS: Read the beginning part of each sentence and the words under it. Decide which of the answers given is *best*. Look at the answer spaces at the right or on your answer sheet (if you have one). Fill in the space which has the same number as the word you have chosen.

SAMPLES

A The name of a color is —

- | | | | | | |
|--------|-------|---|-----------------------|-----------------------|----------------------------------|
| 1 farm | 3 red | 1 | 2 | 3 | 4 |
| 2 milk | 4 pet | A | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> |

B The day that comes after Monday is —

- | | | | | | |
|-----------|-------------|---|-----------------------|-----------------------|-----------------------|
| 5 Sunday | 7 Wednesday | 5 | 6 | 7 | 8 |
| 6 Tuesday | 8 Saturday | B | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

1 A jagged rock is —

- | | | | | | |
|----------|---------|---|-----------------------|-----------------------|-----------------------|
| 1 smooth | 3 round | 1 | 2 | 3 | 4 |
| 2 sharp | 4 flat | 1 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

2 Things which are very much alike are —

- | | | | | | |
|------------|------------|---|-----------------------|-----------------------|-----------------------|
| 5 reverse | 7 similar | 5 | 6 | 7 | 8 |
| 6 circular | 8 distinct | 2 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

3 Steam is a —

- | | | | | | |
|---------|----------|---|-----------------------|-----------------------|-----------------------|
| 1 metal | 3 liquid | 1 | 2 | 3 | 4 |
| 2 solid | 4 vapor | 3 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4 A small, charred bit of wood is a —

- | | | | | | |
|----------|----------|---|-----------------------|-----------------------|-----------------------|
| 5 marble | 7 cinder | 5 | 6 | 7 | 8 |
| 6 bolt | 8 pea | 4 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

5 A plant grown as food for horses and cows is —

- | | | | | | |
|-------------|-------------|---|-----------------------|-----------------------|-----------------------|
| 1 arrowroot | 3 thyme | 1 | 2 | 3 | 4 |
| 2 alfalfa | 4 chickweed | 5 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6 Men freed from slavery gain their —

- | | | | | | |
|------------|-----------|---|-----------------------|-----------------------|-----------------------|
| 5 bondage | 7 meals | 5 | 6 | 7 | 8 |
| 6 drudgery | 8 liberty | 6 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7 A place where water is collected and kept for future use by a city is called a —

- | | | | | | |
|---------|---------------|---|-----------------------|-----------------------|-----------------------|
| 1 pail | 3 reservoir | 1 | 2 | 3 | 4 |
| 2 flask | 4 reservation | 7 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8 To keep something in your possession means to —

- | | | | | | |
|-------------|-------------|---|-----------------------|-----------------------|-----------------------|
| 5 reject it | 7 return it | 5 | 6 | 7 | 8 |
| 6 retain it | 8 spend it | 8 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9 An evil spirit or devil is called a —

- | | | | | | |
|-----------|---------|---|-----------------------|-----------------------|-----------------------|
| 1 demon | 3 clown | 1 | 2 | 3 | 4 |
| 2 monster | 4 snake | 9 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10 People who do not eat meat are —

- | | | | | | |
|-------------|-----------------|----|-----------------------|-----------------------|-----------------------|
| 5 venerable | 7 veterinarians | 5 | 6 | 7 | 8 |
| 6 villains | 8 vegetarians | 10 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11 A man who is strong and forceful has a great deal of —

- | | | | | | |
|------------|-----------|----|-----------------------|-----------------------|-----------------------|
| 1 vigor | 3 money | 1 | 2 | 3 | 4 |
| 2 property | 4 illness | 11 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12 An object completely covered by water is —

- | | | | | | |
|-------------|--------------|----|-----------------------|-----------------------|-----------------------|
| 5 disturbed | 7 subversive | 5 | 6 | 7 | 8 |
| 6 rejected | 8 submerged | 12 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

13 If you are annoyed, you are —

- | | | | | | |
|-------------|----------|----|-----------------------|-----------------------|-----------------------|
| 1 pleased | 3 irked | 1 | 2 | 3 | 4 |
| 2 gratified | 4 joyful | 13 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

14 The meat of a deer is called —

- | | | | | | |
|--------|-----------|----|-----------------------|-----------------------|-----------------------|
| 5 veal | 7 beef | 5 | 6 | 7 | 8 |
| 6 pork | 8 venison | 14 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15 To hesitate is to —

- | | | | | | |
|----------|-----------|----|-----------------------|-----------------------|-----------------------|
| 1 pity | 3 pause | 1 | 2 | 3 | 4 |
| 2 pounce | 4 provide | 15 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16 The air which surrounds the earth is called the —

- | | | | | | |
|--------------|--------------|----|-----------------------|-----------------------|-----------------------|
| 5 atmosphere | 7 hot air | 5 | 6 | 7 | 8 |
| 6 sphere | 8 hemisphere | 16 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17 An anemometer measures the speed of —

- | | | | | | |
|-------------|----------|----|-----------------------|-----------------------|-----------------------|
| 1 airplanes | 3 winds | 1 | 2 | 3 | 4 |
| 2 runners | 4 trains | 17 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18 To counsel is to —

- | | | | | | |
|-----------|----------|----|-----------------------|-----------------------|-----------------------|
| 5 quiz | 7 ignore | 5 | 6 | 7 | 8 |
| 6 contact | 8 advise | 18 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19 If a boy excels in baseball, he is —

- | | | | | | |
|------------|------------|----|-----------------------|-----------------------|-----------------------|
| 1 superior | 3 slow | 1 | 2 | 3 | 4 |
| 2 clumsy | 4 mediocre | 19 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20 When you elude someone, you —

- | | | | | | |
|----------------|--------------|----|-----------------------|-----------------------|-----------------------|
| 5 look for him | 7 avoid him | 5 | 6 | 7 | 8 |
| 6 refer to him | 8 admire him | 20 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

21 A group of four people is called a —

- | | | | | | |
|-----------|-----------|----|-----------------------|-----------------------|-----------------------|
| 1 quintet | 3 couple | 1 | 2 | 3 | 4 |
| 2 bunch | 4 quartet | 21 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

22 Failure of parents to care properly for their children is considered —

- | | | | | | |
|--------------|-----------|----|-----------------------|-----------------------|-----------------------|
| 5 negligence | 7 poverty | 5 | 6 | 7 | 8 |
| 6 ignorance | 8 housing | 22 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

23 When the teacher stresses a point, she —

- | | | | | | |
|-----------------|-----------------|----|-----------------------|-----------------------|-----------------------|
| 1 deplors it | 3 emphasizes it | 1 | 2 | 3 | 4 |
| 2 eliminates it | 4 excludes it | 23 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

TEST 1: Word Meaning (Continued)

- 24 The very poor and needy live in —
 5 greatness 7 luxury 24 5 6 7 8
 6 poverty 8 darkness 6 7 8
- 25 When a sound is muffled, it becomes —
 1 deadened 3 deafening 25 1 2 3 4
 2 increased 4 sharpened 2 3 4
- 26 The process of lowering pressure is called —
 5 repression 7 expression 26 5 6 7 8
 6 decompression 8 expulsion 6 7 8
- 27 The body of a dead animal is called a —
 1 corps 3 sleeper 27 1 2 3 4
 2 ghost 4 carcass 2 3 4
- 28 A menacing person is —
 5 inspiring 7 slinking 28 5 6 7 8
 6 threatening 6 regular 6 7 8
- 29 An agitated person is —
 1 excited 3 happy 29 1 2 3 4
 2 friendly 4 cold 2 3 4
- 30 We are our parents' —
 5 ancestors 7 forefathers 30 5 6 7 8
 6 descendants 8 predecessors 6 7 8
- 31 When something is nearby, it is in the —
 1 vicinity 3 part 31 1 2 3 4
 2 distance 4 future 2 3 4
- 32 If your papers cannot be read because of poor handwriting, they are —
 5 distinct 7 illegible 32 5 6 7 8
 6 illegal 8 meaningful 6 7 8
- 33 A ravenous dog is —
 1 afraid 3 sleepy 33 1 2 3 4
 2 lost 4 hungry 2 3 4
- 34 When a car accelerates, it —
 5 is new 7 goes slower 34 5 6 7 8
 6 goes faster 8 is stuck 6 7 8
- 35 Industrial waste products emptied into a lake may cause —
 1 solution 3 pollution 35 1 2 3 4
 2 infusion 4 corrosion 2 3 4
- 36 To be prominent is to be —
 5 outstanding 7 friendly 36 5 6 7 8
 6 permanent 8 small 6 7 8
- 37 When you complete a task leisurely, you do it —
 1 slowly 3 perfectly 37 1 2 3 4
 2 quickly 4 poorly 2 3 4
- 38 An expeditious worker is —
 5 quick 7 deliberate 38 5 6 7 8
 6 slovenly 8 expendable 6 7 8
- 39 If you are jubilant, you are —
 1 afraid 3 jumpy 39 1 2 3 4
 2 joyful 4 joking 2 3 4
- 40 Enemies are usually —
 5 benevolent 7 amicable 40 5 6 7 8
 6 conciliatory 8 hostile 6 7 8
- 41 A person who attempts to change or improve conditions is called a —
 1 coward 3 reformer 41 1 2 3 4
 2 conservationist 4 conservative 2 3 4
- 42 A painstaking and industrious worker is —
 5 infallible 7 apathetic 42 5 6 7 8
 6 diligent 8 indolent 6 7 8
- 43 A zealous person is —
 1 impolite 3 unhappy 43 1 2 3 4
 2 enthusiastic 4 dangerous 2 3 4
- 44 When something is scorched, it is —
 5 boiled 7 singed 44 5 6 7 8
 6 frozen 8 warmed 6 7 8
- 45 An object full of many tiny holes is —
 1 pillered 3 holy 45 1 2 3 4
 2 mottled 4 porous 2 3 4
- 46 A formidable situation is —
 5 satisfying 7 frightening 46 5 6 7 8
 6 enjoyable 8 comfortable 6 7 8
- 47 An auxiliary engine is —
 1 additional 3 out of order 47 1 2 3 4
 2 large 4 low 2 3 4
- 48 A person swathed in bandages is —
 5 bruised 7 disrobed 48 5 6 7 8
 6 hospitalized 8 enveloped 6 7 8

STOP

Ans. Right	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Gr. Score	20	23	25	27	29	30	32	33	35	36	38	39	41	42	44	46	47	49	51	52	54	56	57	59	60	62	64	66	67	69	71	73	75	76	78	80	83	85	88	90	93	96	100	105	110	115	121	129

TEST 2: Paragraph Meaning

DIRECTIONS: Read each paragraph below. Decide which of the numbered words or phrases below the paragraph is *best* for each blank. Look at the answer spaces at the right or on your answer sheet (if you have one). Fill in the space which has the same number as the word(s) you have chosen.

SAMPLES

We went up in an airplane. At first we flew near the A where we could see people and animals. Later we could not see them. Our plane was too E.

- | | | | | | |
|-----------|---------|---|----------------------------------|-----------------------|-----------------------|
| A 1 house | 3 town | 1 | 2 | 3 | 4 |
| 2 ground | 4 hills | A | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| B 5 high | 7 far | 5 | 6 | 7 | 8 |
| 6 low | 8 fast | B | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Because of the tremendous increase in travel from country to country, many of our world neighbors now dress somewhat as we do. In many cases the traditional national 1 have been laid away to be worn only on special occasions. However, there are still some people who dress as their 2 did before them.

- | | | | | | |
|---------------|------------|---|-----------------------|-----------------------|-----------------------|
| 1 1 flags | 3 medals | 1 | 2 | 3 | 4 |
| 2 costumes | 4 ribbons | 1 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2 5 ancestors | 7 children | 2 | 5 | 6 | 7 |
| 6 neighbors | 8 kings | 2 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Bob went to football practice 3 the doctor's orders against it.

- | | | | | | | |
|-------------------|----------------|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 3 1 on account of | 3 according to | 3 | 1 | 2 | 3 | 4 |
| 2 regardless of | 4 because of | 3 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

One of the oddest of all South American birds is the toucan of Guiana and Brazil. Its huge beak, shaped like the claw of a lobster, is orange in color and is 8 inches long. Its head is blue and orange, and its plumage is black with red and white 4 on the tail. Altogether it is an amazing and 5 creature.

- | | | | | | | |
|---------------|-------------|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 4 5 fur | 7 skin | 4 | 5 | 6 | 7 | 8 |
| 6 scales | 8 feathers | 4 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5 1 dangerous | 3 patriotic | 5 | 1 | 2 | 3 | 4 |
| 2 colorful | 4 fishlike | 5 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

A mirror is made from a perfectly clear piece of glass with a layer of quicksilver behind it. The 6 not only keeps the light from going through but also reflects it. The glass and the quicksilver are both smooth and flat. We can see 7 in anything that is smooth and flat if it is able to throw the light from our faces back to us.

- | | | | | | | |
|-----------------|-------------------|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 6 5 frame | 7 quicksilver | 6 | 5 | 6 | 7 | 8 |
| 6 casing | 8 glass | 6 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7 1 our shadows | 3 a light | 7 | 1 | 2 | 3 | 4 |
| 2 quicksilver | 4 our reflections | 7 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The hump on a camel has nothing to do with its ability to travel long distances without drinking, for its water supply is stored in the cells lining the walls of the first two divisions of its threefold stomach. The hump is more a storehouse of 8. When a camel is fat, the hump is enlarged and stands high on the animal's back. During long journeys, when food is scarce, the camel becomes thin and the hump 9. Undoubtedly, the animal derives a measure of support from its 10, as its body taps that reservoir of fatty nourishment for the energy it expends during work and travel.

- | | | | | | | |
|--------------|------------------|----|-----------------------|-----------------------|-----------------------|-----------------------|
| 8 5 food | 7 blood | 8 | 5 | 6 | 7 | 8 |
| 6 fur | 8 bone | 8 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9 1 expands | 3 shrinks | 9 | 1 | 2 | 3 | 4 |
| 2 gets hard | 4 stays the same | 9 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10 5 stomach | 7 cells | 10 | 5 | 6 | 7 | 8 |
| 6 blood | 8 hump | 10 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Loudness of sound depends directly on the size of the waves that cause it. The proper word in this connection is not size, but amplitude. The greater the amplitude of the waves, the 11 the sound.

- | | | | | | | |
|-------------|-----------|----|-----------------------|-----------------------|-----------------------|-----------------------|
| 11 1 larger | 3 harsher | 11 | 1 | 2 | 3 | 4 |
| 2 louder | 4 softer | 11 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

When looking into a very strong light, part of the retina of the eye is momentarily blinded. During the next few moments, one seems to see a black spot. This is not really a 12, however. The other parts of the 13 can still see, and the part which sees nothing leads to the impression that there is a black spot floating in the air.

- | | | | | | | |
|--------------|--------------|----|-----------------------|-----------------------|-----------------------|-----------------------|
| 12 5 light | 7 black spot | 12 | 5 | 6 | 7 | 8 |
| 6 blind spot | 8 retina | 12 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13 1 retina | 3 brain | 13 | 1 | 2 | 3 | 4 |
| 2 spot | 4 light | 13 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Latin is now what we call a dead language; that is to say, the people of no modern nation speak it. In Roman times Latin was 14 by the most important people then living on the face of the earth. For quite a long time after the downfall of 15, Latin remained the language of scholars. It was the one 16 known to all learned men in the civilized world. They always wrote their books in Latin, and they always used it when delivering lectures.

- | | | | | | | |
|--------------|----------------|----|-----------------------|-----------------------|-----------------------|-----------------------|
| 14 5 spoken | 7 read | 14 | 5 | 6 | 7 | 8 |
| 6 studied | 8 unknown | 14 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15 1 Rome | 3 universities | 15 | 1 | 2 | 3 | 4 |
| 2 the church | 4 Greece | 15 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16 5 science | 7 culture | 16 | 5 | 6 | 7 | 8 |
| 6 art | 8 language | 16 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

TEST 2: Paragraph Meaning (Continued)

Ruth wasn't upset by the little old man. Although he was strange, she was rather pleased by him. She thought he was 17.

- | | | | | | |
|-------------|----------|----|---|---|---|
| 17 1 wicked | 3 quaint | 1 | 2 | 3 | 4 |
| 2 fearful | 4 dirty | 17 | ○ | ○ | ○ |

Among many primitive peoples it is the custom for each tribe to adopt some object from nature as its special symbol, or totem. This totem may be an animal or plant, or a carving in wood or stone, and is supposed to be helpful to the 18 it represents. Tribes that have an animal 19 will never kill that special animal, while those that have adopted a plant as their symbol abstain from eating other 20 of the same species.

- | | | | | | |
|-------------|----------|----|---|---|---|
| 18 5 nature | 7 custom | 5 | 6 | 7 | 8 |
| 6 tribe | 8 animal | 18 | ○ | ○ | ○ |

- | | | | | | |
|-----------|---------|----|---|---|---|
| 19 1 farm | 3 fear | 1 | 2 | 3 | 4 |
| 2 culture | 4 totem | 19 | ○ | ○ | ○ |

- | | | | | | |
|--------------|----------|----|---|---|---|
| 20 5 animals | 7 plants | 5 | 6 | 7 | 8 |
| 6 symbols | 8 humans | 20 | ○ | ○ | ○ |

When air is pumped into an automobile tire, a large volume of air outside the tire is forced into the smaller space inside the tire. All gases, including 21, are compressible; but, to force a gas into a smaller space, extra pressure must be applied to it. The smaller the space to be occupied by the gas, the greater must be the applied 22.

- | | | | | | |
|------------|----------|----|---|---|---|
| 21 1 water | 3 rubber | 1 | 2 | 3 | 4 |
| 2 air | 4 oil | 21 | ○ | ○ | ○ |

- | | | | | | |
|----------|------------|----|---|---|---|
| 22 5 gas | 7 pump | 5 | 6 | 7 | 8 |
| 6 volume | 8 pressure | 22 | ○ | ○ | ○ |

The government of the United States has three branches: the executive, the legislative, and the judicial. The executive branch includes the President, his cabinet, and many federal bureaus. The legislative branch consists of the Senate and the House of Representatives. The judicial branch consists of the federal court system. The Postmaster General, a cabinet member, is in the 23 branch. On the other hand, a senator is a member of the 24 branch, while the head of a federal court in a state is a member of the 25 branch.

- | | | | | | |
|----------------|------------|----|---|---|---|
| 23 1 executive | 3 judicial | 1 | 2 | 3 | 4 |
| 2 legislative | 4 federal | 23 | ○ | ○ | ○ |

- | | | | | | |
|----------------|-----------------|----|---|---|---|
| 24 5 executive | 7 legislative | 5 | 6 | 7 | 8 |
| 6 judicial | 8 congressional | 24 | ○ | ○ | ○ |

- | | | | | | |
|----------------|---------------|----|---|---|---|
| 25 1 executive | 3 legislative | 1 | 2 | 3 | 4 |
| 2 judicial | 4 state | 25 | ○ | ○ | ○ |

Astronomy, the study of all the celestial bodies in the known universe, is the most comprehensive of all sciences. Since we know that from the earliest moment of recorded time, and even before, the priests of Egypt and Babylonia surveyed the 26 regularly, we can also say that 27 is the 28 science known to man.

- | | | | | | |
|------------|-----------|----|---|---|---|
| 26 5 earth | 7 heavens | 5 | 6 | 7 | 8 |
| 6 oceans | 8 gods | 26 | ○ | ○ | ○ |

- | | | | | | |
|----------------|------------|----|---|---|---|
| 27 1 surveying | 3 religion | 1 | 2 | 3 | 4 |
| 2 astronomy | 4 history | 27 | ○ | ○ | ○ |

- | | | | | | |
|------------------|------------------|----|---|---|---|
| 28 5 oldest | 7 most religious | 5 | 6 | 7 | 8 |
| 6 most difficult | 8 best | 28 | ○ | ○ | ○ |

Bronze is a brown alloy of copper and some other metal, usually tin. Bronze is sometimes an alloy of 29 with zinc or with other metals. The word also refers to a color that may be either yellowish or reddish 30.

- | | | | | | |
|------------|----------|----|---|---|---|
| 29 1 metal | 3 copper | 1 | 2 | 3 | 4 |
| 2 bronze | 4 tin | 29 | ○ | ○ | ○ |

- | | | | | | |
|------------|----------|----|---|---|---|
| 30 5 brown | 7 zinc | 5 | 6 | 7 | 8 |
| 6 alloy | 8 copper | 30 | ○ | ○ | ○ |

The Odyssey is the story told by Homer of the ten-year journey of Odysseus, a Greek hero of the war at Troy. Because he had made the gods angry with him, 31 was not permitted to return directly home from 32, but first had to wander for 33 years.

- | | | | | | |
|-----------------|--------------|----|---|---|---|
| 31 1 the Trojan | 3 Odysseus | 1 | 2 | 3 | 4 |
| 2 Homer | 4 the author | 31 | ○ | ○ | ○ |

- | | | | | | |
|-----------|---------------|----|---|---|---|
| 32 5 Troy | 7 Greece | 5 | 6 | 7 | 8 |
| 6 Homer | 8 the Odyssey | 32 | ○ | ○ | ○ |

- | | | | | | |
|-------------|-----------|----|---|---|---|
| 33 1 twenty | 3 fifteen | 1 | 2 | 3 | 4 |
| 2 five | 4 ten | 33 | ○ | ○ | ○ |

Names of characters and events in stories often are symbolic and therefore may be used by the reader to make predictions about the future events in the story. If, in a novel, on three previous occasions it had begun to rain before an unpleasant event had materialized, "rain" in the story would mean 34. If the main character's name is Mr. Merrysmith, you would expect him to be 35. Colors are also very often used symbolically: white is most often used to represent life. In the same setting one would expect black to represent 36.

- | | | | | | |
|--------------------|---------------------|----|---|---|---|
| 34 5 impending joy | 6 present happiness | 5 | 6 | 7 | 8 |
| 7 impending sorrow | 8 past grief | 34 | ○ | ○ | ○ |

- | | | | | | |
|--------------------|------------|----|---|---|---|
| 35 1 uncooperative | 3 sad | 1 | 2 | 3 | 4 |
| 2 unpleasant | 4 mirthful | 35 | ○ | ○ | ○ |

- | | | | | | |
|------------|------------|----|---|---|---|
| 36 5 death | 7 darkness | 5 | 6 | 7 | 8 |
| 6 God | 8 birth | 36 | ○ | ○ | ○ |

TEST 2: Paragraph Meaning (Continued)

Madame Curie, who must be placed among those rare and fortunate few who bring into science an idea which gives an entirely new direction to scientific work and thought, was a poor Polish girl whose maiden name was Marie Sklodowska, and whose first lessons in chemistry were learned at the lycée in Warsaw. There she took her degree and was fired with the desire to study in the schools of Paris, to which she made her way. As a struggling pupil she worked at the Sorbonne, where her industry and talent became recognized. She studied, as others did, the radioactive minerals then beginning to excite attention, but from them she drew more than anyone else had done, for she brought forth the strange and wonderful metal, radium.

This passage is best described as 37.

- 37 1 fiction 3 science 1 2 3 4
2 fantasy 4 biography ○ ○ ○ ○

It is evident that Madame Curie was primarily interested in 38.

- 38 5 teaching 7 writing 5 6 7 8
6 research 8 family life ○ ○ ○ ○

Madame Curie's greatest contribution to science, according to this passage, was her 39.

- 39 1 industry and energy
2 victory over hardship
3 discovery of radium
4 work with metals 1 2 3 4
39 ○ ○ ○ ○

The passage indicates that Madame Curie's abilities as a scientist were 40.

- 40 5 misunderstood 7 poorly developed 5 6 7 8
6 unrecognized 8 outstanding ○ ○ ○ ○

Madame Curie was primarily a 41.

- 41 1 biologist 3 chemist 1 2 3 4
2 medical doctor 4 geologist ○ ○ ○ ○

Why does water freeze? This sounds like a simple question, but no one can answer it yet. We do not know why, as heat leaves 42, it goes from the liquid into the 43 state.

- 42 5 air 7 steam 5 6 7 8
6 water 8 ice ○ ○ ○ ○

- 43 1 fluid 3 cold 1 2 3 4
2 solid 4 vapor ○ ○ ○ ○

The left side of the brain controls the muscles of the right side of the body and vice versa. Therefore, an injury to the right side of the brain in all probability would result in paralysis to the 44.

- 44 5 left side of the body
6 entire body
7 right side of the body
8 right side of the brain 44 5 6 7 8
○ ○ ○ ○

The North Pacific region of the United States has led the nation in lumbering since 1900. In fact, the states of Washington and Oregon produce almost a third of the country's timber. As most of western Washington's forests stand within 50 miles of the various channels of Puget Sound, the logs can be floated to lumber mills built at tidewater. The mills can then ship the lumber by inexpensive ocean freight to southern Pacific ports and via the Panama Canal to eastern ports. They also export lumber to Europe and to Asia.

It is evident that the northwest part of the United States has many 45.

- 45 1 trees 3 ocean ports 1 2 3 4
2 people 4 canals 45 ○ ○ ○ ○

"They" in the last sentence refers to 46.

- 46 5 Washington and Oregon
6 Pacific ports
7 eastern ports
8 the mills 46 5 6 7 8
○ ○ ○ ○

The mills use ocean freight for shipping to factories in the United States because it is 47.

- 47 1 cheap 3 fast 1 2 3 4
2 dependable 4 less troublesome 47 ○ ○ ○ ○

As used in this passage, the word "timber" in the second sentence most nearly means 48.

- 48 5 wood pulp
6 trees for nurseries
7 wood for building
8 firewood 48 5 6 7 8
○ ○ ○ ○

It is apparent from the passage that there are many 49 in western Washington.

- 49 1 lakes
2 railroads
3 rivers and streams
4 roads 49 1 2 3 4
○ ○ ○ ○

TEST 2: Paragraph Meaning (Continued)

Jake and Bud were great friends but were incredibly different in certain respects. Jake was carefree and cheerful and, for a boy his age, very courageous. Bud was quiet and 50 and occasionally appeared to be somewhat of a 51.

- | | | |
|-------------|----------|------------|
| 50 5 gay | 7 polite | 5 6 7 8 |
| 6 solemn | 8 smart | 50 ○ ○ ○ ○ |
| 51 1 coward | 3 fool | 1 2 3 4 |
| 2 hero | 4 bully | 51 ○ ○ ○ ○ |

One should not confuse the number of light waves per second, or the frequency of the 52, with the rate at which light is traveling. A tall man with very long legs and a boy with short legs may be walking side by side at exactly the same rate, but the boy may be taking three strides to the man's one. In somewhat the same way all the kinds of light travel at 53, but violet light, the visible light with the highest frequency, corresponds to the boy's short strides, and red light, the visible light with the longest wave length, to the 54 strides of the man.

- | | | |
|----------------------|-----------------|------------|
| 52 5 sound | 7 waves | 5 6 7 8 |
| 6 color | 8 air | 52 ○ ○ ○ ○ |
| 53 1 different rates | 3 a slow rate | 1 2 3 4 |
| 2 proportional rates | 4 the same rate | 53 ○ ○ ○ ○ |
| 54 5 short | 7 quick | 5 6 7 8 |
| 6 long | 8 frequent | 54 ○ ○ ○ ○ |

The planets travel around the sun in elliptical paths; therefore, any one planet is not always the same distance from the sun. A planet's closest approach to 55 is called its perihelion, from the Greek words "peri," meaning nearby, and "helion," meaning sun. Its farthest point from the sun is called its aphelion. The moon also travels around the earth in 56. Its farthest point of difference is called its apogee; its nearest point is called its perigee. "Apo" means 57.

- | | | |
|----------------|---------------|------------|
| 55 1 the earth | 3 its ellipse | 1 2 3 4 |
| 2 its neighbor | 4 the sun | 55 ○ ○ ○ ○ |
| 56 5 circles | 7 24 hours | 5 6 7 8 |
| 6 ellipses | 8 perihelion | 56 ○ ○ ○ ○ |
| 57 1 planet | 3 around | 1 2 3 4 |
| 2 near | 4 away | 57 ○ ○ ○ ○ |

A simple transformer consists of two coils, called primary and secondary, usually wound on a core of magnetic material. A varying voltage in the primary 58 sets up a corresponding voltage in the 59 coil.

- | | | |
|-------------|---------------|------------|
| 58 5 magnet | 7 transformer | 5 6 7 8 |
| 6 coil | 8 core | 58 ○ ○ ○ ○ |
| 59 1 simple | 3 first | 1 2 3 4 |
| 2 magnetic | 4 secondary | 59 ○ ○ ○ ○ |

Five prizes, worth several thousand dollars each, are awarded annually under the will of Alfred Nobel, a Swedish chemist, inventor of dynamite and other high explosives. He made a fortune from the manufacture of these, yet he was a lover of peace, and the most celebrated of the five prizes, the one people are chiefly thinking of when they speak of the Nobel prize, is given to the person or society which in any year does the greatest service in the cause of international brotherhood, in reducing or ending standing armies, or in promoting peace. Of the remaining prizes, one is for the most remarkable piece of idealist writing, and the other three are for eminence in physical, chemical, and medical science respectively.

The Nobel prize for literature is awarded to authors whose works embody 60.

- | | | |
|------------------|----------------|------------|
| 60 5 peace plans | 7 high ideals | 5 6 7 8 |
| 6 research | 8 love stories | 60 ○ ○ ○ ○ |

How often are the Nobel prizes awarded? 61

- | | | | | |
|----------------|-------------------|--------------------|-----------------------------|------------|
| 61 1 each year | 2 every two years | 3 every five years | 4 The passage does not say. | 1 2 3 4 |
| | | | | 61 ○ ○ ○ ○ |

Which one of the following persons would have *least* opportunity to receive a Nobel prize? 62

- | | | |
|-----------------|----------------|------------|
| 62 5 a novelist | 7 an actor | 5 6 7 8 |
| 6 a statesman | 8 a biochemist | 62 ○ ○ ○ ○ |

What was Alfred Nobel's professional field of work? 63

- | | | | | |
|---------------|-------------|--------------|-----------------------------|------------|
| 63 1 military | 2 chemistry | 3 government | 4 The passage does not say. | 1 2 3 4 |
| | | | | 63 ○ ○ ○ ○ |

The irony of the Nobel prize for peace is that so much of the money for the award was earned from 64.

- | | | |
|----------------|--------------|------------|
| 64 5 chemicals | 7 books | 5 6 7 8 |
| 6 oil | 8 explosives | 64 ○ ○ ○ ○ |

STOP

No. Right	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Gr. Score	below	20	20	21	22	23	24	25	26	28	29	30	32	34	36	38	39	41	42	43	44	46	47	48	49	50	52	53	54	56	57	59	60	61	62	64	65	66	67	69	70	72	73	75	77	78	80	82	84	
No. Right (cont'd)	51	52	53	54	55	56	57	58	59	60	61	62	63	64																																				
Gr. Score	87	92	96	100	104	106	109	112	115	117	120	123	126	129																																				

APPENDIX B

OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

INTERMEDIATE EXAMINATION: FORM A

OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

By ARTHUR S. OTIS, PH.D.

Formerly Development Specialist with Advisory Board, General Staff, United States War Department

INTERMEDIATE EXAMINATION: FORM A For Grades 4-9

20

Score.....

Read this page. Do what it tells you to do.

Do not open this paper, or turn it over, until you are told to do so. Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name..... Age last birthday..... years
First name, initial, and last name

Birthday..... Teacher..... Date..... 19....
Month Day

Grade..... School..... City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

Sample: Which one of the five words below tells what an apple is?
1 flower, 2 tree, 3 vegetable, 4 fruit, 5 animal..... (4)

The right answer, of course, is "fruit"; so the word "fruit" is underlined. And the word "fruit" is No. 4; so a figure 4 is placed in the parentheses at the end of the dotted line. This is the way you are to answer the questions.

Try this sample question yourself. Do not write the answer; just draw a line under it and then put its number in the parentheses:

Sample: Which one of the five things below is round?
1 a book, 2 a brick, 3 a ball, 4 a house, 5 a box.....()

The answer, of course, is "a ball"; so you should have drawn a line under the words "a ball" and put a figure 3 in the parentheses. Try this one:

Sample: A foot is to a man and a paw is to a cat the same as a hoof is to a — what?
1 dog, 2 horse, 3 shoe, 4 blacksmith, 5 saddle.....()

The answer, of course, is "horse"; so you should have drawn a line under the word "horse" and put a figure 2 in the parentheses. Try this one:

Sample: At four cents each, how many cents will 6 pencils cost?.....()

The answer, of course, is 24, and there is nothing to underline; so just put the 24 in the parentheses. If the answer to any question is a number or a letter, put the number or letter in the parentheses without underlining anything. Make all letters like printed capitals.

The test contains 75 questions. You are not expected to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to begin. Try to get as many right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

Do not turn this page until you are told to begin.

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EXAMINATION BEGINS HERE.

1. Which one of the five things below does not belong with the others? (Do not write on these dotted lines.) ()
1 potato, 2 turnip, 3 carrot, 4 stone, 5 onion.....
2. Which one of the five words below tells best what a saw is? ()
1 something, 2 tool, 3 furniture, 4 wood, 5 machine.....
3. Which one of the five words below means the opposite of west? ()
1 north, 2 south, 3 east, 4 equator, 5 sunset.....
4. A hat is to a head and a glove is to a hand the same as a shoe is to what? ()
1 leather, 2 a foot, 3 a shoestring, 4 walk, 5 a toe.....
5. A child who knows he is guilty of doing wrong should feel (?) ()
1 bad, 2 sick, 3 better, 4 afraid, 5 ashamed.....
6. Which one of the five things below is the smallest? ()
1 twig, 2 limb, 3 bud, 4 tree, 5 branch.....
7. Which one of the five things below is most like these three: cup, plate, saucer? ()
1 fork, 2 table, 3 eat, 4 bowl, 5 spoon.....
8. Which of the five words below means the opposite of strong? ()
1 man, 2 weak, 3 small, 4 short, 5 thin.....
9. A finger is to a hand the same as a toe is to what? ()
1 foot, 2 toenail, 3 heel, 4 shoe, 5 knee.....
10. Which word means the opposite of sorrow? ()
1 sickness, 2 health, 3 good, 4 joy, 5 pride.....
11. Which one of the ten numbers below is the smallest? (Tell by letter.) ()
A 6084, B 5160, C 4342, D 6521, E 9703, F 4296, G 7475, H 2657, J 8839, K 3918
12. Which word means the opposite of pretty? ()
1 good, 2 ugly, 3 bad, 4 crooked, 5 nice.....
13. Do what this mixed-up sentence tells you to do. ()
number Write the the in 5 parentheses.....
14. If we believe some one has committed a crime, but we are not sure, we have a (?) ()
1 fear, 2 suspicion, 3 wonder, 4 confidence, 5 doubtful.....
15. A book is to an author as a statue is to (?) ()
1 sculptor, 2 marble, 3 model, 4 magazine, 5 man.....
16. Which is the most important reason that words in the dictionary are arranged alphabetically? ()
1 That is the easiest way to arrange them. 2 It puts the shortest words first. 3 It enables us to find any word quickly. 4 It is merely a custom. 5 It makes the printing easier ..
17. Which one of the five things below is most like these three: plum, apricot, apple? ()
1 tree, 2 seed, 3 peach, 4 juice, 5 ripe.....
18. At 4 cents each, how many pencils can be bought for 36 cents? ()
19. If a person walking in a quiet place suddenly hears a loud sound, he is likely to be (?) ()
1 stopped, 2 struck, 3 startled, 4 made deaf, 5 angered.....
20. A boy is to a man as a (?) is to a sheep. ()
1 wool, 2 lamb, 3 goat, 4 shepherd, 5 dog.....
21. One number is wrong in the following series. What should that number be? (Just write the correct number in the parentheses.) ()
1 6 2 6 3 6 4 6 5 6 7 6.....
22. Which of the five things below is most like these three: horse, pigeon, cricket? ()
1 stall, 2 saddle, 3 eat, 4 goat, 5 chirp.....
23. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.) ()
nuts from squirrels trees the gather.....
24. A man who betrays his country is called a (?) ()
1 thief, 2 traitor, 3 enemy, 4 coward, 5 slacker.....
25. Food is to the body as (?) is to an engine. ()
1 wheels, 2 fuel, 3 smoke, 4 motion, 5 fire.....
26. Which tells best just what a pitcher is? ()
1 a vessel from which to pour liquid, 2 something to hold milk, 3 It has a handle, 4 It goes on the table, 5 It is easily broken.....

Do not stop. Go on with the next page.

27. If George is older than Frank, and Frank is older than James, then George is (?) James.
1 older than, 2 younger than, 3 just as old as, 4 (cannot say which)..... ()
28. Count each 7 below that has a 5 next after it. Tell how many 7's you count.
7 5 3 0 9 7 3 7 8. 5 7 4 2 1 7 5 7 3 2 4 7 0 9 3 7 5 5 7 2 3 5 7 7 5 4 7..... ()
29. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.)
leather shoes usually made are of..... ()
30. An electric light is to a candle as a motorcycle is to (?)
1 bicycle, 2 automobile, 3 wheels, 4 speed, 5 police..... ()
31. Which one of the words below would come first in the dictionary?
1 march, 2 ocean, 3 horse, 4 paint, 5 elbow, 6 night, 7 flown..... ()
32. The daughter of my mother's brother is my (?)
1 sister, 2 niece, 3 cousin, 4 aunt, 5 granddaughter..... ()
33. One number is wrong in the following series. What should that number be?
3 4 5 4 3 4 5 4 3 5..... ()
34. Which of the five things below is most like these three: boat, horse, train?
1 sail, 2 row, 3 motorcycle, 4 move, 5 track..... ()
35. If Paul is taller than Herbert and Paul is shorter than Robert, then Robert is (?) Herbert.
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ()
36. What is the most important reason that we use clocks?
1 to wake us up in the morning, 2 to regulate our daily lives, 3 to help us catch trains,
4 so that children will get to school on time, 5 They are ornamental..... ()
37. A coin made by an individual and meant to look like one made by the government is called(?)
1 duplicate, 2 counterfeit, 3 imitation, 4 forgery, 5 libel..... ()
38. A wire is to electricity as (?) is to gas.
1 a flame, 2 a spark, 3 hot, 4 a pipe, 5 a stove..... ()
39. If the following words were arranged in order, with what letter would the middle word begin?
Yard Inch Mile Foot Rod..... ()
40. One number is wrong in the following series. What should that number be?
5 10 15 20 25 29 35 40 45 50..... ()
41. Which word means the opposite of truth?
1 cheat, 2 rob, 3 liar, 4 ignorance, 5 falsehood..... ()
42. Order is to confusion as (?) is to war.
1 guns, 2 peace, 3 powder, 4 thunder, 5 army..... ()
43. In a foreign language, good food = Bano Naab
good water = Heto Naab
The word that means *good* begins with what letter?..... ()
44. The feeling of a man for his children is usually (?)
1 affection, 2 contempt, 3 joy, 4 pity, 5 reverence..... ()
45. Which of the five things below is most like these three: stocking, flag, sail?
1 shoe, 2 ship, 3 staff, 4 towel, 5 wash..... ()
46. A book is to information as (?) is to money.
1 paper, 2 dollars, 3 bank, 4 work, 5 gold..... ()
47. If Harry is taller than William, and William is just as tall as Charles, then Charles is (?) Harry.
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ()
48. If the following words were arranged in order, with what letter would the middle word begin?
Six Ten Two Eight Four..... ()
49. If the words below were rearranged to make a good sentence, with what letter would the third word of the sentence begin? (Make the letter like a printed capital.)
men high the a wall built stone..... ()
50. If the suffering of another makes us suffer also, we feel (?)
1 worse, 2 harmony, 3 sympathy, 4 love, 5 repelled..... ()
51. In a foreign language, grass = Moki
green grass = Moki Laap
The word that means *green* begins with what letter?..... ()

Do not stop. Go on with the next page.

52. If a man has walked west from his home 9 blocks and then walked east 4 blocks, how many blocks is he from his home? ()
53. A pitcher is to milk as (?) is to flowers.
1 stem, 2 leaves, 3 water, 4 vase, 5 roots ()
54. Do what this mixed-up sentence tells you to do.
sum three Write two the four and of ()
55. There is a saying, "Don't count your chickens before they are hatched." This means (?)
1 Don't hurry. 2 Don't be too sure of the future. 3 Haste makes waste. 4 Don't gamble ()
56. Which statement tells best just what a fork is?
1 a thing to carry food to the mouth, 2 It goes with a knife, 3 an instrument with prongs at the end, 4 It goes on the table, 5 It is made of silver ()
57. Wood is to a table as (?) is to a knife.
1 cutting, 2 chair, 3 fork, 4 steel, 5 handle ()
58. Do what this mixed-up sentence tells you to do.
sentence the letter Write last this in ()
59. Which one of the words below would come last in the dictionary?
1 alike, 2 admit, 3 amount, 4 across, 5 after, 6 amuse, 7 adult, 8 affect ()
60. There is a saying, "He that scatters thorns, let him go barefoot." This means (?)
1 Let him who causes others discomforts bear them himself also. 2 Going barefoot toughens the feet. 3 People should pick up what they scatter. 4 Don't scatter things around. ()
61. If the following words were arranged in order, with what letter would the middle word begin?
Plaster Frame Wallpaper Lath Foundation ()
62. In a foreign language,
many boys = Boka Hepo
many girls = Marti Hepo
many boys and girls = Boka Ello Marti Hepo
The word that means *and* begins with what letter? ()
63. A statement which expresses just the opposite of that which another statement expresses is said to be a (?)
1 lie, 2 contradiction, 3 falsehood, 4 correction, 5 explanation ()
64. There is a saying, "Don't look a gift horse in the mouth." This means (?)
1 It is not safe to look into the mouth of a horse. 2 Although you question the value of a gift, accept it graciously. 3 Don't accept a horse as a gift. 4 You cannot judge the age of a gift horse by his teeth. ()
65. Which one of the words below would come last in the dictionary?
1 hedge, 2 glory, 3 label, 4 green, 5 linen, 6 knife, 7 honor ()
66. Which statement tells best just what a watch is?
1 It ticks, 2 something to tell time, 3 a small, round object with a chain, 4 a vest-pocket-sized time-keeping instrument, 5 something with a face and hands ()
67. Ice is to water as water is to what?
1 land, 2 steam, 3 cold, 4 river, 5 thirst ()
68. Which statement tells best just what a window is?
1 something to see through, 2 a glass door, 3 a frame with a glass in it, 4 a glass opening in the wall of a house, 5 a piece of glass surrounded by wood ()
69. Which of the five words below is most like these three: large, red, good?
1 heavy, 2 size, 3 color, 4 apple, 5 very ()
70. Write the letter that follows the letter that comes next after M in the alphabet ()
71. One number is wrong in the following series. What should that number be?
1 2 4 8 16 24 64 ()
72. An uncle is to an aunt as a son is to a (?)
1 brother, 2 daughter, 3 sister, 4 father, 5 girl ()
73. If I have a large box with 3 small boxes in it and 4 very small boxes in each of the small boxes, how many boxes are there in all? ()
74. One number is wrong in the following series. What should that number be?
1 2 4 5 7 8 10 11 12 14 ()
75. There is a saying, "Don't ride a free horse to death." This means (?)
1 Don't be cruel. 2 Don't abuse a privilege. 3 Don't accept gifts. 4 Don't be reckless. ()
If you finish before the time is up, go back and make sure that every answer is right.

APPENDIX C

GATES READING SURVEY — FORM 1

GATES READING SURVEY—FORM 1

For Grade 3 (Second Half) Through Grade 10

Speed and Accuracy, Reading Vocabulary, Level of Comprehension



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Write your name here.....

How old are you?.....When is your birthday?.....

School.....Grade.....Date.....

In this booklet you will find several tests of reading. They will show how fast you read, how well you understand what you read, and how many words you

know. Don't waste any time, and don't look at anyone's paper. Follow your teacher's directions. The directions for the first test are given below.

SPEED AND ACCURACY TEST

Directions: Read these paragraphs. Draw a line under the word which best answers the question or completes

the sentence. Draw a line under one word only. Do the exercises as rapidly as you can without making errors.

Sample: All night long the truck driver sat at the wheel of the huge trailer truck. He drove along the twisting highways until dawn. How did he feel then?

rested amused tired fresh

On the next two pages are more paragraphs similar to this sample. When your teacher tells you to turn the page, read the paragraphs and draw a line

under the word which best answers the question or completes the sentence. Be sure to do the paragraphs in order 1, 2, 3, etc., in which they are numbered.

Do not turn the page until you are told to begin.

To the teacher: Show the children the sample exercise above. Read the directions with the pupils and make sure that they know what to do. Follow this same procedure when you come to the sample exercises on pages 4 and 6.

IMPORTANT: Be sure to signal STOP at the end of the stipulated time for the Speed and Accuracy Test. (4 minutes for grades 3, 4, and 5; 4 minutes for grades 6 and up). No exact time allowances are set for the other two tests. Keep your pupils working vigorously, but give them as much time as you think they need. Twenty minutes, or a little more, is usually sufficient for each test. Detailed instructions for administering and scoring the entire test are given in the Manual (included in each test package).

Speed:	Raw score.....	Grade score.....	Age score.....	|	Reading accuracy:
Vocabulary:	Raw score.....	Grade score.....	Age score.....		Per cent correct.....
Comprehension:	Raw score.....	Grade score.....	Age score.....		Accuracy rating.....
					4-25, 100M
		Averages:	Grade score.....	Age score.....	

SPEED AND ACCURACY TEST

(Time allowance: 5 minutes for grades 3, 4, 5; 4 minutes for grade 6 and above.)

1. Coal usually comes from mines deep in the ground. Men go underground to dig it out. Then it is brought up to the surface. Coal is found in the

trees sky ground water

2. The huge animals walked slowly, swinging their trunks from side to side. They had big floppy ears and long white tusks. These animals were

tigers deer lions elephants

3. Although the Plains Indians were the first to wear the war bonnet, many other Indians later wore it, too. What Indians first wore the war bonnet?

Plains Woodlands Swamp East

4. Henry tipped his head far back to look at the tops of the buildings. They seemed to reach up almost to the sky. The buildings must have been

short blue tall wide

5. She lapped up the milk in the saucer. Then she curled up on a bed, purred for a while, and went to sleep. What one of the following animals was this?

dog mouse pig cat

6. Man could travel in the air before he had airplanes. He used a balloon to float high above the earth. Balloons were used before

carriages airplanes bicycles feet

7. Alabama has a moist, warm climate. It is a good place for growing cotton and corn. If you were in Alabama in summer, you would expect to feel

dry cold freezing warm

8. Jack wanted to wash his face. First he ran hot water into the basin. Then he turned on the cold water. This made the hot water in the basin

warmer cooler disappear boil

9. Many people visit the Grand Canyon every year. They stand on its edge and look at the bottom of the canyon far below. The Grand Canyon is

deep small shallow dull

10. Waterfalls are used to make electricity. Niagara Falls is one of the largest waterfalls in the world. It is used to make a lot of

water pools electricity noise

11. Furniture and floors are made of hard wood. Paper is often made from wood which is too soft for furniture or floors. From what kind of wood is paper made?

dark hard strong soft

12. Pure, clean air has no taste nor odor. It cannot be seen, either. If you looked at a clear glass bottle which contained only pure air, it would seem to be

empty colored wet dirty

13. Hippopotamus means "river horse." Hippos are good swimmers and can stay under water a long time. You would expect to find them near

deserts farms rivers cities

14. Floods can cause a lot of damage. Sometimes large dams are built to keep water from flooding. Large dams help cut down the damage caused by

dams water fish fire

15. Jane picked up the receiver. She called a number. After a moment, a voice at the other end of the wire said, "Hello." What was Jane using?

telephone television radio iron

16. When the English first came to this country, the Indians taught them how to hunt, fish, and grow corn. How did the Indians act toward the English at first?

unfriendly helpful angry threatening

17. In the early days of America, each town had its market day. People drove into town to buy things and to enjoy visiting with their friends. Market days were

dull sad rainy fun

18. It is hard to see through a heavy fog. Boats go slowly through the water, and cars drive slowly on the roads. Boats blow their foghorns to warn other

cars roads boats foghorns

GO RIGHT ON TO NEXT PAGE

SPEED AND ACCURACY TEST Continued

19. Huck Finn and Tom Sawyer were often together. They fished. They explored an old cave. They made a raft and took a trip. Huck and Tom were friends sisters enemies thieves

20. The boat pushed through the icy water of the big lake. The land was covered with ice and snow as far as the eye could see. How did the air feel? soft warm cold comfortable

21. This fruit grows on a tree. At first it is small and green, and then, as it grows, it becomes red and round. What fruit is this? banana lemon cabbage apple

22. Columbus called the natives of the Americas "Indians" because he thought he had reached the East Indies. Who named the American Indians? Indians natives Columbus East Indians

23. After his name people write "M.D." He carries a little black bag and takes care of people who are sick. He helps them to get well. What is he? lawyer doctor carpenter baker

24. More than eighteen hundred years ago, the Romans built a wall in England. Some of it is still standing. This wall must have been strong paper weak thin

25. It is easy to drive across some deserts because the sand is firm and dry and smooth. In the desert, it is not always necessary to build expensive houses chairs tables roads

26. Long ago, the Great Plains Indians believed that thunder was made by a great bird flapping its wings. What did the Indians believe made thunder? clouds rain lightning bird

27. The frogs croaked all night. At dawn, the birds began to sing. Cocks crowed and dogs barked at each noise. The city boy wished the country were not so quiet sunny noisy green

28. Some trees are called "evergreens" because their leaves do not fall or change color when cold weather comes. When are these trees green? always never rarely sometimes

29. The tiny song sparrow flew up close to the big gray catbird. The catbird hurriedly flew away from the crusts of bread. The song sparrow must be a good layer swimmer singer fighter

30. "Aqueduct" comes from two Latin words: "aqua," which means "water," and "ducere," which means "to lead." What do aqueducts carry? water Latin sugar lead

31. Mary went to the store to buy ice cream. The man asked her if she wanted vanilla, chocolate, or strawberry. How many flavors of ice cream did he have? two three one four

32. Aluminum has great strength and little weight. It is often used to make airplanes. It is a very useful metal because it is strong and heavy light brittle fast

33. When the canals of Holland freeze, the women enjoy skating to market. Children enjoy gliding to school on the ice. What do the Dutch like to do? ski write skate shop

34. Pear trees are particular. They will not bear fruit where it is too cold. Their fruit will not ripen where it is too hot. The climate they need is hot moderate cold extreme

35. To us, a plant's flowers are important because they are beautiful. To the plant, they are important as part of seed-making. Plants make flowers for seeds warmth beauty noise

36. The firefly is called a "lightning bug" because it gives off flashes of light. Unlike most lights, this kind gives off little or no heat. Firefly light is hot pink cool neon

STOP HERE

Speed: Raw score (number correct)..... Accuracy: Record number attempted....., then consult Manual to find accuracy score

READING VOCABULARY TEST

Directions: Look at the first word in each line. Then find another word in the same line that means the same or nearly the same as the first word. Note the number of this word and write its number in the blank space at the right. Read line A, then line B, then line C below to see the way to do it.

A. dog	1 cloud	2 bird	3 animal	4 dress	5 fish	.....	A. <u>3</u>
B. red	1 man	2 song	3 tree	4 sit	5 color	.....	B. <u>5</u>
C. little	1 big	2 small	3 pet	4 book	5 cold	.....	C. <u>2</u>

Now read each line on this and the next page and find the word that means the same or nearly the same as the first word in each line. Write its number in the blank space. Do as many lines as you can.

1. baby	1 color	2 book	3 child	4 hat	5 song	.....	1. _____
2. rain	1 wood	2 water	3 color	4 bird	5 food	.....	2. _____
3. play	1 seat	2 angry	3 game	4 food	5 farm	.....	3. _____
4. wood	1 water	2 tree	3 color	4 food	5 bird	.....	4. _____
5. ten	1 number	2 end	3 men	4 top	5 this	.....	5. _____
6. sing	1 son	2 long	3 music	4 fruit	5 drink	.....	6. _____
7. penny	1 heavy	2 fence	3 shell	4 coin	5 soft	.....	7. _____
8. step	1 talk	2 farm	3 girl	4 strike	5 walk	.....	8. _____
9. roof	1 water	2 cover	3 bottom	4 shout	5 cloud	.....	9. _____
10. above	1 over	2 under	3 table	4 inside	5 after	.....	10. _____
11. ill	1 strong	2 cold	3 bitter	4 well	5 sick	.....	11. _____
12. nickel	1 metal	2 injury	3 plant	4 bird	5 break	.....	12. _____
13. ninety	1 building	2 money	3 large	4 number	5 unsteady	.....	13. _____
14. curtain	1 number	2 song	3 food	4 bird	5 cloth	.....	14. _____
15. rise	1 before	2 catch up	3 fall under	4 get up	5 anger	.....	15. _____
16. mischief	1 trouble	2 mistake	3 master	4 clothing	5 confusion	.....	16. _____
17. reply	1 swim	2 lift	3 speak	4 food	5 house	.....	17. _____
18. onion	1 stream	2 bird	3 metal	4 plain	5 vegetable	.....	18. _____
19. injury	1 question	2 building	3 interest	4 hurt	5 mark	.....	19. _____
20. scamper	1 fill up	2 sweep	3 run	4 scrub	5 stumble	.....	20. _____
21. quarrel	1 fight	2 pail	3 question	4 bottle	5 shape	.....	21. _____
22. flattery	1 light	2 bird	3 dress	4 attack	5 praise	.....	22. _____
23. reliable	1 helpless	2 dependable	3 dishonest	4 stormy	5 stern	.....	23. _____
24. gallant	1 swift	2 brave	3 ugly	4 hard	5 watery	.....	24. _____
25. suitable	1 garment	2 cottage	3 cheap	4 proper	5 durable	.....	25. _____
26. overlook	1 cheapen	2 miss	3 deceive	4 scorn	5 leap	.....	26. _____
27. execute	1 kill	2 excuse	3 examine	4 preserve	5 shout	.....	27. _____
28. linger	1 hurry up	2 plant	3 trade	4 broaden	5 stay on	.....	28. _____
29. slacken	1 wash	2 whip	3 cool off	4 slow up	5 accuse	.....	29. _____
30. plough	1 bread	2 bird	3 implement	4 illness	5 book	.....	30. _____

GO RIGHT ON TO NEXT PAGE

READING VOCABULARY TEST Continued

31. regulate	1 decide	2 count	3 control	4 assemble	5 divide	31. _____
32. minuet	1 comb	2 clock	3 weapon	4 boat	5 dance	32. _____
33. extinguish	1 enter	2 contest	3 divide	4 put out	5 leave	33. _____
34. recollect	1 numbers	2 remember	3 add up	4 demand	5 steal	34. _____
35. obvious	1 cloudy	2 secret	3 tasty	4 selfish	5 apparent	35. _____
36. scurvy	1 seaweed	2 overcoat	3 hurrying	4 disease	5 food	36. _____
37. charitable	1 stingy	2 boisterous	3 constructive	4 vicious	5 generous	37. _____
38. accurate	1 correct	2 polite	3 clean	4 machine	5 measure	38. _____
39. gondola	1 pole	2 animal	3 boat	4 engine	5 gardener	39. _____
40. hideous	1 noisy	2 stormy	3 selfish	4 ugly	5 shiny	40. _____
41. flank	1 company	2 fence	3 fresh	4 side	5 honest	41. _____
42. passionate	1 feel strongly	2 full	3 confused	4 stick to	5 dirty	42. _____
43. meditate	1 color	2 model	3 argue	4 deceive	5 think	43. _____
44. jeopardy	1 freedom	2 flower	3 danger	4 wonder	5 debt	44. _____
45. righteous	1 homely	2 just	3 smart	4 sunny	5 old	45. _____
46. potent	1 powerful	2 showy	3 thug	4 humble	5 sad	46. _____
47. tantalize	1 dance	2 confine	3 oppress	4 tease	5 transform	47. _____
48. luminous	1 foolish	2 delicate	3 shining	4 round	5 dangerous	48. _____
49. inanimate	1 lifeless	2 idiot	3 unearned	4 impolite	5 insecure	49. _____
50. remorse	1 recover	2 regret	3 redesign	4 move	5 defy	50. _____
51. savory	1 pleasing	2 savage	3 stingy	4 unclean	5 shining	51. _____
52. rapture	1 injury	2 noise	3 joy	4 break	5 shame	52. _____
53. indignant	1 correct	2 angry	3 childish	4 colored	5 unknown	53. _____
54. hallucination	1 anteroom	2 federation	3 trap	4 delusion	5 weapon	54. _____
55. transcend	1 excel	2 sail	3 twist	4 slide	5 falsify	55. _____
56. modulation	1 engraving	2 modification	3 modernize	4 moulding	5 repair	56. _____
57. malicious	1 sweet	2 spicy	3 funny	4 courageous	5 spiteful	57. _____
58. pertinacious	1 smooth	2 complicated	3 precious	4 tenacious	5 gracious	58. _____
59. compulsory	1 ordinary	2 required	3 costly	4 voluntary	5 uncertainty	59. _____
60. perceptible	1 tricky	2 expensive	3 visible	4 wasteful	5 modest	60. _____
61. tribulation	1 trouble	2 stream	3 tribal	4 taxes	5 celebration	61. _____
62. bequeath	1 flowers	2 curse	3 give	4 decorate	5 bless	62. _____
63. precocious	1 expensive	2 prepared	3 unwise	4 excellent	5 advanced	63. _____
64. irresolute	1 irony	2 sloppy	3 cowardly	4 hesitating	5 unclean	64. _____
65. confiscate	1 construct	2 confide	3 flatter	4 imprison	5 seize	65. _____

STOP HERE

Number correct (possible 65)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....

LEVEL OF COMPREHENSION TEST

Directions: Read each paragraph. Note the space marked A. Note the line of words marked A. Find the word in line A that makes the best sense in space A and draw a line under it. Do the same for the

space marked B, and for C when there is a C. The sample is marked correctly. If you cannot do one of the paragraphs, do not spend too much time on it. Go on to the next item.

Sample: My cat is now very old. After it has had dinner it likes to find a soft, warm A and go to B .

A. glass	cold	<u>bed</u>	lake	pig
B. town	<u>sleep</u>	five	swim	pieces

1. A new family has just come to live next door. Do they have any children? Here come a boy and girl who are just the right A to play with us. It will be fun to play with B .

A. write	fight	live	play	age
B. family	him	her	door	them

2. All day long, the birds flew from tree to tree and sang their songs. They hopped around on the ground, too, and looked for A . All night they sat in the trees and B .

A. books	dogs	food	stars	stories
B. read	flew	cooked	slept	danced

3. The honeybee flew through the air. Elaine was afraid it would sting her. It passed by and went to a flower. Bees collect pollen from A when they gather B .

A. stores	flowers	policemen	steeples	clocks
B. houses	birds	trouble	honey	hay

4. Grandmother rocked the little cradle and sang a quiet song. Back and forth, back and forth, went the cradle. Up and down, up and down, went the tune of the song. Soon the A was B .

A. lamb	blanket	grandmother	baby	neighbor
B. asleep	old	awake	crying	angry

5. Tim saw a clown with a painted face at the circus. The clown's cheeks were white and his nose was bright red. After that, Tim often put A on his B and played at being a clown.

A. mud	circus	paint	jam	clay
B. shoes	face	shirt	tent	cage

6. American deer are graceful, fragile creatures. Except for the few that hunters shoot and eat, they are not useful animals. The reindeer of the northern regions, however, are strong. They can draw loaded sleds across the A for hours without B .

A. beaches	ice cream	hunters	snow	forests
B. tiring	shooting	company	smiling	speaking

GO RIGHT ON TO NEXT PAGE

LEVEL OF COMPREHENSION TEST Continued

7. Almost all animals find it easier to walk on four feet, although some can be taught to walk on two. Man prefers to do his walking and standing on two _____ A _____, using his _____ B _____ for holding things.

- A. hands arms chairs stilts feet
 B. toes teeth hands ears eyes

8. When threatened, the squid will shoot forth a heavy cloud of dark ink, which serves as a smoke screen. Another trick of his is to change color quickly and frequently. These two methods are employed whenever he wishes to _____ A _____ from _____ B _____.

- A. become win borrow eat escape
 B. sight danger smoke plates passengers

9. The silence of the moon will not be shattered when space travelers arrive there from Earth. Without air, sounds cannot be carried, and so the almost airless _____ A _____ will remain a _____ B _____ place.

- A. balloon sun sky Earth moon
 B. quiet noisy moist friendly jolly

10. The only diamond field in the United States was discovered in 1907 by a farmer living on the land. It is located in southwest Arkansas. Since diamond fields are _____ A _____, this discovery was _____ B _____.

- A. plentiful small scarce easy hard
 B. valueless valuable lost simple discarded

11. The normal temperature of the human body is 98.6° Fahrenheit. Dogs and cats have a temperature of about 101.5°. This is approximately _____ A _____ degrees higher than the _____ B _____ of humans.

- A. two three four five six
 B. temperature intensity height density weight

12. With the discovery of penicillin and sulfanilamide, man gained powerful allies in his fight against infectious _____ A _____. He now had the forces which could win some of the major battles against _____ B _____ microorganisms.

- A. laughter drugs nature disease humor
 B. friendly helpful enemy tinted desirable

13. Oxygen is spring's alarm clock that wakes the sleeping creatures at the bottom of ponds. They exhaust the _____ A _____ of oxygen in the water during the _____ B _____ and need a fresh supply to stir them up.

- A. degree demand supply extent temperature
 B. fall winter summer spring day

14. Words sometimes have their roots in an old tale. "Serendipity" is such a word. It was coined from the story about the three Princes of Serendip, who were always stumbling across good things which they were not seeking. Serendipity means the _____ A _____ discovery of something _____ B _____.

- A. accidental deliberate infelicitous careful minimum
 B. cupidly vexed abominable mature valuable

TURN THE PAGE AND GO RIGHT ON

LEVEL OF COMPREHENSION TEST Continued

15. Sago is a food obtained from the trunk of a certain variety of the palm tree. The finest sago comes from large A that grow in Borneo and Sumatra. Each tree B yields from one to eight hundred pounds of sago.

- A. forests vines fruits fires animals
B. branch top root leaf trunk

16. The amount of work electricity can do depends on how many electrons are moving and how much force is pushing them. The quantity of electrons is the current, and it is measured in units called amperes. Volts are the measure of the force. Electric meters measure both amperes and A in B called kilowatts.

- A. electrons force volts quantity electricity
B. packages units currents scales weights

17. A family in the United States today usually consists of a mother, father, and children. In other parts of the world, larger numbers of people related by blood or by A often B the family unit.

- A. marriage relatives hatred ideals revenge
B. decompose count invent comprise destroy

18. What is the difference in a film between a fade-out and a dissolve? In the fade-out, the screen becomes dark. In the dissolve, the new image appears, as it were, behind the other and grows strong as the old image weakens, until the new image A the B entirely.

- A. disappears stirs employs dominates impresses
B. camera lens screen actor projector

19. If you examine a newspaper or magazine photograph under a magnifying glass, you will discover it is made up of a multitude of tiny dots. The A of the picture increases as the number of dots per square inch B.

- A. copies amount subject photographer clarity
B. varies increases stabilizes decreases evaporates

20. The two forms of knowledge, aesthetic and intellectual or conceptual, are indeed diverse, but this does not amount altogether to A and disjunction, as we find with two B going each its own way.

- A. identity contiguity resemblance separation similitude
B. rods spasms forces targets vegetables

21. The possibility that a population bred for excellence might lose its fertility deserves A. It is remote, but it should be guarded against by associating B with excellence as one feature of the composite which guides the C.

- A. reward chagrin punishment nothing attention
B. fertility people wealth injury honor
C. stars feeding conversation breeding stream

STOP HERE

Number correct (possible 43)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....

APPENDIX D
GATES READING SURVEY — FORM 2

GATES READING SURVEY—FORM 2

For Grade 3 (Second Half) Through Grade 10

Speed and Accuracy, Reading Vocabulary, Level of Comprehension



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Write your name here.....

How old are you?.....When is your birthday?.....

School.....Grade.....Date.....

In this booklet you will find several tests of reading. They will show how fast you read, how well you understand what you read, and how many words you know. Don't waste any time, and don't look at anyone's paper. Follow your teacher's directions. The directions for the first test are given below.

SPEED AND ACCURACY TEST

Directions: Read these paragraphs. Draw a line under the word which best answers the question or completes the sentence. Draw a line under one word only. Do the exercises as rapidly as you can without making errors.

Sample: All night long the truck driver sat at the wheel of the huge trailer truck. He drove along the twisting highways until dawn. How did he feel then?

rested amused tired fresh

On the next two pages are more paragraphs similar to this sample. When your teacher tells you to turn the page, read the paragraphs and draw a line under the word which best answers the question or completes the sentence. Be sure to do the paragraphs in order 1, 2, 3, etc., in which they are numbered.

Do not turn the page until you are told to begin.

To the teacher: Show the children the sample exercise above. Read the directions with the pupils and make sure that they know what to do. Follow this same procedure when you come to the sample exercises on pages 4 and 6.

IMPORTANT: Be sure to signal **STOP** at the end of the stipulated time for the Speed and Accuracy Test (6 minutes for grades 3, 4, and 5; 4 minutes for grades 6 and up). No exact time allowances are set for the other two tests. Keep your pupils working vigorously, but give them as much time as you think they need. Twenty minutes, or a little more, is usually sufficient for each test. Detailed instructions for administering and scoring the entire test are given in the Manual (included in each test package).

Speed:	Raw score.....	Grade score.....	Age score.....	Reading accuracy:
Vocabulary:	Raw score.....	Grade score.....	Age score.....	Per cent correct.....
Comprehension:	Raw score.....	Grade score.....	Age score.....	Accuracy rating.....
Averages: Grade score.....				Age score.....

SPEED AND ACCURACY TEST

(Time allowance: 6 minutes for grades 3, 4, 5; 4 minutes for grade 6 and above.)

1. Betty and Sally put on their best dresses and their new shoes. They wrapped their gifts carefully in colored paper. They were going to a

fire movie party playground

2. Billy sat on the window sill. Outside, the wind was blowing the snow into whirling clouds. Billy felt warm and comfortable as he watched through the

book window mirror tunnel

3. Elsie and Ed sat down at a table. The waiter came over to them with a menu and asked them what they would like to eat. Where were Elsie and Ed?

restaurant classroom hut movie

4. Jim walked out to the end of the pier. He fixed the line on his rod and put the bait on the hook. He threw the end of the line into the water to catch a

bird line fish deer

5. In Canada, some of the people speak French, some speak English, and some speak both. How many languages are spoken in Canada?

three two one four

6. Coconuts grow at the top of tall trees. Skillful climbers go up the slim trunks and throw down the fruit. What do you have to do to pick coconuts?

bend eat climb hop

7. Harry put on his bathing suit. He packed his lunch. He took a towel from the shelf and put his comb in his pocket. What was Harry going to do?

swim study ski read

8. Jake's dog, Bonnie, won the blue ribbon at the dog show. Photographers took pictures of Jake and Bonnie for the newspaper. How did Jake feel?

sad ashamed lonely proud

9. The sun stood high in the sky. Mothers were busy, for soon the children would be coming home to have their lunch. About what time of day was it?

11:30 4:30 6:00 9:00

10. Joe ate a piece of chocolate cake. Then he ate some cookies. After that he had a few candies. What sort of food did Joe like to eat?

fruit sweets meat vegetables

11. The stars are bright at night, and seem quite near. Actually, they are so far away it takes their light millions of years to reach us. Stars are

far near dark new

12. Plains Indians usually lived in tents and moved about often. In the Sahara Desert, people live in the same way. The people of the Sahara live in

houses stores huts tents

13. Mary was sad because she was all alone on her birthday. All at once, her friends ran in, crying, "Happy birthday, Mary!" What sort of party was this?

graduation surprise Christmas Halloween

14. In 1763 the English defeated the French in a war called the French and Indian War. Indians fought on both sides. Who won this war?

French Americans English Canadians

15. Mary pulled and tugged at the knob. She was not able to turn it. It was a cold day to be locked outside. What was Mary trying to open?

box bag safe door

16. Our language, which already has a million words, gains thousands more each year. The number of words in our language is at least

500 1,000 10,000 1,000,000

17. Horses that run on hard and rocky surfaces must wear horseshoes to prevent their hoofs from being hurt. What are horseshoes used for?

protection beauty style warmth

18. When we take a photograph, we "write with light." That is what the word means. In taking a photograph, it is necessary to have a camera and

paintbrush pencil darkness light

GO RIGHT ON TO NEXT PAGE

SPEED AND ACCURACY TEST Continued

19. Many animals live in Australia which are found nowhere else. One of the most interesting of these is the kangaroo. Where do kangaroos live?

England Australia Africa China

20. The more branches a maple tree has, the more syrup it gives. If a maple tree gave a large amount of syrup, you would guess that its branches were

small few weak many

21. Clouds are made of little drops of water hanging in the air. When a cloud becomes too heavy with water, the water falls out of the cloud. Then it becomes

rain wood clouds leaves

22. Without light there is no color. When a room is completely dark, colors cannot be seen. Really the colors are not there. In the dark, everything is

blue green colorless pink

23. A chickadee is small and lively. It makes many short flights. It is always hopping about. It likes to hang upside down from a branch. A chickadee is a

vegetable fish cat bird

24. Joe has a toothache, and it is extremely painful. He wants to get rid of the pain, and so he is going to someone who can fix his tooth. To whom will he go?

lawyer dentist teacher friend

25. Switzerland has little land and few people. The Swiss people work hard, however, and their country is clean and prosperous. Switzerland is

large small dirty poor

26. The sun is a star that keeps the earth warm. Without it, people could not raise food. It keeps them from freezing. What is the sun?

planet moon star earth

27. An object traveling through the air at high speeds will become hot. A way must be found to keep rocket ships cool as they go swiftly through the

scientists airplanes water air

28. Crabs have hard shells. The shells will not stretch, and so the crab must keep growing new shells as it gets bigger. How many shells does a crab grow?

several one none two

29. A woodpecker pecks at trees with its bill and makes a loud rapping noise. It is looking for insects to eat. Where does the woodpecker find its food?

insects trees bill flowers

30. The temperature in Death Valley, California, has been as high as 134°F. Most people like the temperature to be between 60° and 80°. Death Valley is

freezing cold hot high

31. Scientists now believe that sunlight and starlight are alike. They think, too, that both are made in the same way. What is starlight like?

electricity sunlight darkness fire

32. The Greeks believed in a sun god, Apollo. They thought the sun moving across the sky was Apollo driving his chariot. Apollo was the sun god of the

Romans English Greeks French

33. Although they no longer look alike, the rhinoceros and the horse were once close relatives. What animal was once a close relative of the horse?

dog cat giraffe rhinoceros

34. Before the Indians had horses, their tepees were small because they had to carry them on their backs. After they had horses, their tepees could be

larger smaller lighter brighter

35. Bill ate some salty nuts. He went to the drinking fountain. When he turned it on, no water came out. The fountain was broken. How did Bill feel?

thirsty happy broken tired

36. When water freezes, it takes up more room. If a crack in a rock is filled with water, and the water freezes, then it is likely that the rock will

freeze shrink split spill

STOP HERE

Speed: Raw score (number correct) Accuracy: Record number attempted....., then consult Manual to find accuracy score

3

READING VOCABULARY TEST

Directions: Look at the first word in each line. Then find another word in the same line that means the same or nearly the same as the first word. Note the number of

this word and write its number in the blank space at the right. Read line A, then line B, then line C below to see the way to do it.

A. dog	1 cloud	2 bird	3 animal	4 dress	5 fish	A. 3
B. red	1 man	2 song	3 tree	4 sit	5 color	B. 5
C. little	1 big	2 small	3 pet	4 book	5 cold	C. 2

Now read each line on this and the next page and find the word that means the same or nearly the same as the

first word in each line. Write its number in the blank space. Do as many lines as you can.

1. house	1 fruit	2 bird	3 harm	4 color	5 home	1. _____
2. dinner	1 buy	2 food	3 tree	4 dark	5 day	2. _____
3. hot	1 fight	2 heavy	3 warm	4 sweet	5 small	3. _____
4. girl	1 child	2 cold	3 glass	4 bird	5 water	4. _____
5. animal	1 wood	2 color	3 place	4 horse	5 tree	5. _____
6. three	1 dark	2 tree	3 stone	4 number	5 wood	6. _____
7. moving	1 eating	2 seeing	3 hurt	4 reading	5 going	7. _____
8. sixteen	1 money	2 place	3 quiet	4 number	5 stingy	8. _____
9. skirt	1 dance	2 game	3 dress	4 paper	5 hurry	9. _____
10. carry	1 take	2 eat	3 hit	4 throw	5 buy	10. _____
11. howling	1 game	2 weapon	3 bird	4 simple	5 yelling	11. _____
12. crow	1 group	2 lift	3 building	4 place	5 bird	12. _____
13. overflow	1 catch up	2 run over	3 deceive	4 flatter	5 smell	13. _____
14. daughter	1 color	2 place	3 darker	4 child	5 game	14. _____
15. chocolate	1 food	2 tardy	3 crayon	4 metal	5 tool	15. _____
16. slipper	1 fall down	2 toy	3 shoe	4 candy	5 bird	16. _____
17. champion	1 winner	2 horse	3 lake	4 bully	5 drink	17. _____
18. ordinary	1 dainty	2 common	3 cheap	4 shiny	5 deep	18. _____
19. whirl	1 run	2 spin	3 hurry	4 whine	5 color	19. _____
20. palace	1 king	2 beauty	3 animal	4 building	5 drink	20. _____
21. moist	1 lift up	2 ship	3 animal	4 metal	5 wet	21. _____
22. attack	1 assault	2 sharpen	3 polish	4 shout	5 demand	22. _____
23. exhibit	1 fight	2 show	3 confuse	4 preserve	5 shout	23. _____
24. recite	1 keep	2 cut up	3 report	4 rejoin	5 shine	24. _____
25. villain	1 woman	2 animal	3 scoundrel	4 town	5 plant	25. _____
26. merciful	1 cruel	2 pretty	3 stuffed	4 stormy	5 kindly	26. _____
27. fantastic	1 pretty	2 strange	3 unfair	4 cheap	5 expensive	27. _____
28. quantity	1 amount	2 can	3 drink	4 value	5 food	28. _____
29. lighten	1 lengthen	2 stagger	3 attack	4 confuse	5 reduce	29. _____
30. bleak	1 high	2 sunny	3 dreary	4 sour	5 hard	30. _____

GO RIGHT ON TO NEXT PAGE

READING VOCABULARY TEST Continued

31. vicious	1 mixed up	2 hungry	3 dripping	4 wicked	5 paint	31. _____
32. previous	1 wet	2 expensive	3 before	4 friendly	5 smart	32. _____
33. tatter	1 apron	2 book	3 smooth	4 tear	5 add up	33. _____
34. readily	1 smooth	2 clear	3 easily	4 slowly	5 painfully	34. _____
35. mirth	1 joy	2 candy	3 flower	4 anger	5 confusion	35. _____
36. acquire	1 crowd	2 prevent	3 sell	4 injure	5 secure	36. _____
37. participate	1 turn under	2 divide	3 persecute	4 join in	5 cut up	37. _____
38. impudent	1 unwise	2 rude	3 wasteful	4 poor	5 sickly	38. _____
39. valor	1 fortress	2 dough	3 courage	4 coating	5 tool	39. _____
40. suspend	1 hang	2 hurry	3 pretend	4 cut up	5 spring	40. _____
41. condense	1 divide	2 can	3 heat	4 reduce	5 criticize	41. _____
42. narrative	1 order	2 stairway	3 sailor	4 fisherman	5 story	42. _____
43. hindrance	1 falsehood	2 retreat	3 support	4 fault	5 interference	43. _____
44. genial	1 soft	2 friendly	3 naughty	4 burned	5 race	44. _____
45. persecution	1 oppression	2 cooked	3 auction	4 battle	5 fire	45. _____
46. segment	1 seed	2 part	3 combination	4 rudder	5 guess	46. _____
47. incredulous	1 unbelieving	2 fearless	3 dependable	4 sickly	5 gullible	47. _____
48. populace	1 publish	2 medicine	3 coat	4 people	5 statement	48. _____
49. vagrant	1 worm	2 tool	3 tramp	4 direction	5 soldier	49. _____
50. rigidity	1 coldness	2 stiffness	3 strange	4 hunger	5 availability	50. _____
51. opportune	1 cheap	2 expensive	3 timely	4 faulty	5 crafty	51. _____
52. acute	1 sharp	2 funny	3 idiotic	4 fearful	5 horrible	52. _____
53. adjacent	1 under	2 next to	3 double	4 fearful	5 cowardly	53. _____
54. innumerable	1 durable	2 lasting	3 colored	4 unknown	5 many	54. _____
55. myriad	1 hive	2 jewel	3 chain	4 scattered	5 many	55. _____
56. complacent	1 contented	2 contrary	3 pretty	4 generous	5 expensive	56. _____
57. contemptible	1 brilliant	2 argumentative	3 honest	4 haughty	5 disgraceful	57. _____
58. admonish	1 strangle	2 mix	3 punish	4 advise	5 praise	58. _____
59. suppress	1 print	2 stop	3 criticize	4 supply	5 make up	59. _____
60. circuitous	1 indirect	2 affluent	3 plentiful	4 stingy	5 amazing	60. _____
61. paternal	1 foreign	2 dull	3 secretive	4 fatherly	5 boastful	61. _____
62. obscene	1 scenic	2 foul	3 rural	4 clean	5 subtle	62. _____
63. pilfer	1 strain	2 invent	3 poison	4 steal	5 retreat	63. _____
64. bulwark	1 post	2 challenge	3 defense	4 achievement	5 gun	64. _____
65. fallacious	1 dangerous	2 explosive	3 fearless	4 faulty	5 fashionable	65. _____

STOP HERE

Number correct (possible 65)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....

LEVEL OF COMPREHENSION TEST

Directions: Read each paragraph. Note the space marked A. Note the line of words marked A. Find the word in line A that makes the best sense in space A and draw a line under it. Do the same for the

space marked B, and for C when there is a C. The sample is marked correctly. If you cannot do one of the paragraphs, do not spend too much time on it. Go on to the next item.

Sample: My cat is now very old. After it has had dinner it likes to find a soft, warm A and go to B.

A. glass	cold	<u>bed</u>	lake	pig
B. town	<u>sleep</u>	five	swim	pieces

1. We have a playroom in our A. It is down in the basement, so we need an electric B even on sunny days.

A. tent	house	bed	car	lake
B. storm	friend	light	ladder	engine

2. My little brother has a big box of play blocks. I help him A towers and bridges, but he likes to B them all down.

A. burn	build	sing	shoot	sleep
B. eat	cry	swim	knock	sell

3. Bob's father took him for a ride in an airplane. It rolled across the airfield and soon it was in the air. It climbed higher and higher. From high up in the A, the houses far below B tiny.

A. sky	water	airfield	pilot	ocean
B. looked	smelled	flew	walked	felt

4. Our bread is made from wheat that comes mostly from the central part of the United States. In this part of our country there are many large A with huge fields of B and other grains.

A. balloons	boats	farms	engines	rivers
B. wheat	apples	pears	lettuce	fish

5. Electric-eye doors are useful in such places as railway stations and stores. In these places, people are likely to be carrying A and therefore do not have their B free to open doors.

A. woes	packages	radiators	doors	trains
B. feet	nose	spirits	hands	energy

6. When Bert was eight years old, his parents gave him a pony. First he learned to ride. Then he taught the pony to A a little B.

A. push	pull	ride	laugh	fly
B. fence	sandwich	wagon	automobile	saddle

GO RIGHT ON TO NEXT PAGE

LEVEL OF COMPREHENSION TEST Continued

7. Today most homes stay in one place, and food is kept in the refrigerator. Once, however, food was on the hoof and had to be followed. Hunters and their families _____ A _____ after the _____ B _____ and carried their houses with them.

- A. flew wished followed stroked swam
B. stores meteors refrigerator animals medicine men

8. Plastic is a relatively new material. It has become of major importance in a short time. Strength and flexibility are the two outstanding qualities which make it _____ A _____ for many different _____ B _____.

- A. attractive edited useful manageable frightful
B. schools instances grounds boys purposes

9. Alexander Graham Bell was a teacher of the deaf. Because of his work with people who lived in a _____ A _____ world, he became interested in the problems of sound. Our telephone is a _____ B _____ of this interest.

- A. noisy brilliant soundless static changeless
B. fault charge forerunner teacher result

10. On mountaintops, liquids boil at lower temperatures because of diminished air pressure. Spacemen must wear pressurized suits where there is little _____ A _____ in order to keep their blood from _____ B _____.

- A. water food soda air liquid
B. disappearing boiling fading leaping stuffing

11. A new problem confronts the landscape gardener. He must consider his art as seen from the air. With _____ A _____ travel steadily increasing, a community must give more and more attention to its appearance from the _____ B _____.

- A. automobile underground sea train airplane
B. clouds highway ocean tunnel station

12. Iron ore is first melted into pig iron. From this pig iron all other types of iron and steel are made. As pig iron is hard and brittle, it can be used only for _____ A _____ articles that do not receive much _____ B _____. It breaks easily.

- A. finding throwing breaking making cleaning
B. pressure cleaning attention light heat

13. It is economically sound to control water. Too much water means the destruction of life and property by flood. Too little water often brings the same results by drought. When water is controlled, it is available for _____ A _____ and for _____ B _____.

- A. irrigation waste destruction music problems
B. drowning floods scenery housing power

14. Ceremony plays its part in every society. It provides the greeting, "Good Morning," with which we acknowledge an event as minor as the _____ A _____ of a new day. It establishes the form in which we observe major events such as _____ B _____ or death.

- A. passing end memory decline coming
B. head colds quarrels marriage picnics parties

TURN THE PAGE AND GO RIGHT ON

LEVEL OF COMPREHENSION TEST Continued

15. Of the several kinds of birds that once were common in the United States but are now _____A_____, the Passenger Pigeon is perhaps the most famous. There were once so many that their millions _____B_____ the sky.

- A. extinct prevalent numerous unpopular huge
B. replaced swallowed conquered darkened refused

16. The regulation double-hung window in which each sash slides past the other, the outer one on top, was invented by, or at the time of, Thomas Jefferson. It is said he was annoyed at the way casement windows tangled with the draperies. Since then, _____A_____ windows have become _____B_____ in many parts of the country.

- A. bay casement picture double-hung screen
B. doors standard blinds bigger weaker

17. With great reluctance man surrendered his belief in the earth as the center of the universe. To accept the idea that the earth is merely one of nine planets _____A_____ a dying star seemed to _____B_____ man's importance.

- A. fighting cheating lighting escaping circling
B. distill prove diminish choose increase

18. A space station would be the earth's second satellite, but its first of the man-made variety. The moon is our first satellite, and a space station would behave according to the same _____A_____ laws that _____B_____ the moon.

- A. natural tyrant's man-made legislated popular
B. trouble persuade created nourish govern

19. Since any object consumes its own mass as it gives off energy, the sun will eventually become an _____A_____ cinder at the center of our _____B_____ solar system.

- A. altruistic elated effervescent exhausted ebullient
B. mundane livid frigid ergot frenetic

20. "No matter if the facts be physical or moral, they all have their causes . . . Vice and virtue are products, like vitriol and sugar; and every _____A_____ phenomenon arises from other more simple _____B_____ on which it, hangs."

- A. ghastly eccentric raucous complex imaginary
B. trivia phenomena counsels prodigality annulments

21. A part of a man can govern and otherwise _____A_____ other parts of him. Supernatural and abstract _____B_____ operate on man by habits and ideals instilled in him, especially in early life. It is only as notions of God, duty, etc., take up their abode in men that they become political _____C_____.

- A. stop injure influence abhor tolerate
B. animals men money lights entitles
C. traders forces devils seances vapors

STOP HERE

Number correct (possible 43)..... Number wrong..... Raw score (number correct minus ¼ number wrong).....

APPENDIX E
PERSONALITY ADJUSTMENT SCALE

PERSONALITY ADJUSTMENT SCALE, TURNER (1961)

1. Unusually well-adjusted
2. Above average in his cooperation and interest in his work
3. Average in his attitudes in class and interest in his work
4. Not as cooperative nor as interested in his work as the average pupil
5. Emotional difficulties which make him uncooperative and not interested in his work

APPENDIX F
RAW SCORES FORM X STANFORD ACHIEVEMENT TEST
INTERMEDIATE II READING TESTS

TABLE F-I
 RAW SCORES FORM X STANFORD ACHIEVEMENT TEST
 INTERMEDIATE II READING TESTS

Group A		Group B	
48	67	51	65
55	60	59	59
45	55	62	39
47	69	59	55
64	56	64	55
38	63	42	63
57	52	62	55
63	57	38	56
48	69	59	53
51	63	67	62
45	42	48	63
62	48	37	28
42	47	59	62
47	63	30	36
37	32	42	42
64	36	24	34
39	56	37	41

APPENDIX G

I.Q. SCORES OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

INTERMEDIATE EXAMINATION FORM A

TABLE G-I

I.Q. SCORES OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

INTERMEDIATE EXAMINATION FORM A

Group A		Group B	
109	116	109	116
105	113	106	114
105	108	104	109
103	104	103	105
101	104	101	104
99	102	100	102
98	101	98	101
97	102	97	101
95	100	95	101
92	100	95	100
95	98	95	97
92	95	93	95
88	95	92	94
91	94	91	93
91	93	91	92
94	90	91	90
90	85	90	85

APPENDIX H

RAW SCORES GATES READING SURVEY — FORM 1

TABLE H-I
 RAW SCORES GATES READING SURVEY -- FORM 1
 GROUP A

Speed and Accuracy		Vocabulary		Level of Comprehension		Overall Average	
12	30	35	38	19	31	66	99
21	14	28	34	26	21	75	69
11	14	25	28	26	26	62	68
13	16	20	32	22	26	55	74
11	14	31	27	20	26	62	67
9	16	34	32	20	26	63	74
11	10	27	19	29	19	67	48
17	13	37	29	30	29	84	71
11	22	19	29	24	27	54	78
12	14	26	28	24	28	62	70
13	12	30	21	21	19	64	52
10	11	21	38	16	31	47	80
5	17	10	20	9	14	24	51
12	19	30	30	19	33	61	71
9	9	26	28	16	14	51	51
11	10	31	17	20	23	62	50
7	13	26	31	6	25	39	39

TABLE H-II
 RAW SCORES GATES READING SURVEY — FORM 1
 GROUP B

Speed and Accuracy		Vocabulary		Level of Comprehension		Overall Average	
15	16	29	30	29	28	73	74
20	18	46	30	25	27	91	75
10	15	40	19	22	23	72	57
18	12	27	24	23	31	68	67
20	21	32	35	22	29	74	85
14	18	21	27	20	28	55	73
12	16	36	37	27	28	75	81
9	14	25	21	23	20	57	55
11	18	26	23	29	20	66	61
18	14	34	26	29	22	81	62
14	9	28	28	28	14	70	51
10	9	23	11	18	0	51	20
13	10	35	20	32	15	80	45
2	12	15	28	3	20	20	60
11	15	26	24	25	17	62	56
10	9	19	15	14	13	43	37
8	13	25	24	9	15	42	68

APPENDIX I

RAW SCORES GATES READING SURVEY — FORM 2

TABLE I-I
 RAW SCORES GATES READING SURVEY — FORM 2
 GROUP A

Speed and Accuracy		Vocabulary		Level of Comprehension		Overall Average	
11	29	29	37	25	28	65	94
12	15	36	27	33	29	81	71
18	20	30	41	28	29	76	90
19	17	21	38	23	29	63	84
16	17	27	33	24	30	67	80
11	20	38	40	24	28	73	88
15	16	38	26	28	24	81	66
16	19	39	35	27	27	82	81
18	25	27	44	30	25	75	94
15	18	24	30	22	24	61	72
9	21	34	29	22	25	65	75
10	16	30	36	27	33	67	85
8	18	16	29	14	20	38	67
13	19	32	31	28	32	73	82
10	22	27	26	18	16	55	64
17	14	28	22	30	19	75	65
12	20	25	32	13	28	50	80

TABLE I-II
 RAW SCORES GATES READING SURVEY — FORM 2
 GROUP B

Speed and Accuracy		Vocabulary		Level of Comprehension		Overall Average	
16	23	35	38	32	33	83	94
22	23	33	35	35	27	90	85
20	16	39	23	17	21	76	60
21	19	31	29	34	27	86	75
21	27	40	41	34	31	95	99
19	20	25	33	18	32	62	85
12	20	30	32	27	35	69	85
13	16	28	29	19	19	60	64
15	19	30	32	29	23	74	74
17	18	41	29	23	20	81	67
15	13	33	34	21	22	69	69
14	13	29	23	24	11	67	47
12	16	40	30	28	15	80	61
5	11	2	25	2	21	9	57
12	17	25	29	22	22	59	68
11	12	38	16	27	11	76	39
12	14	16	19	14	13	42	46

APPENDIX J
PERSONALITY ADJUSTMENT RATINGS

TABLE J-I
PERSONALITY ADJUSTMENT RATING

Group A				Group B			
September		March		September		March	
2	3	1	2	2	3	1	4
3	2	3	3	3	3	3	2
3	4	3	3	3	3	4	2
3	3	1	2	4	3	4	3
3	3	2	3	2	4	1	4
4	2	3	2	2	4	2	4
3	3	3	2	2	3	2	4
3	3	2	1	4	2	3	3
3	2	3	2	3	4	3	4
3	3	3	3	4	5	3	5
3	3	2	4	3	3	4	4
4	5	5	5	4	3	3	3
3	4	3	5	4	5	3	5
3	4	1	3	3	5	3	4
4	4	3	5	5	2	3	2
4	4	3	4	5	3	4	3
2	5	2	4	4	3	4	4

VITA

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