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A diagnostic survey of the strengths and weaknesses in reading at the fifth grade level

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A DIAGNOSTIC SURVEY OF THE STRENGTHS AND WEAKNESSES IN READING AT THE FIFTH GRADE LEVEL

by

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THE PROBLEM

Introduction

In recent years much emphasis and concentration has been placed upon the teaching of reading. Despite the research that is being done, the in-service training given, the variety of methods used, and the abundant material available, far too many pupils never achieve results comparable to their capacities. Complete surveys and studies reveal varying degrees of reading disability among the school population.

Bond and Tinker state that many reading difficulties can be prevented or corrected at the early stages. "The preventive program implies at least three kinds of emphasis in instruction: 1) a thoroughgoing reading readiness program in preparing the child for initial reading at successively higher levels; 2) proper adjustment of instruction to individual differences; and 3) systematic developmental programs at all levels."[1] Consequently, the emphasis here is on prevention rather than remediation. In discussing remediation, these same authors consider general immaturity, deficiency in one or more reading skills, lack of basic skills, and emotional or social problems as contributing factors in reading disability.[2]

Bracken emphasizes the necessity of considering the personal,

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[1] Guy L. Bond and Miles A. Tinker, Reading Difficulties: Their Diagnosis and Correction, (New York: Appleton - Century Crofts, Inc. 1957), p. 7.

[2] Ibid., p. 81.

mental, physical, emotional, social, economic, neurological, and educational aspects of the reading problem.[3]

Spache categorizes the causal elements into physical, intellectual, personal, educational, and miscellaneous.[4] Most authors agree that reading disability is a complex problem resulting from multiple causes, rather than from one single factor. Unless the teacher is aware of and fully realizes the reading problem, no solution or help is probable. Consequently, a thorough diagnosis is necessary to determine the problem and to improve instruction.

Statement of the Problem

The purpose of this study was to determine the specific strengths and weaknesses in reading at the fifth grade level in a parochial school in Gary, Indiana. Since comprehension and study skills are extremely important at this level, these areas were chosen for intensive concentration. The specific objectives of this study were to determine:

1. In which areas of comprehension are the pupils weak?
2. In which areas of study skills are the pupils weak?
3. In which areas are the pupils showing strengths?
4. What are the specific weaknesses in the upper fourth of the class?
5. What are the specific strengths in the lower fourth of the class?

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[3]Dorothy Kendall Bracken, "Methods for Diagnosing Reading Problems," Corrective Reading in Classroom and Clinic, ed. Helen M. Robinson, Supplementary Educational Monographs, No. 79 (Chicago: University of Chicago Press, 1953), p. 102-107.

[4]George D. Spache, "Factors Which Produce Defective Reading," Corrective Reading in the Classroom and Clinic, ed. Helen M. Robinson, Supplementary Educational Monographs, No. 79 (Chicago: University of Chicago Press, 1953), p. 40-57.

6. Do the children of similar intelligence portray similar weaknesses?

Significance

From a pedogogical point of view this study is important in directing the reading program of the school and in determining and discussing the methods and procedures of instruction to be followed. The fifth grades were chosen because this is the transition from the lower grades to the upper level, and primarily because three years would provide ample time to emphasize particular skills before high school entrance if necessary. In order to obtain an accurate evaluation of the strengths and weaknesses in reading, both standardized and informal tests were administered.

Scope

The eighty-eight pupils for this study were selected from one parochial school in the city of Gary. Since this involved a status study, measurement tools were utilized. A variety of tests--The Kuhlman Anderson Intelligence Test,[5] Iowa Test of Basic Skills,[6] the Wide Range Pronunciation Test,[7] and the Durkin Phonics Survey[8]--were selected to identify important subskills and requisites for good comprehension. The quartile points and the quartile deviations of each of the subtest scores were calculated for the entire group and also for the upper and lower 27% of the

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[5] Rose G. Anderson, Kulhmann Anderson Intelligence Test--Seventh Edition, (New Jersey: Personnel Press, Inc., 1964).

[6] E. F. Lindquist and A. N. Hieronymus, Iowa Tests of Basic Skills Form 3, (Boston: Houghton Miflin Company, 1964).

[7] Joseph Jastak and Sidney Bijou, Wide Range Achievement Test, (New York: The Psychological Corporation, 1946).

[8] Dolores Durkin and Leonard Meshover, Phonics Knowledge Survey, (New York: Teachers College, Columbia University, 1964).

group. The percentage of errors for each subskill was calculated and compared with the national norms. From the study of these results, a clear picture of the strengths and weaknesses of the group as a whole and of the lower and upper 27% would be presented. Even though this study would not concern itself directly with the cause and remediation of the weaknesses, it would, however, contribute toward determining causal factors and suitable remedial measures.

CHAPTER II

REVIEW OF RELATED LITERATURE

Diagnosis of Reading Difficulties

"We throw all our attention on the utterly idle question whether A has done as well as B, when the only question is whether A has done as well as he could."[1] A basic principle of modern education is reflected in this statement. Today educators and teachers realize that both A and B are individuals but that one may have more potential than the other, greater background experience, or better physical health. Consequently, both will probably vary in learning abilities and in rate of learning. Because of this concept, evaluation and diagnosis have become an integral part of present-day education.[2] According to Burton, a program of evaluation must consider the whole child and all factors associated with his development. This will provide adequate information for differentiating instruction to meet the individual needs of each child.[3]

Brueckner believes that educational diagnosis relates to the techniques by which one discovers and evaluates both strengths and weaknesses of each individual as a basis for more effective guidance. "Diagnosis is a logical process based on a consideration of all available data

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[1]Albert Galloway Keller and Maurice R. Davies, (eds.), Essays of William Graham Sumner, Vol. I, (New Haven, Conn.: Yale University Press, 1954), p. 372.

[2]William H. Burton, Reading in Child Development, (Indianapolis: The Bobbs Merrill Company, Inc., 1956), p. 450.

[3]Ibid., p. 450.

and their interpretation in the light of knowledge gained from past experience which enables the diagnotician to suggest necessary developmental or remedial measures."[4]

Teigs further adds that educational diagnosis is the basis or foundation for efficient teaching. Its function is to facilitate the optimum development of each pupil. The following activities ought to become routine: 1) determining for every pupil which factors of his intelligence are strong and which are weak; 2) if he learns better through language or non-language situations and materials; 3) what his unattained objectives are; and 4) the nature of his desires, his fears, and his frustrations.[5]

Today the diagnosis of reading and learning difficulties is more or less an essential part of regular classroom instruction. However, previous to this, many teachers have been aware of the necessity of continual diagnosis. They have daily evaluated their children, their potential and their achievement, and tried to help them achieve accordingly. Brueckner and Bond maintain that the effectiveness of the diagnosis depends upon the extent to which the teacher possesses the following competencies:

1. A thorough understanding of the learning process in the area being investigated and its components, of the way in which the components normally grow and mature, and of the symptoms that indicate that normal development is not taking place.

2. Knowledge of the factors that contribute to learning difficulties in the area being investigated.

3. Skill in considering multiple hypotheses as to the causes of a child's learning difficulties.

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[4]Leo J. Brueckner, "Introduction: Educational Diagnosis," Thirty-fourth Yearbook of the National Society for the Study of Education, (Bloomington: Public School Publishing Company, 1935), p. 2.

[5]Ernest Tiegs, "Educational Diagnosis," Educational Bulletin No. 18, (Los Angeles: California Test Bureau, 1956), p. 5.

4. Ability to apply intelligently and effectively the diagnostic methods and devices used in the modern educational clinics, or to adapt them informally to the task at hand.

5. Ability to recognize symptoms of contributory conditions whose diagnosis requires the services of specialists in other professional fields, including medicine, etc.

6. The ability to synthesize the findings of the various agencies participating in the diagnosis and to identify the factors most likely to be contributory to the difficulty in the case at hand.

7. The ability to suggest the steps to be taken to bring about an investigation and to demonstrate the methods and materials of instruction.[6]

Diagnostic procedure according to Smith and Dechant begins with the child's instructional needs based on the expectancies of his chronological age, metal age, and grade placement. The teacher's primary purpose is to discover how the child reads, why he reads the way he does, what he can read, and what he can read with success. It is equally important that the teacher become aware of a particular problem or problems. In general, the teacher should acquaint herself with the child's general abilities, his reading potential and the factors impeding his reading development.[7]

Bond and Tinker accentuate that the core of the successful programs of instruction must be based on a thorough diagnosis of the child's unique reading needs and personal characteristics, and that the diagnosis must be directed toward obtaining the information necessary for the improvement of instruction.[8] Nelson reiterates that there is no definite

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[6]Leo Brueckner and Guy L. Bond, The Diagnosis and Treatment of Learning Difficulties, (New York: Appleton-Century-Crofts, Inc., 1957), p. 424.

[7]Henry Smith and Emerald Dechant, Psychology in Teaching Reading, (New Jersey: Prentice Hall, 1961), p. 408.

[8]Guy L. Bond and Miles A. Tinker, Reading Difficulties: Their Diagnosis and Correction, (New York: Appleton-Century-Croft, Inc., 1957), p. 125-127.

formula for diagnosing reading difficulties. However, certain techniques can be used to discover the weak areas. When the various difficulties are known and the causes understood, then the teacher can plan the instructional procedure and activities for the child. The classroom teacher will find that the records of the child, health records, background of the child, intelligence quotients, achievement test scores, standardized tests and teacher observations will be very valuable in her analysis.[9]

Hoyt and Blackmore consider it of prime importance for teachers to analyze their student's ability early in the year and plan their reading programs on the basis of each child's needs.[10]

Robinson agrees with other authors when she writes:

> Maximum success in correcting personal and reading problems results when a sumpathetic teacher accepts the pupil as an individual, respects his integrity, provides reading material with which he can be successful, de-emphasizes errors and gives appropriate recognition to success and learning.[11]

Harris emphasizes that reading diagnosis should place more stress on qualitative interpretation and less on quantitative scores. He further suggests that if a child sees the word room and reads it as summer, he should be asked to do his thinking aloud, thus enabling the teacher to understand why he does this. After checking the basic mechanics of reading, Harris would proceed to the analysis of word recognition skills,

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[9]Florence Nelson, "Methods for Diagnosing Reading Problems in Grades Four to Eight," Corrective Reading in Classroom and Clinic, ed. Helen Robinson, Supplementary Educational Monographs, No. 79, (Chicago: University of Chicago Press, 1953), p. 79.

[10]Jeanne S. Hoyt and Dorothy S. Blackmore, "Fifty-Seven Readers: Comparison of Reading Achievement and Expected Achievement--Grades One to Seven," Journal of Educational Research, LII, (Jan., 1960), p. 165.

[11]Helen M. Robinson, "Personality and Reading," Modern Educational Problems, ed. Arthur Traxler, (Washington: American Council in Education, 1953), p. 99.

comprehension skills, oral reading and then silent reading. Not really a skill, but very important according to Harris, is the necessity of checking the child's interests and attitudes.[12]

Reading diagnosis--to be effective and valuable--must determine the nature of the problem, indicate where the child can best be treated, isolate the specific nature of the problem, specify how improvement can be made, detect limiting factors, and locate any environmental conditions that need correcting. Barbe agrees with many other authors that, until the teacher knows what the problem is, there is little chance of the successful treatment of this problem.[13]

Intelligence Tests - Measure of Reading Success

> Many factors influence the child's progress in school, such as physical defects, language handicaps, left-handedness, and left-sidedness, poor instructions, and long sieges of illness. The leading factor, however, is mental ability. This factor must be considered when the success or failure of the educational program is in question.[14]

Dechant agrees that the I.Q. has long been a predictor of the child's performance, yet he feels that the mental age is a better indicator of reading readiness and achievement especially at the early levels.[15] Intelligence, however, is not the sole nor necessarily the best indicator of reading achievement. Research indicates that the majority of poor readers

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[12] Albert Harris, Diagnosis of Reading Difficulties, ed. Helen Robinson, Supplementary Educational Monographs No. 79, (Chicago: University of Chicago Press, 1953), p. 15.

[13] Walter Barbe, "Instructional Cause of Poor Reading," Education, LXXVII, (May, 1957), p. 540.

[14] George Isaiah Thomas, "A Study of Reading Achievement in Terms of Mental Ability," Elementary School Journal, XXXIII, (Sept., 1946), p.29.

[15] Emerald Dechant, Improving the Teaching of Reading, (Englewood Cliffs, N.J.: Prentice Hall,Inc., 1964), p. 567.

have I.Q.'s between 80 and 110 and that very often the severely retarded readers have I.Q.'s of 130 or more in relation to their mental ages.

According to Guilford's analysis of intelligence (1959), the processes characteristic of intellectual activity are also characteristic of reading. These include: cognition, the recognition of or discovery of units, classes, relationships, systems; memory of what is recognized; divergent thinking which involves fluency and originality in dealing with words, ideas, and relations; convergent thinking which leads to the right or best answer; evaluation which includes critical thinking, the making of inferences, and the drawing of generalizations and conclusions.[16]

In the viewpoint of DeBoer and Dallman, a close relationship exists between intelligence and reading tests because the tasks of each are so similar. Moreover they also confirm that the cultural background and the present environment affect the performance in both tests.[17]

Mann, Alvord, and Richardson conducted a study using the Kuhlman Anderson Intelligence Test and the Iowa Basic Skills Tests. "The results suggest that ability to perceive and/or report the phenomenon is related to intelligence and achievement in reading and language fundamentals; that is, the two groups differed significantly in intelligence and certain aspects of achievement".[18]

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[16]J. P. Guilford, "Three Faces of the Intellect," American Phychologist, XIV, (August, 1959), p. 469-479.

[17]John DeBoer and Martha Dallman, The Teaching of Reading, (New York: Holt Rinehart and Winston, 1964), p. 422.

[18]Lester Mann, Agnes Alvord, Paul Richardson, "Relationship Between Spiral After Effect Reports and Measures of Intelligence and Achievement in Fifth Grade Children," Psychology in Schools, Vol. I, (July, 1964), p. 305-308.

Most writers express the relationship between intelligence and reading in this way. First of all, inadequate intelligence appears to cause inability to learn in all school subjects, of which reading is but one phase. Secondly, in children who have specific reading disabilities, intelligence seems to be distributed essentially as it is in the general population. In other words, severely retarded readers may be children with low, average, or superior intelligence.[19] Smith further adds, that the dull child (I.Q. 70-85) according to the above reference was poorly equipped to meet the demands of the typical school, because the standards set for all children are unattainable by these youngsters; at a later time, when these youngsters have failed again and again, the same tasks are no longer appropriate in terms of the children's maturing interests and needs.[20]

According to Spache there is less tendency to attribute reading disability to low intelligence today than a quarter of a century ago. Presently more adequate intelligence testing is being done which again indicates that all retarded readers are not pupils of low intelligence. Educators are realizing more than ever that intellectually handicapped children are not disabled readers when their reading achievement corresponds to their intelligence quotient.[21] From the above statement it is evident that all slow learners are not necessarily retarded readers.

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[19]Helen Robinson, Why Pupils Fail in Reading, (Chicago: The University of Chicago Press, 1957), p. 66-67.

[20]Ibid., p. 67.

[21]George Spache, Toward Better Reading, (Champaign, Illinois: Garrard Publishing Company, 1962), p. 468.

Bond and Tinker[22] agree with Strang[23] that mental ages and reading achievement are usually quite similar for students whose I.Q.'s range from 90 to 110. Students with I.Q.'s above 110 may have mental ages from one to two years above their reading ages. Conversely students with I.Q.'s below 90 may exceed their reading ages by one-half to two years. The characteristics of the student and the quality of previous education may vary these relationships. Confirming the above, Spache remarks that many children exceed their mental age by their reading achievement.[24]

The California Test Bureau, in one of their bulletins, stated that the interpretation of the language factor is being used as a criterion of the child's reading ability. The findings of this study indicate, however, that this is more accurate at some levels than at others.[25] Riden, too, agrees that significant correlation exists between reading ability and intelligence.[26]

Intelligence tests--both individual and group--correlate with reading comprehension. However, Hage and Stroud point out that the verbal scores correlate more closely than the non-verbal. Consequently, the tests giving both verbal and non-verbal scores provide a more diagnostic tool for

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[22]Guy Bond and Miles Tinker, Reading Difficulties: Their Diagnosis and Correction, (New York: Appleton-Century-Crofts, 1957), p. 112.

[23]Ruth Strang, Diagnostic Teaching of Reading, (New York: McGraw Hill Book Company, 1964), p. 215.

[24]George Spache, "Integrating Diagnosis with Remediation in Reading," Elementary School Journal, LVI, (Sept., 1956), p. 18-25.

[25]California Test Bureau, "Diagnosis in the Reading Program", Educational Bulletin, No. 18, (Los Angeles, California: The California Test Bureau, 1945).

[26]Sybil M. Riden, "The Effects of Environment in the Reading Ability of Eight Year Old Children," Journal of Educational Psychology, XXVII, (Nov., 1957), p. 225-226.

the teacher.[27] Evidence has been presented to confirm that since reading plays such an important part in group intelligence tests, effective reading instruction would raise the Intelligence Quotient. Yet, a high mental age does not assure a high learning rate in beginning reading according to Durrell.[28] Again, many authors agree with Spache[29] and Neville[30] that group intelligence tests penalize poor readers because they demand certain reading abilities.

Plattor and associates confirm that scores on verbal intelligence tests cannot be considered as a valid measure for pupils with reading difficulties, for low scores are often the indication of reading retardation rather than the capacity to learn. In situations such as these, both verbal and non-verbal language tests should be given and a comparison between the two made.[31]

In the opinion of Gates, although intelligence is by no means the only factor determining reading ability it is nevertheless still customary to assume that reading age should, and usually could, reach approximately the level of mental age and that the need of diagnostic study is indicated when it falls appreciably lower.[32]

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[27]Dean S. Hage and James B. Stroud, "Reading Proficiency and Intelligence Scores, Verbal and Non-Verbal," Journal of Educational Research, LII, (March, 1959), p. 258-262.

[28]Donald Durrell, "Success in First Grade Reading," Journal of Education, CXL, (Feb., 1958), p. 148.

[29]George Spache, Toward Better Reading, (Champaign, Ill.: Garrard Publishing Company, 1962), p. 469.

[30]Donald Neville, "Relationship Between Skills and Intelligence Test Scores," Reading Teacher, XVIII, (Jan., 1965), p. 257-261.

[31]Emma Plattor, Stanton Plattor, Clarence Sherwood, Sylvia Sherwood, "Relationship Between Reading Retardation and Measurement of Intelligence," Personnel and Guidance, XXXVIII, (Sept., 1959), p. 50.

[32]Arthur Gates, "The Measurement of Evaluation of Achievement in Reading," Thirty-Sixth Yearbook of National Society for the Study of Education, Part I, The Teaching of Reading: A Second Report, (Bloomington, Ill.: Public School Publishing Company, 1951), p. 142.

Monroe and Bachus report that reading tests usually show a fairly high, but by no means perfect correlation with intelligence tests. Children who are retarded in general intelligence are usually similarly retarded in reading.[33] Strang adds that since intelligence and reading have so much in common, intelligence tests cannot be solely used in predicting reading potential.[34]

Research shows that many authors still agree that intelligence is extremely important in general reading achievement. Harrison suggests these specific mental abilities requisite for success in reading: the ability to see likenesses and differences, to remember word forms, to remember ideas, to do abstract thinking, to correlate abstractions with definite modes of response.[35]

Concerning the relationship of mental ability to reading, Harris draws the following conclusions:

1. A substantial relationship exists between mental age and the ease of learning to read; most children who fail in reading in the first grade have mental ages below six years.

2. Most children who have normal Intelligence Quotients have Mental Ages above six years, and are free from special handicaps, can be successfully taught to read in the first grade.

3. It is not possible to set a minimum mental age for learning to read because too many factors are involved.

4. Schools which provide first grade programs which are rich in experiences and social activities, with no formal reading instruction, avoid many problems of reading failure and achieve

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[33]Marion Monroe and Bertie Backus, "Remedial Reading," A Monograph in Character Education, (Cambridge, Mass.: Houghton Miflin Co., 1937), p. 21.

[34]Ruth Strang, Diagnostic Teaching of Reading, (New York: McGraw Hill Co., 1964), p. 313.

[35]Lucille Harrison, Reading Readiness, (Boston, Mass.: Houghton Miflin Co., 1939), p. 8-9.

> as good or better readers in the higher grades as the schools which teach reading from the beginning of the first grade.[36]

Both individual and group intelligence tests have their merits and values. The group tests require less administration time, but generally are less valid than the individual tests. These are very often a measure of the present level of development and of the child's verbal skills, so if the child is retarded in reading, this test might underestimate his potential. Since the individual tests are less dependent upon reading achievement, they are more likely to predict and indicate more accurately the child's potential. However, these tests require more administration time and also usually a trained examiner.[37]

Despite the criticism, the intelligence test is still a useful tool in the diagnosis and appraisal of reading. The mental age is the measure of mental maturity and the I.Q. is an indicator of the rate of mental development. The total score is useful in indicating the individual's present over-all capacity to think, act, and to deal purposely and effectively with his environment. The subtests scores and the observations made during the testing give clues to the nature and sometimes the causes of the person's reading difficulties.[38] Intelligence tests do not measure all factors, but they do give an estimate of the child's level and rate of mental development.

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[36]Albert J. Harris, How to Increase Reading Ability, (New York: Longmans Green and Co., 1956), p. 90-91.

[37]Henry P. Smith and Emerald Dechant, Psychology in Teaching Reading, (New Jersey: Prentice Hall, Inc., 1961), p. 409.

[38]Ruth Strang, "Diagnostic Teaching of Reading," (New York: McGraw Hill Book Company, 1964), p. 222.

Comprehension - A Thinking Process

Since comprehension is so vital to efficient reading and since this study specifically stressed comprehension, some corresponding and related research was reviewed.

Just what is comprehension? Many and varied are the definitions of this term. However, some authors agree with Smith when she says comprehension is a blanket term covering the whole area of thought-getting processes involved in reading.[39] Gates summarizes the mental processes involved in meaningful reading in this statement: "The reading program should make careful provision for contributing as fully as possible to the cultivation of a whole array of techniques involved in understanding, thinking, reflecting, imagining, judging, evaluating, analyzing, and reasoning."[40] Wolfe stresses the importance of comprehension for she maintains that children who lack the ability to understand and think critically do not comprehend and, therefore, do not read. Consequently, both the skills involving facts and those involving critical reading must be taught.[41] Critical reading as described by DeBoer includes the search for revelant materials, the evaluation of the data, the identification and comparison of sources, and the synthesis of the findings. The capacity for suspended judgment and the interpretation of the writer's motive are also included. Chiefly, however, and all-important is the sufficient

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[39] Nila Banton Smith, Reading Instruction for Today's Children, (New Jersey: Prentice Hall, Inc., 1963), p. 257.

[40] Arthur I. Gates, "Reading in the Elementary School," Forty-Eighth Yearbook of the National Society for the Study of Education, Part II, Chapters 1 and 2, (Chicago: University of Chicago Press, 1949), p. 3-23.

[41] Josephine B. Wolfe, "Ways and Means of Developing Basic Skills," Reading in Action, I.R.A. Conference Proceedings, Vol. 2, (Newark, Delaware: International Reading Association, 1957), p. 91.

background of knowledge to provide a sound basis for judgment.[42]

In speaking of comprehension, four categories are included, namely, literal comprehension, interpretation, critical reading, and specific word meanings.[43] A definition of each of these terms may be profitable at this point, since all reading authorities do not agree on the interpretation of these words.

Literal comprehension implies nothing more than getting the primary, direct, and "literal" meaning of the word, idea, or sentence in the context.

Interpretation includes the skills in literal comprehension plus those that are concerned with getting deeper meanings such as: drawing inferences; making generalizations; reasoning cause and effect; speculating on what happened between events; anticipating what will happen next; detecting the significance of a statement, passage, or selection; making comparisons; identifying the purpose of the writer, and the motive of the characters; associating personal experience with the reading content; forming sensory images; and experiencing emotional reactions.

Critical reading is a term much under discussion and about which many reading authorities do not agree. However, they all agree that critical reading does not include literal comprehension but implies any reading in which thinking at the higher levels is done. In addition to this it includes all the skills in interpretation, as well as the study skills and the evaluative skills. According to Smith, critical reading includes literal comprehension and interpretation but goes further because the

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[42]John DeBoer, "Teaching Critical Reading," Elementary English, XXIII, (Oct., 1946), p. 251-54.

[43]Nila B. Smith, op. cit., p. 262.

reader evaluates, that is, passes personal judgment on the quality, the value, the accuracy and the truthfulness of what is read.

Specific word meanings deal with primary meanings multiple meanings, abstractions, similes, synonyms, antonyms, metaphorical language, and meanings of variant word forms. This phase of reading is extremely important in content subject areas. Without the study of the technical vocabulary the child will encounter many difficulties.[44]

Before the child can even get the literal meaning from the page, he must be able to recognize words, know how to use the dictionary, and be aware of various parts of words etc. Bond and Tinker emphasize the fact that sight vocabulary and the mechanics of reading are essential to comprehension. However, they also maintain that this is not sufficient, for the elements of the sentence and their organization in relation to each other must also be understood. Smith agrees that basic meaning development, therefore, must include: various methods of acquiring words meanings, such as experience, context clues, enrichment of meaning through descriptive words, figures of speech, symbolic expressions and the noting of semantic variations; phrasing into thought units; sentence comprehension; paragraph organizations and finally story organization and story sense. Basically, comprehension depends upon facility in the use of concepts acquired through experience.[45]

Studies indicate that vocabulary and comprehension are highly related, for without an understanding of words, comprehension is impossible. Yet the meanings of words and the ability to select the correct meanings

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[44]Ibid., p. 263-264.

[45]Guy Bond and Miles Tinker, Reading Difficulties: Their Diagnosis and Treatment, (New York: Appleton-Century-Crofts, Inc., 1957), p. 229.

from the context alone cannot assure accurate comprehension. Some other basic skills are necessary to assist the reader in comprehending. Although no one method has been identified for developing these skills, writers recommend the following procedure: survey the main headings; check the key words and ideas; and try to relate what is being read to what is already known. Some discuss thought-unit reading; some emphasize answering specific questions; while others stress outlining. Spache thinks that the children should be taught to read for varying degrees of comprehension. He suggests the following steps:

1. Plan each reading and its purpose in connection with the whole area of study, the demands and general purposes of the instructor, and the specific purposes of the reader.

2. Teaching the student different ways or rates of reading and their effect on comprehension.

3. Instructing him in a systematic approach to difficult materials, such as Robinson's SQ3R or some other method to promote retention.

4. Training in critical reading--this involves practice in identifying the facts given, evaluating the ideas offered, and detecting bias, omissions, distortions, and the like.

5. Giving the student practice in applying his reading skills in the various content fields.[46]

Comprehension, therefore, depends upon an understanding of the vocabulary, an understanding of the sentence structure, an awareness of the organization of the material read. For accurate and complete comprehension the reader must select the main and the minor ideas and relate the one to the other.[47]

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[46]George D. Spache, "Integrating Diagnosis with Remediation in Reading," The Elementary School Journal, LVI, (September, 1955), p. 23.

[47]Donald Durrell, "Development of Comprehension and Interpretation," Reading in the Elementary School, Forty-eighth Yearbook of the National Society for the Study of Education, Part II, (Chicago: The University of Chicago Press, 1949), p. 193-194.

Not every child will and can comprehend in the same degree but it is the teacher's task to make every possible effort to help each student comprehend up to the limit of his native ability. David believes that a larger proportion of students would realize their full potential for understanding what they have read, if they would be systematically trained in the five skills which he includes in his functional definition of comprehension. These basic skills are: skill in answering questions explicitly answered in the passage; skill in answering questions not explicitly answered in the selection; skill in following the structure of the passage; skill in drawing inferences about the content, purpose, intent and point of view of the author; skill in recognizing the literary devices used by the author. Underlying these skills are the general mental abilities to remember word meanings and to reason with verbal concepts. Basically, neither of these lend themselves to be taught specifically because they are a part of the pupil's native endowment. However, the gradual building up of an experiential background and of word association tends to augment this.[48]

From a study he conducted, Anderson maintains that comprehension in reading would improve if all reading tasks were prefaced with directions and questions to be answered after the reading of the selection. This approach in the opinion of the author would gradually develop in the reader the facility in setting his own purposes, develop independence of reading, and with the aid of specific exercise and instruction develop a variety of reading skills. If the opposite were done, namely, that the pupil be told to read the selection and then only read and answer the questions, this--

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[48]Frederick B. Davis, "The Teaching of Comprehension in Reading in the Secondary School," Education, LXXVI, (May, 1956), p. 541-544.

according to the author--would retard reading development, produce slow readers, hinder him from developing a purpose for reading, would not develop the habit of selecting the important details from the nonimportant. Under these circumstances all items would be equally important for him to remember since he would not know which ones he would be questioned on. In short this method would not be conducive to developing multiple skills.[49]

Research reveals that the language of the child changes both qualitatively and quantitatively as he matures. These changes are a result of the child's interaction with his environment and are due to both maturation and learning. An extensive knowledge of words and their meanings is one of the best possible indices of general knowledge and scholastic aptitude.[50] Witty,[51] Dolch,[52] and Sutton,[53] emphasize the importance of stressing techniques which serve to make the learning situation more meaningful and more closely related to the experiences of the child. Actual experiences, trips, classroom activities, dramatics, use of concrete objects, movies, slides, pictures etc. are all ways of enlarging children's vocabularies which have proved successful by research. Word recognition alone is not sufficient and is too narrow for accurate comprehension; the complexity of the material is often due to the concepts behind the word symbols. In accord with

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[49]A. W. Anderson, "Directing Reading Comprehension," Reading Teacher, Vol. XII, (Feb., 1960), p. 206-211.

[50]Albert Kingston, "Vocabulary Development," Journal of Reading, Vol. VIII, No. 4, (March, 1965), p. 265-269.

[51]Paul Witty, "An Experiment with Films, Film-Readers, and the Magnetic Sound Track Projector," Elementary English, XXX, (April, 1953), p. 232.

[52]E. W. Dolch, "Vocabulary Development," Elementary English, XXX, (February, 1953), p. 70-75.

[53]R. S. Sutton, "The Effect of Vocabulary Building on Reading Skills," Elementary School Journal, LIV, (October, 1953), p. 94-97.

the above, Dolch gives several reasons for the difficulty of reading in the middle grades: many words have unknown or unusual meanings; new arrangements are in long sentences, with many modifiers, and with inverted word order; pictures or ideas which this material wishes to portray are far from the child's experience.[54]

Some studies have appeared in regard to the relationship of word meanings in reading. Sanderson's experiment to determine the effect of direct instruction in the development of meaning vocabulary showed a definite rise in vocabulary power as a result of instruction.[55] Thorndike,[56] and Traxler[57] found that a positive relationship existed between the size of vocabulary and achievement in school. Some studies which compared the earlier vocabulary studies with the present-day ones discovered that at some levels the vocabulary power was greater today than earlier. This may be due to television and other widening experiences to which the children of today are exposed. In general, studies have indicated that vocabulary is highly related to comprehension, for without an understanding of words, comprehension is impossible.

Bond and Tinker point out that word study should deal with new

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[54]E. W. Dolch, "Comprehension in Reading," Education, LXXVI, (May, 1956), p. 536-540.

[55]Marion Sanderson, "An Experiment in the Development of Meaning Vocabularies," Studies and Summaries, Prepared by Hugh Bonar, (Wisconsin: Manitowac Public Schools, 1941), p. 31-55.

[56]Robert L. Thorndike, "Two Screening Tests of Verbal Intelligence," Journal of Applied Psychology, Vol. XXVI, (1942), p. 128-135.

[57]ArThur E. Traxler, "The Relationship Between Vocabulary and General Achievement in the Elementary School," Elementary School Journal, XLV, (Feb., 1945), p. 331-333.

words as they are met in context.[58] Leary stresses the value of teaching a word in context.

> Train a child to anticipate probable meaning, to infer an unknown word from its total context, to skip a word and read on to derive its probable meaning, to check the context clue, with the form of the word, to search the context for a description or explanation that will identify the word, and he will have acquired the most important single aid to recognition. For, regardless of what word he perceives, if it doesn't make sense in its setting, his perception has been in error.[59]

A very productive way of developing ability to derive deeper meanings from the printed page is through discussions of questions stimulating cause and effect relationships, and to point out the necessity for supplying details "between the lines", making comparisons, drawing inferences, and gathering generalizations.[60] Gans lists six prerequisites for developing thinking readers:

1. A teacher who is a critical reader.

2. Importance of a guided discussion--in a good discussion a child examines ideas in such a way that he stretches his own comprehension powers.

3. The right to think honestly--a classroom in which the teacher permits her class to challenge her ideas is an excellent place for essential learning.

4. Learning how to challenge and how to differ--the school plays an important part in teaching children to think independently. It also has the responsibility to teach the child polite techniques and to acquaint the parents with the new techniques of thinking in this light.

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[58]Guy Bond and Miles Tinker, Reading Difficulties: Their Diagnosis and Correction, (New York: Appleton-Century-Crofts, Inc., (1957), p. 246-248.

[59]Bernice Leary, "Developing Word Perception Skills in Middle and Upper Grades," Current Problems of Reading Instruction, Seventh Annual Conference on Reading, (Pittsburgh: University of Pittsburgh Press, 1961), p. 25.

[60]Nila B. Smith, Reading Instruction for Today's Children, (Englewood Cliffs, New Jersey: Prentice Hall, 1963), p. 268.

5. Increasing the child's respect for himself--if a child feels he is listened to, he will gain self-respect and belief in himself.

6. Learning self control in discussion.[61]

In critical reading, the student must first of all identify the facts and then evaluate or appraise them. The critical reader is not only concerned with what is being said but also why the author is saying it. Because he is interested in accurate interpretations, he sifts ideas, organizes them, rejects some, questions some and accepts others. Although critical reading can be taught, this is not sufficient; the child needs training and guidance in the use of the various techniques. According to Jelinek, critical reading requires critical thinking which is "essentially a matter of interpreting facts, applying generalizations, and recognizing errors in logic."[62]

Huelsman recommends three ways of teaching critical reading: the direct approach; the functional approach; and the incidental approach. In the direct approach the children are taught the methods of logical reasoning and also the devices used by the speakers and writers to influence the listener or the reader. To discover the propaganda techniques; newspapers, magazines, editorials, and cartoons are used. In the functional approach, the pupils begin by reading the material and attempt to discover for themselves the pitfalls in logic and also the essential elements of good thinking. The incidental approach takes for granted that critical reading will occur as a result of learning in the social studies

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[61]Roma Gans, Common Sense in Teaching Reading, (Indianapolis: The Bobbs Merrill Co., 1963), p. 414.

[62]James J. Jelinek, "Literature and the Development of Critical Thinking," The Clearing House, XXX (April, 1956), p. 463.

area.[63]

Every student must be encouraged to develop an attitude that will eventually result in critical thinking. Taba confirms that critical thinking is not a simple gadget that can be taught and acquired on the spot in one lesson, unit, or even in one single subject. It is necessary to see critical thinking as a developmental process in which there is a pyschological learning sequence that students need to follow.[64]

To teach effectively in any content area demands the teaching of reading. Every teacher must assume the full responsibility for teaching the special vocabulary, concepts and reading skills required by his subject. "To teach content effectively, he must teach reading effectively."[65]

For a basis of good comprehension, a child must learn to associate meaning with the written symbol. This meaning he has acquired through experience. He may improve his comprehension by using such techniques as surveying the main headings, reading for main ideas, reading thought units, and forming the habit of grouping supporting details about main ideas in a thought outline form. He should have a purpose for reading and should read critically, identifying the facts and evaluating them in the light of his own experience.[66]

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[63]Charles B. Huelsman, "Promoting Growth in Ability to Interpret When Reading Critically, in Grades Seven to Ten," Promoting Growth Toward Maturity in Interpreting What is Read, (Supplementary Educational Monographs, No. 74) Chicago: The University of Chicago Press, 1951, p. 149-153.

[64]Hilda Taba, "The Problems in Developing Critical Thinking," Progressive Education, XXVIII (November, 1950) p. 45.

[65]Henry Smith and Emeral Dechant, Psychology in Teaching Reading, (New Jersey: Prentice Hall, Inc., 1961), p. 373.

[66]Ibid., p. 218.

Study Skills

If a child learned to read, it cannot, therefore, be assumed that he has acquired the skills and attitudes necessary for reading to learn. Teaching children to study is the responsibility of the content area teachers. Yoakam points out that teachers must come to regard themselves as directors of the study process. They must be as interested in the development and the improvement of study habits as in the imparting of knowledge to children. They must learn that, unless pupils form the habit of reading and studying, they have missed a large part of the purpose of their education.[67]

Traxler suggests that classroom teachers will have the best results if they "regard the improvement of study skills as a continuous objective in all their teaching."[68]

Why separate comprehension from study skills? The fact that the student can understand what is on the page, gives no guarantee that this will be retained and applied. If a student has never learned to study effectively, he may perform far below his potential for this reason alone. Among the factors upon which effective study depends, the three most outstanding ones are motivation, habit formation, and study skills.[69]

Schlesser and Young studying the work habits of 498 male freshmen at Colgate University concluded that it is less important to teach the student the techniques of study than it is to help him develop motives for and habits of vigorous, persistent effort. They discovered that regardless

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[67]Gerald Yoakam, "The Improvement of Reading and Study Habits," The Reading Teacher, II (February, 1958), p. 184.

[68]Arthur Traxler, "The Improvement of Study," The School Review, LIII (May, 1945), p. 290.

[69]Henry Smith and Emerald Dechant, op. cit., p. 327.

of what study habits the studious individual had, he was a good worker. Their classification of a good worker was one who began his work immediately, enjoyed his work, and persisted until he had achieved his goals.[70]

Motivation must be coupled with well-grounded habits of attention and persistence. Persistence demands that the student plan his activities and systematize his work. Without this, much time and effort is needlessly wasted. In addition to motivation and organization the student needs certain study skills and techniques. Before one can teach study skills effectively he must know what skills are basic to study. Smith and Dechant list the following skills as essential:

1. Ability to identify and state the purpose for reading.
2. Ability to locate information.
3. Ability to select the correct and needed information.
4. Ability to comprehend what is read.
5. Ability to organize the information.
6. Ability to utilize the information.
7. Ability to remember the information.
8. Ability to adjust the method and rate of reading to the purposes and nature of the material.[71]

Smith categorizes study skills needed to study effectively into three groups, namely, common reading skills, common study skills, and specialized factors. The common reading skills are those in any type of reading such as pronunciation techniques, meaning-gathering techniques, rate techniques, etc. The common study skills are selection and evaluation, organization, recall, location of information, following directions.

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[70]George Schlesser and C. W. Young, "Study and Work Habits," The School Review, LIII (February, 1945), p. 85-89.

[71]Henry Smith and Emerald Dechant, op. cit., p. 327-331.

The specialized factors include vocabulary, and specific skills peculiar to certain subjects as social studies, science, and mathematics.[72]

Research in the field of study skills has been very meager up to the last ten years. Some of the recent research findings are: Fay found that reading skills related to subject matter differ from one achievement area to another. This study was conducted with sixth grade pupils for the purpose of finding the relationships between achievement in five specific reading skills in three school subjects, arithmetic, social studies, and science.[73]

An investigation of the relationship between general comprehension and comprehension in the social studies area was made by Artley. He discovered that there is much overlapping in ability to read in different subject areas and also many striking differences.[74]

Another study was made determining the relationship between certain study and reading skills and reading comprehension of scientific and historical materials. Shores' study showed that general reading ability is not sufficient; students must be equipped with specific skills.[75]

The results of these and the many other studies conducted seem to indicate that there are unique differences in skills used in different subject areas; despite the fact that reading is essential to all subject matter fields, there is a definite need for the development of specific

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[72]Nila Banton Smith, op. cit., p. 312.

[73]Leo C. Fay, "The Relationship Between Specific Reading Skills and Selected Areas of Sixth Grade Achievement," Journal of Educational Research, XLIII (March, 1950), p. 541-547.

[74]Sterl A. Artley, "General and Specific Factors in Reading Comprehension," Journal of Experimental Education, XLV (March, 1948), p. 181-188.

[75]Harlan Shores, "Skills Related to the Ability to Read History and Science," Journal of Educational Research, XXXVI (April, 1943), p. 584-593.

skills in the various areas of concentration and content areas.

If these skills are essential, then can these skills be taught, can they be improved by singling them out and giving practice in the particular one? Research shows they can, for research studies were conducted for this purpose. Jacobsen summarized many research studies in this area and concluded that giving reading instruction in the field in which the content is to be mastered is superior to giving it in another field and expecting the abilities to transfer to the content fields.[76]

Locating and organizing information are important skills in learning. Students must be able to use indices, periodical literature, atlases, almanacs, year books, encylopedias and dictionaries in order to study efficiently and effectively. Joined with this are the different types of reading such as skimming, scanning, and thorough reading. Closely allied are the abilities of summarizing, outlining, underlining, note-taking and various combinations of these. All these must be taught the child if he is to know them. Wiegand and Blake suggest that the student "listen carefully, putting into note forms those items which have been emphasized, repeated several times, referred to as items you will be expected to learn and will be examined on, written on the blackboard or graphed for emphasis."[77]

Gray and Reese offer a number of suggestions as to how the teacher may help the student strengthen his skill in organizing:

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[76]Paul B. Jacobsen, "Two Experiments with Work-type Reading Exercises in Ninth Grade," University of Iowa Studies in Education,)Iowa: University of Iowa Studies in Education, 1933), p. 85.

[77]George Weigand and Walter Blake, College Orientation, (New Jersey: Prentice Hall, Inc., 1955), p. 32.

1. Have students prepare outlines with topical and marginal headings employed by the author. Then direct them to fill in subordinate ideas and details.

2. Ask students to find the topic sentence of each paragraph and state points which develop its theme in the sentences that follow.

3. Have the students state the theme of the paragraph and list from memory ideas related to it.

4. Ask the students to list key words in a selection, then review the material to note how key words are related to topic sentences.

5. Direct the students to find out the main purpose of the chapter . . . then have the class read the chapter through to discover how the author developed the theme.

6. Have the students outline the main points of the chapter after the first reading.

7. Help the students identify transition words, such as moreover, clearly, hence, however, consequently, therefore.

8. Guide the students in recognizing transition sentences.

9. Give the student a lesson in previewing the contents of a textbook and chapter.[78]

The value is not the making of the outline or the note-taking but the use that is made of them for seeing relationships, for identifying important points, and for reviewing.

Summary

Thorndike's definition, "Reading is thinking"[79] is really true after reading the research studies conducted in the various phases of reading. Reading is a complex, unified continuous activity. Reading is necessary for every day activities; reading requires intelligence, exper-

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[78]Lillian Gray and Dora Reese, Teaching the Children to Read, (New York: The Ronald Press Company, 1957), p. 304.

[79]Edward L. Thorndike, "Reading as Reasoning: A Study of Mistakes in Paragraph Reading," Journal of Educational Research, VIII (June, 1917), p. 323.

fence, willingness to learn, knowledge of the basic mechanics of reading, mental processes involved in comprehension, and finally all the skills needed to profit from and by reading what is being done. Research has indicated that many children do not read as they should and consequently the classroom teacher must be continuously diagnosing and evaluating to discover the reason for the retardation.

CHAPTER III

THE PROCEDURE

Purpose of the Study

Many studies have been made to determine the causes of reading disabilities. The present study's underlying objective was to determine the specific strengths and weaknesses in reading exhibited by the fifth graders of one parochial school in the city of Gary. Related research and findings were reviewed, current articles were read, tests were studied and actual work in the classroom helped to complete this diagnostic study.

Since the school has parallel grades, both fifth grade classes were selected for the study. The eighty-eight fifth graders were chosen because there would still be time to strengthen the weaknesses before leaving the eighth grade. Both classes had experienced teachers and had similar scholastic experiences throughout their previous years of schooling. However, despite the fact that these children all attend the same school, reside in the same area, their backgrounds are varied. Some of them have parents who are college graduates, while others have one parent who is in a professional field; others have parents who are laborers. The population is stable and the school is in a suburban area of the city.

Selection of Tests

Since intelligence is a factor in determining reading achievement, the Kuhlman Anderson Group Intelligence Test was administered to the child-

ren to measure their potential and to determine the mental ages. This test consists of a series of tests including such items as: making words from jumbled letters; following verbal directions when given several at a time; recognizing forms and combining the correct parts to make a whole; counting; understanding the meaning of common fractional parts; and completing a series of symbols that have been begun.

Fundamental to comprehension are the basic mechanics of reading and word perception. To determine the fundamental knowledge of sounds, phonics, and structural analysis the Durkin Phonics Survey was used. Even though this test yields no grade score or percentile rank it is an excellent diagnostic tool for it determines the knowledge the individual has of sounds, blends, short and long vowels, rules for syllabication and generalization. Furthermore, being an individual test, it is an aid to the examiner to detect many specific weaknesses and obtain a clear picture of the strengths and weaknesses of the mechanics so vital for accurate word recognition and comprehension.

To achieve a working knowledge of the oral mechanics of recognizing and attacking words, the Wide Range Achievement Test was used. This, too, is an individual test, providing a grade score in the recognition of isolated words.

Vocabulary and comprehension were tested by the respective portions of the Iowa Basic Skills Tests.

> In the construction of the vocabulary tests, the major guides in the selection of words were frequency of usage, as determined from standard sources, balanced inclusion of the parts of speech, and representation of various subject matter areas. The general skills tested are: 1) the use of tools involved in word recognition; 2) knowledge of the meaning of the words; 3) sensitivity to find difference in meaning, judgment, in choosing the most appropriate word in a given situation.[1]

The items in the test consist of a word in context followed by several possible definitions. The purpose of the test is not merely to determine whether the child knows the meaning of the one stimulus word, but rather whether he knows the meaning of each word used in the item. The stimulus words, as well as many others used in this test were chosen from the Thorndike[2] and Rinsland[3] word lists.

Reading comprehension includes more than an understanding of a sentence or an idea; thus paragraph comprehension was used. The passages varied in length from a few sentences to a full page. These were chosen in an attempt to represent as completely as possible all types of material encountered by the pupil in his everyday reading. The material was derived from newspapers, magazines, encyclopedias, government publications, textbooks, and original literary works.

Whether or not a pupil is a good reader depends, not only on the extent to which he comprehends the author's meaning, but also on the degree to which he grasps the significance of the ideas presented, evaluates them, and draws useful conclusions from them. Thoughtful reading is the result of a long period of growth beginning in the first grade. No amount of drill at the higher levels can make up for a lack of attention to reading for meaning in the middle and lower grades according to Lindquist.[4]

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[1]E. F. Lindquist and A. N. Hieronymus, Iowa Tests of Basic Skills, Form III - Manual (Boston: Houghton Miflin Co., 1964), p. 27.

[2]Robert L. Thorndike, The Teacher's Word Book of 20,000 Words (New York: Teachers College, Columbia University, 1931).

[3]Henry Rinsland, A Basic Vocabulary of Elementary School Children (New York: The Macmillan Company, 1947).

[4]E. F. Lindquist and A. N. Hieronymus, Iowa Basic Skills Tests, Administrator's Manual, (Boston: Houghton Miflin Co., 1964), p. 29-30.

Consequently in the reading comprehension tests, an attempt was made to test the ability to make simple inferences. However, to score well on the latter items many more complex skills had to be used.

The skills emphasized may be classified under four major headings; details, purpose, organization, and evaluation. Each of these is again broken down into minor skills for a more effective diagnosis. "Details" is subdivided into the ability to recognize and understand important facts and details; ability to recognize and understand implied facts and relationships; the ability to deduce the meaning of words or phrases from context. The "subdivisions for purpose" include the ability to detect the main purpose of the paragraph or selection, and to recognize the main idea or topic of the paragraph or selection. The two abilities tested under organization are to recognize common elements or parallel topics in incidents or paragraphs. The ability to develop generalizations from a selection; the ability to recognize the writer's viewpoint, attitude, or intention; the ability to recognize the mood or tone of the selection; and the ability to recognize outstanding qualities of style or structure were skills tested under evaluation.

In the content area much comprehension is dependent on the knowledge and the skills involved in the work study skills. The work study skills selected for study in this test may be classified as the knowledge and use of map materials, of graphic and tabular materials, and of reference materials. These skills are considered of crucial importance to self-education in out-of-school and after-school activities.

A detailed analysis of the map reading skills involved reveals that the following are tested: determining distance through the use of a map scale; describing location in terms of latitude and longitude;

comparing data from two maps or more; inferring man's activities or ways of living; the ability to visualize landscape features; and the ability to read and interpret facts from maps.

Since graphs and tables are tools for disseminating knowledge, a test of these skills is also included. At least five different graphs or tables are included at every level. A large portion of the instruction is concerned with the reading of traditional graph forms such as bar graphs, line graphs, and circle graphs. A simplified list of the abilities included are: to comprehend the title, the topic on which the graph gives information; to recognize from subtitles or column headings what is shown by each part of the graph or table; to read amounts; to compare two or more values from the graph or table; to determine the relative rates or trends; to realize that percentages and proportions do not give absolute amounts; to determine the underlying relationships through correct interpretation of a graph; to grasp the outstanding facts portrayed by the graph; to determine rank from an unordered list, graph or chart.

To effectively study the knowledge and the use of reference material is very important; therefore, a test covering these items was also included. The reference skills considered most important at each particular level were stressed in the testing arrangement. In most sections, however, a great variety of skills are covered. In the section on general reference materials are items dealing with parts of a book, the globe, current magazines, the dictionary, the encyclopedia, and an atlas. The section on the use of the dictionary includes items on spelling, syllabification, accent, pronunciation, meaning, multiple meaning, and plurals. In the use of an encyclopedia, the items deal with a city, a mineral, an animal, a collection of common objects, a person and a process.

Administering and Scoring

After the standarized and informal tests were carefully selected, the next step was the administration of these tests. All tests were given during the span of the first two weeks in October, in the following sequence: The group tests,--the Kuhlman Anderson Intelligence Test and the Iowa Tests of Basic Skills were administered, followed by the two individual tests,--the Wide Range Achievement Test and the Durkin Phonics Survey. All group tests were machine scored and rechecked by the writer. The individual tests were scored as they were administered and later rechecked by the writer.

In order to keep uniformity of presentation as far as possible, all tests were administered by the writer. Directions and time limits were closely adhered to. After all tests had been checked and rechecked, all scores were systematically recorded.

Study of Data

Study of the results of the group:--After all the raw scores and the grade equivalents for each child had been recorded, the data were subjected to statistical analysis. Quartile points and quartile deviations for each test were found considering the group as a whole. Since the Durkin Phonics Survey yielded no grade scores, the quartile points and quartile deviations were found using raw scores. The I.Q. was used to find the quartile points and quartile deviations in the Kuhlman Anderson Test. However, on all other tests grade scores were used in calculating the quartile points and quartile deviations. The Vocabulary tests, the Reading Comprehension test, and the Work Study Skills tests were compared with the national norms for the fifth grade

at this time.

Later the same procedure was followed using the upper twenty-seven per cent and the lower twenty-seven per cent of the group in each test. Quartile points and quartile deviations were again found; these were again compared with the national norms.

Study of the test items:--To arrive at a still better picture of the strengths and the weaknesses and to pin-point the weaknesses more closely a tabulation of each test item incorrectly answered was scored according to quartiles. This was done in all tests. However, since no national norms were available for some of the tests, the Vocabulary test, the Reading Comprehension test, and the Work Study Skills alone were used for the following statistical measures. The percentage of errors was found for each subtest of reading comprehension and study skills and then compared with the national percentage of errors.

Summary

The steps of procedure have been outlined as used to determine the strengths and weaknesses of reading in the fifth grades in one parochial school in Gary. Discussion of the procedure has been combined under these topics: 1) purpose of the study, 2) testing program, 3) administration and scoring, 4) study of the data to determine the strengths and weaknesses.

CHAPTER IV

INTERPRETATION OF RESULTS

This study was undertaken to determine the strengths and the weaknesses in reading at the fifth grade level in one school of Gary. Answers to the following questions were sought:

1. In what areas of comprehension are the pupils weak?
2. In which areas of study skills are the pupils weak?
3. In which areas do the children show strengths?
4. What are the specific weaknesses in the upper fourth of the class?
5. What are the specific weaknesses in the lower fourth of the class?
6. Do the children of similar I.Q. portray similar weaknesses?

Analysis of Data

In view of making a comparative analysis of intelligence quotients and reading potential, statistical results have been interpreted first for the class as a whole and secondly for the upper and the lower twenty-seven per cent of the class, in each area tested.

Table 1 indicates the quartile points, quartile deviations and range of Intelligence Quotients as obtained from the Kuhlman Anderson Intelligence Test. Judging from the quartile points, one would expect this group to achieve above grade level, since the median I.Q. is well above average, and the lowest quartile point is still within the average range.

TABLE I

QUARTILE POINTS, QUARTILE DEVIATIONS, AND RANGE OF INTELLIGENCE QUOTIENTS OBTAINED FROM THE KUHLMAN ANDERSON TEST

QUARTILE I	QUARTILE 2	QUARTILE 3	QUARTILE DEVIATION	RANGE
99.4	107.0	117.5	9.0	84-142

However, since the range of the I.Q. is so broad, a spread of fifty-eight points, a large range of abilities can likewise be expected. The students in the lower quartile will find it difficult to compete with those in the upper quartile, while those in the upper fourth will necessarily have to be challenged to produce achievement corresponding to their abilities.

The findings of the mechanics of word recognition are reported in Table 2. Both of the tests indicate that this group has mastered quite

TABLE 2

QUARTILE POINTS, QUARTILE DEVIATIONS, AND RANGE OF ATTAINED SCORES OBTAINED FROM THE WIDE RANGE PRONUNCIATION TEST AND THE DURKIN PHONICS KNOWLEDGE SURVEY

Name of Test	Q_1	Q_2	Q_3	Q Dev.	Range
Wide Range Pronunciation Test Gr. Score	5.4	6.6	7.9	1.2	4.0 - 11.3
Durkin Phonics Survey Raw Score	174	181	189	7.3	155-195

well the fundamental mechanics of reading, since all the quartile points are above the standard at this time. A comparison of the upper and the lower quartile points, indicates that the lower fourth of the class will again have difficulty competing with the upper fourth, despite the fact that the lower quartile point is still well above the standard. The range alone makes this obvious. A child with a score of 4.0 will encounter many more difficulties than the one with a score of 11.3, for those in the lower fourth are still struggling with making the mechanics a basis for automatic and instant recognition. This tremendous range of achievement presents a real challenge for the teacher. The Phonics Survey Test presents the same picture. Although the Phonics Survey yields no grade scores or percentiles, it is very indicative of the strengths and weaknesses. With 199 as the highest possible score, the lowest score for this class was 155 items correct. In the upper fourth the errors were merely isolated errors of carelessness and thoughtlessness. However, in the lower fourth the predominant weakness was that of making generalizations from given examples. The pupils knew how to pronounce the words, syllabicate them, knew whether the vowel was long or short, whether the c and g was hard or soft, but then were unable to make generalizations concerning these situations. A minority of the lower fourth had difficulty with the various sounds of x, oo, and qu. All other errors were isolated instances. Vowel and consonant sounds presented no problems; syllabication, a few. However, since these children were at fifth grade level, they would receive additional help with syllabication.

Table 3 shows the comparison of the attained scores with the norms for a group of fifth graders on the subtests of the Iowa Basic Skills in Reading Comprehension and Work Study Skills. Again working with quartile

TABLE 3

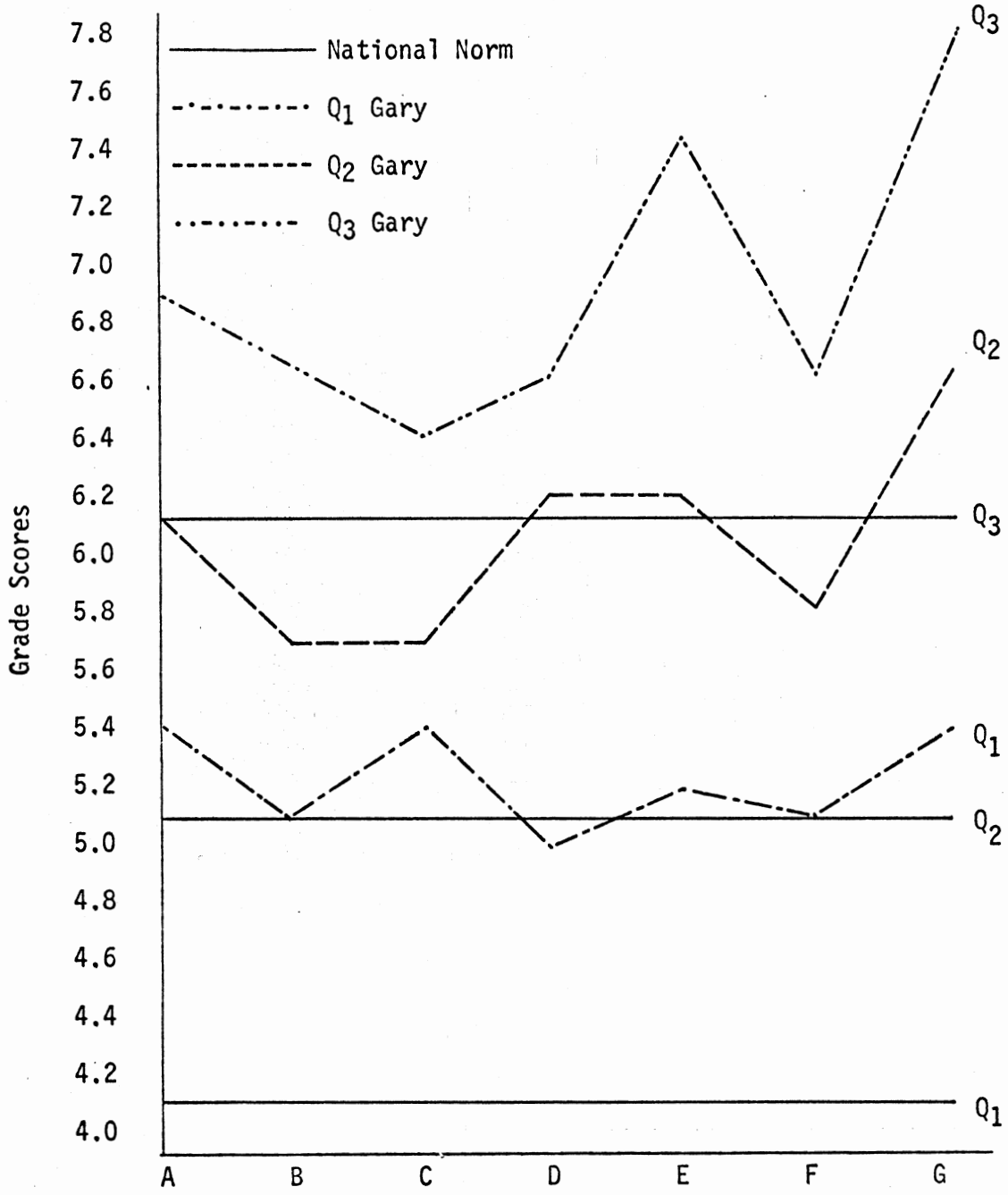
COMPARISON OF THE ATTAINED GRADE SCORES WITH THE NORMS FOR A GROUP OF FIFTH GRADE CHILDREN ON THE SUBTESTS OF THE IOWA BASIC SKILLS IN READING AND STUDY SKILLS

Name of Test	Quartile 1			Quartile 2			Quartile 3			Q Deviation		
	Gary	Norm	Diff.	Gary	Norm	Diff.	Gary	Norm	Diff.	Gary	Norm	Diff.
Reading												
Vocabulary	5.4	4.1	1.4	6.1	5.1	1.0	6.9	6.1	.8	.74	1.0	.26*
Comprehension	5.1	4.1	1.0	5.7	5.1	.6	6.7	6.1	.6	.78	1.0	.22*
Work Study Skills												
Maps	5.4	4.1	1.3	5.7	5.1	.6	6.4	6.1	.3	.5	1.0	.5*
Graphs	5.0	4.1	.9	6.2	5.1	1.1	6.6	6.1	.5	.8	1.0	.5*
References	5.2	4.1	1.1	6.2	5.1	1.1	7.4	6.1	1.3	1.1	1.0	.1
Total	5.1	4.1	1.0	5.9	5.1	.8	6.6	6.1	.5	.71	1.0	.3*

* Difference favors Norm Group

points and quartile deviations and noting the difference between this particular group and the standard norms for the test, the group as a whole is working above average, which is in conformity with their I.Q. ratings. In all subtests the pupils in the lower quartile rank one year or more above the standard; however, the median quartiles are not so consistent. These vary, with vocabulary one year above the norm and reading comprehension just six months above the norm. Discussing the work study skills, the reading of graphs and the using of references, rate one year above the standard, while the reading of maps is only six months above. Even though this is above the standard, it does, however, indicate a weakness in this area in comparison to the other areas. Concerning quartile 3, it is easily discernible that the difference between the attained scores and the standard norms is lower than in the previous quartiles. Most of these are only several months above, except the use of reference material which scores one year and three months above. The differences in the quartile deviations favor the norm groups, mainly because the lower quartile is so much higher than the standard. Since each quartile does not correspondingly score one year above the norm, the quartile deviations are larger in the norm group.

The summary of Table 3 is shown in graphic form in Figure 1. This line graph shows clearly that the group is above the National Norm. In studying the quartiles, some variations are evident. Skills in using reference materials are extremely high in the upper quartile group, while the lower quartile group excels in map skills. The reading of graphs appears to be a weakness in the upper and the lower quartiles but not in the middle half. The strengths in the lower quartile seem to be vocabulary, the reading of maps and the pronunciation of words in isolation. The median quartile evidences strengths in vocabulary, reading of graphs, the use of



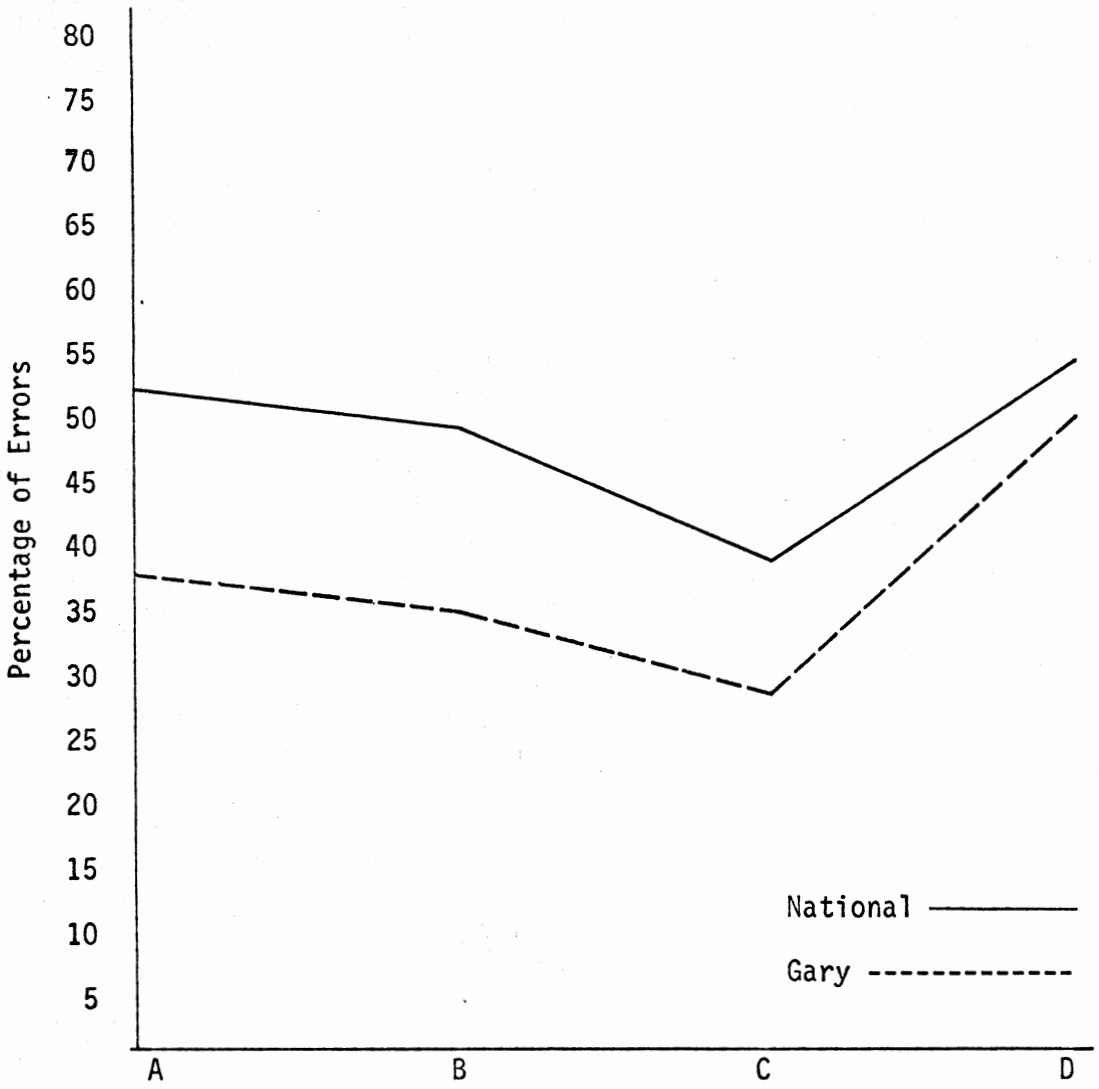
A. Vocabulary
B. Reading Comprehension
C. Maps
D. Graphs
E. References
F. Total Work Study Skills
G. Wide Range Pronunciation

Figure 1 - Comparison of quartile points for subtests of Iowa Basic Skills by fifth grade group in Gary with quartile points according to national norms.

references, and the pronunciation of isolated words. Similarly, in the upper quartile, pronounced strengths are exhibited in the use of references and in the pronunciation of words in isolation. An apparent weakness in this quartile is the reading of maps.

Since the general study of the test scores and the subtests did not show any specific weakness, the actual items of each test were studied. All items of the reading comprehension test were tabulated and evaluated according to four categories: details, purpose, organization, and evaluation. Included in details was the ability to recognize and understand important and implied facts, important details, implied relationships, and ability to use context clues in determining the meaning of new words. Skill in detecting the main purpose of a paragraph and in determining the main idea were listed under purpose. Organization included all abilities necessary to organize. Lastly, evaluation concerned itself with developing generalizations, recognizing the author's viewpoint, his mood, tone, qualities of style and structure. Each of the abilities tested was again divided into four subheadings. Since in some instances this amounted to one or two questions, it was decided to work with just the four main categories and to average the incorrect responses, thus obtaining a single per cent of errors for each of the four categories. This percentage was then compared with the national norm for the fifth grade in early October.

As Figure 2 illustrates, this study group has a smaller percentage of errors than is indicated by the national norm. However, the highest percentage of errors seems to be in evaluation; consequently some work ought to be done along this line. According to Figure 2, organization has the lowest percentage of errors, but in comparing it with the national norm, the same holds true. The difference between the study group and the national



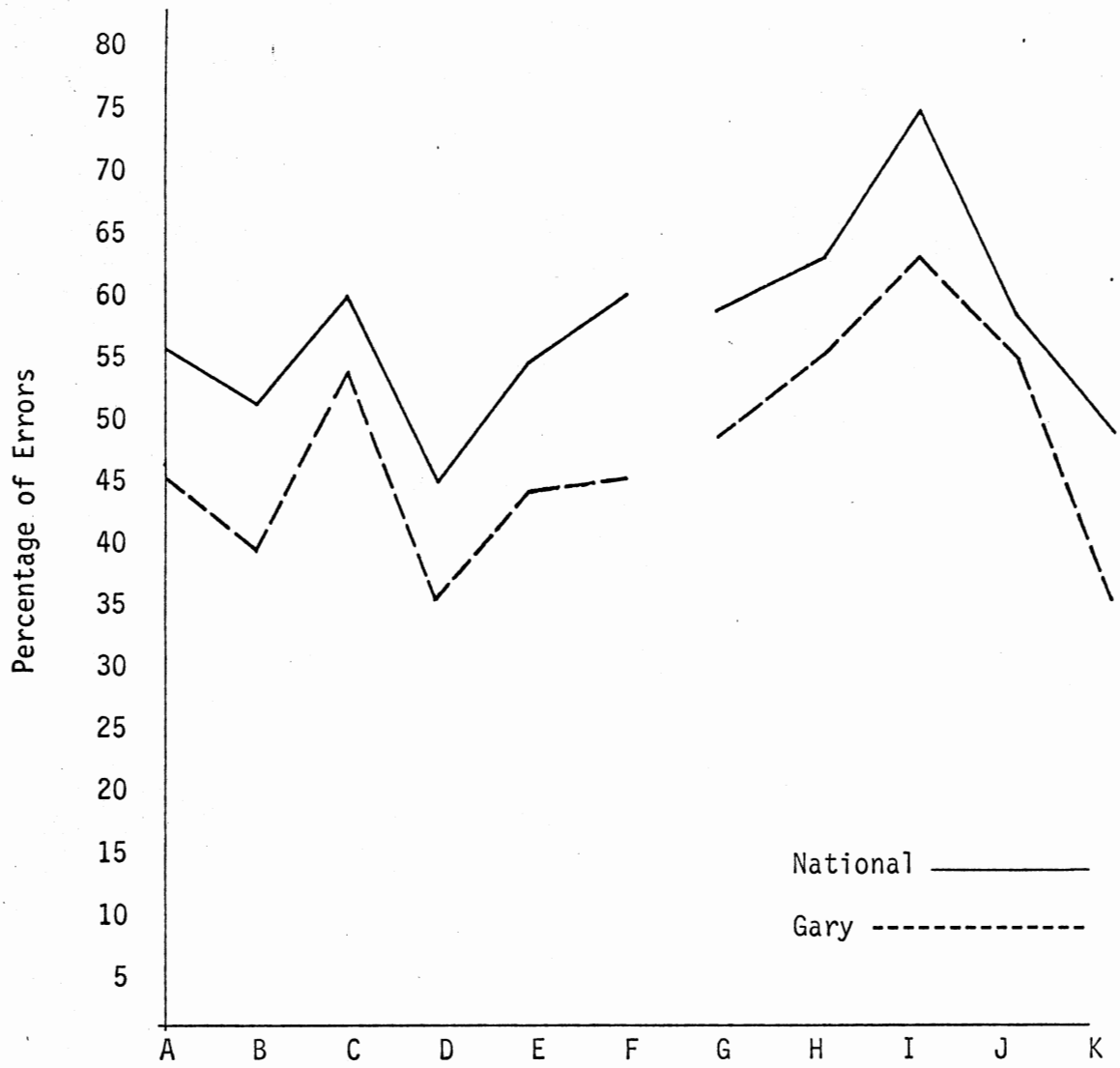
A. Details
B. Purpose
C. Organization
D. Evaluation

Figure 2 - Comparison of percentage of errors for subtests of reading comprehension of Iowa Basic Skills of a group of fifth graders from Gary with percentage of errors according to national norm.

norm is about equal in categories of details, purpose and orgnization; but the difference is smaller in evaluation, which again indicates a weakness in the study group, despite the fact that this group is above the norm.

The percentage of errors in map reading and in the reading of graphs and tables, can be seen in Figures 3 and 4. Here, too, because of the many minor divisions, the percentage of each major heading was considered and averaged. As can be seen from Figure 3 the Gary group again has a lower percentage of errors than the national norm in all categories of map reading, reading of graphs and tables, and in the use of reference material. Comparing the study skills scores of the Gary group with the national norm for study skills in map reading, it can be concluded that the Gary group's weakness in this area would be in determining distance, whereas the greatest strength in this area of skills lies in the reading and interpretation of facts. In the reading of maps and graphs a weakness is shown in determining relative rates and in determining underlying relationships. Since the latter information is gained from the correct interpretation of a graph, this would likely be the problem. The ability to read amounts and to determine rank seem to be quite well established. The ability to use various reference materials evidently has been mastered by this group of children, judging from the percentage of errors in comparison with the national norm. However, the greatest strength here indicated is that of the skill of alphabetizing. Since the percentage of errors is lower than the national norm, this would indicate that these children are more or less working up to their potential, since from the beginning it was expected that this group would be able to achieve better than an average group because of higher intelligence expressed by the I.Q. scores.

Due to the wide range of potential and also for a more thorough



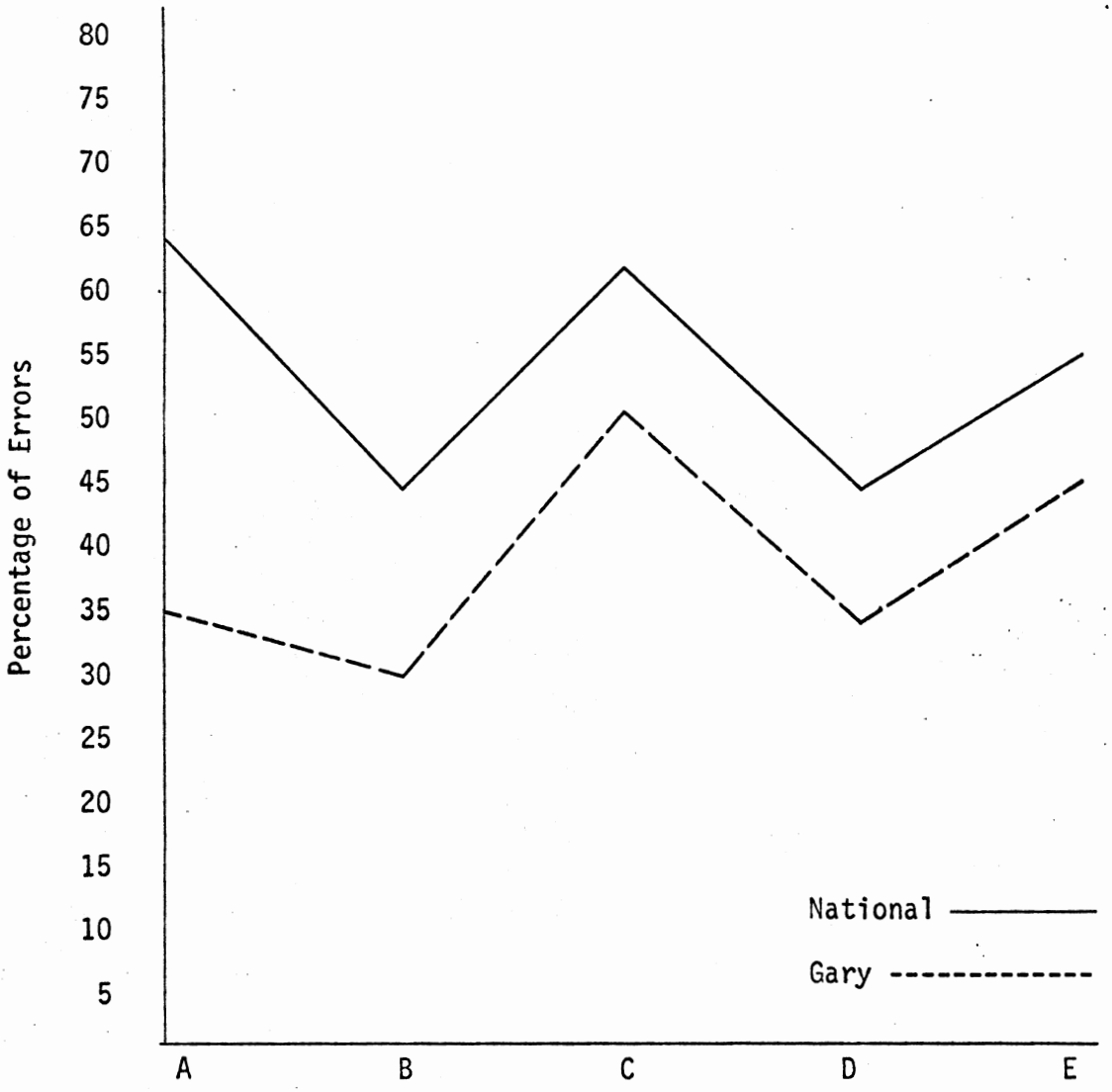
Reading Maps

A. Orient map and determine directions
B. Locate places on maps and globes
C. Determine distance
D. Visualize landscape features
E. Infer man's activities
F. Read and interpret facts from pattern maps

Reading Graphs and Tables

G. Read amounts
H. Compare values
I. Determine relative rates and trends
J. Determine underlying relationships
K. Determine rank from unordered list

Figure 3 - Comparison of percentage of errors for subtests of work study skills of Iowa Basic Skills of a group of fifth graders from Gary with percentage of errors according to national norm.



Knowledge and Use of Reference Material

A. Alphabetizing
B. Use of the Table of Contents
C. Use of the Encylopedia
D. Use of the Index
E. Use of General Reference Material

Figure 4 - Comparison of percentage of errors for subtests of work study skills of Iowa Basic Skills of a group of fifth graders from Gary with percentage of errors according to national norm.

study of the group, a comparison was made of the upper and lower twenty-seven per cent of the group in each test. Since the group in question was comprised of eighty-eight pupils each division or each twenty-seven per cent would involve twenty-two pupils. Thus, each quartile would average five to six pupils. With this in mind, the results as shown in Table 4 will be clearer. Table 4 presents the comparison of the quartile points and range of the upper twenty-seven per cent and the lower twenty-seven per cent of the Intelligence Quotients of the pupils involved. The range

TABLE 4

COMPARISON OF QUARTILE POINTS AND RANGE OF ATTAINED SCORES IN THE KUHLMAN ANDERSON INTELLIGENCE TEST - THE UPPER AND THE LOWER TWENTY-SEVEN PER CENT OF THE GROUP

	Q_1	Q_2	Q_3	Range
Upper 27%	118	124	132	115-142
Lower 27%	91	94	97	84-100

in the upper ability group is greater than in the lower ability group, the median I.Q. of the upper group being well above average, while the median of the lower group is a low average. Obviously, the children in the lower ability group will have difficulty competing with those in the upper ability group in academic achievement.

A high intelligence quotient does not necessarily result in success and achievement. Here lies the tremendous responsibility of the teacher, to fit his instruction to the abilities of his pupils,--to each as an individual. This study group will demand of their teachers the task of challenging every child's intellectual abilities to the fullest extent, and to

insure that every child, every day, will experience some success in keeping achievement in line with his abilities.[1]

Table 5 gives information concerning quartile points and range of the upper intelligence group and the lower intelligence group in the mechanics of reading resulting from the Wide Range Pronunciation Test and the Durkin Phonics Survey. In studying this information, an extremely wide

TABLE 5

COMPARISON OF THE QUARTILE POINTS AND THE RANGE OF ATTAINED SCORES ON THE WIDE RANGE PRONUNCIATION TEST AND THE DURKIN PHONICS SURVEY - THE UPPER AND THE LOWER TWENTY-SEVEN PER CENT OF THE GROUP

Name of Test	Q_1	Q_2	Q_3	Range
Wide Range				
Upper 27%	8.3	9.2	9.7	7.9 - 11.3
Lower 27%	4.6	4.9	5.1	4.0 - 5.4
Durkin Phonics Survey				
Upper 27%	190	192	194	188-195
Lower 27%	159	167	172	155-174

range is discernible in the two groups. A span of seven years and three months exists between the highest and the lowest grade scores. Since the third quartile point is just at grade level at the time of testing, this would lead to the conclusion that approximately twenty-five per cent of this group is below average in the recognition of isolated words. This conclusion is based on grade score and not on potential.

Because the results of the Durkin Phonics Survey are recorded in raw scores, the interpretation is not quite as apparent. Comparing the

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[1]Henry Smith, Psychology in Teaching, (New Jersey: Prentice Hall, 1962), p. 196-198.

lowest score of 155 with the highest possible score of 195, the conclusion is that 155 is eighty-eight per cent of the highest possible score. Consequently, even the lower intelligence group is meeting with success in the area of phonics and word attack skills.

Although the data in Table 6 show that there is a wide range of achievement in this study group, it also suggests that there are many similarities. The strongest areas of each group are vocabulary and the ability to use reference materials. In the lower intelligence group the quartile points for each quartile range between five and seven points in the various tests. The same conclusion can be made about the upper intelligence group. One exception to this is the second quartile which varies only two points. The range from the highest to the lowest quartile point, considering all tests is fourteen points in the lower intelligence group and sixteen in the upper intelligence group. The lowest quartile point for the lower group is in the ability to read maps whereas the lowest in the upper group is in comprehension. The highest quartile points for both groups are in the use of reference material yet the largest range of scores exists in this same area in the lower group. The largest range of grade scores in the upper intelligence group is the ability to read maps. Considering quartile points, most points in the lower intelligence group are below the average at this time and all quartile points in the upper intelligence group are a year and a half or more above the average. However, a point to remember is that each quartile averages about six pupils.

SUMMARY OF FINDINGS

To achieve the purpose of this diagnostic survey, the group was first studied as a whole to determine its strengths and the weaknesses. To obtain a more thorough analysis of the specific strengths and weaknesses

TABLE 6

COMPARISON OF UPPER AND LOWER TWENTY-SEVEN PER CENT OF THE GROUP ON THE SUBTESTS IN READING AND STUDY SKILLS OF IOWA BASIC SKILLS TESTS

Name of Test	Q_1	Q_2	Q_3	Range
Vocabulary				
Upper 27%	6.9	7.2	7.6	6.8 - 7.8
Lower 27%	4.6	5.2	5.4	3.8 - 5.4
Comprehension				
Upper 27%	6.5	7.1	7.4	6.5 - 8.6
Lower 27%	4.4	4.8	4.9	3.3 - 5.1
Work Study Skills				
Maps				
Upper 27%	6.7	7.1	7.4	6.3 - 8.9
Lower 27%	4.1	4.5	5.0	3.5 - 5.1
Graphs				
Upper 27%	6.9	7.2	7.5	6.5 - 8.4
Lower 27%	4.0	4.6	4.9	3.0 - 5.3
References				
Upper 27%	7.1	7.3	8.1	6.7 - 8.5
Lower 27%	4.6	4.9	5.4	3.0 - 5.5
Total				
Upper 27%	6.8	7.1	7.4	6.4 - 7.8
Lower 27%	4.6	5.0	5.2	3.6 - 5.3

a study was made of the upper twenty-seven per cent and the lower twenty-seven per cent in each test. Later the incorrect answers were tallied and a percentage of errors of each item was found. In each of the above, the results were compared with the national norms.

From this study the following conclusions can be made:

1. Since all scores are above the national norm, and since this class is better than average, the group generally is working up to capacity.
2. Weaknesses in evaluating materials read are evidenced in comprehension.
3. In Work Study Skills, Map Reading and the Reading of Graphs and Tables presented some difficulty.
4. Vocabulary results indicate a strength in this area.
5. It is possible that teaching procedure, socio-economic status, background of the children, the area in which they live all contribute to the above norm scores.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The objective of this study was to determine the strengths and the weaknesses in reading in two fifth grades. Specifically the writer questioned: 1) In which areas of comprehension and study skills are the pupils weak? 2) In which areas do they show strengths? 3) Are the specific weaknesses in the upper quartile the same as in the group as a whole? 4) Are the weaknesses in the lower quartile the same as the group as a whole? 5) Do the children of similar I.Q. portray the same weaknesses?

Summary of Procedure

During the first two weeks of October, the writer administered and scored the following tests: the Kuhlmann Anderson Intelligence Test, the vocabulary and reading comprehension tests of the Iowa Basic Skills Tests, the Wide Range Pronunciation Test, and the Durkin Phonics Survey. The raw scores and grade scores were tabulated separately and compiled according to I.Q. for the purposes of comparison and interpretation.

Statistical data included: 1) quartile points, quartile deviations, and range for each test for the group as a whole; 2) comparison of attained scores with the national norms in grade scores; 3) item analysis of each item incorrectly scored in Reading Comprehension and Work Study Skills; 4) computation of the percentage of errors of each major division; 5) comparison of the percentage of errors for the subtests of

the reading comprehension and work study skills with the percentage of errors according to the national norm; 6) the same procedure as above applied to data for pupils whose I.Q. scores were in the upper twenty-seven per cent and the lower twenty-seven per cent of the group.

Findings

This diagnostic survey of the strengths and weaknesses in fifth grade reading indicate the following:

In studying the group as a whole, five conclusions are evident:

1. The group is above average in ability.
2. A large range of ability is evidenced since intelligence quotients ranged from 84 to 142.
3. All quartile points are above the national norms, so generally the group is working up to capacity.
4. The larger the range of potential and ability in a group the greater the responsibility of the teacher to provide and differentiate his instruction toward each individual child.
5. Knowledge of one work study skill does not imply the knowledge of another.

In comparing the lower and the upper twenty-seven per cent of the class in each test, the following are obvious:

1. The lower group finds it difficult to compete with the upper group.
2. Both groups are maintaining growth in proportion to their potential.
3. The lower group exceeds the national norm more than the upper group.

Studying the specific strengths and weaknesses of the group as a whole, the following are discernible:

1. The majority of children excel in vocabulary.
2. In comprehension, organization of material exceeds all other scores.
3. In work study skills--the use of reference material, alphabetizing, reading and interpretation of facts are definitely strong points.
4. In the reading of graphs and tables, reading amounts and determining rank are superior to the other scores.
5. Comprehension is good; however, the evaluation of material needs strengthening.
6. In reading graphs and tables, the weakest area is determining underlying relationships.

In the comparison of the upper and the lower groups, the weaknesses vary, while some of the strengths are evident in both groups:

1. In the upper group, the use of reference material ranks very high, while in the lower group, map reading ranks the highest.
2. Pronunciation of words in isolation are strengths in both groups.
3. The upper group is weak in determining distances in map reading, while the lower group is quite strong in this.
4. The lower group's weakest point is the skill of reading graphs and tables.
5. Since the children of both groups are fairly stable in each test, the children of similar I. Q. portray the same strengths and weaknesses.

6. Generally, the children's scores in each group correspond with their abilities. Isolated instances are the exception.

Conclusions

From the data in this study, the following conclusions appear valid:

1. The group is apparently working at their capacity level, since the results of all tests are above the national norms; correspondingly so are the I.Q.
2. As a group, the pupils with the lower I.Q. also fall into the lower achieving quartile; likewise, those with the higher ability fall into the higher quartile in each test.
3. Generally, the pupils remained in the same quartile for all tests and subtests, except in isolated cases.
4. Evidently, much work has been stressed in vocabulary and reference work.
5. The children in the lowest quartile have been considered and helped to achieve their potential.
6. The children have had a well balanced program of skills in the preceding grades.
7. Map reading practice ought be provided for the upper quartile.
8. More challenging tasks ought be given those in the upper quartile.
9. Although the scores are above the norm, weaknesses are still discernible in various areas.

Implications

This diagnostic study offers for consideration the following

implications:

1. Since the classroom teacher uses the intelligence quotient for predicting reading success, the teachers ought to be acquainted with the interpretation, the values of the tests, and also of the problems arising from misinterpretation.
2. Since the classroom teacher is usually the one to diagnose reading difficulties, she should be aware of the factors influencing or causing these disabilities.
3. Teacher observation is important in evaluating and diagnosing reading difficulties, but it should not be used as the only criterion. Both standardized and informal tests are valuable.
4. In order to give more accurate diagnosis, a valuable help for the teacher is a daily evaluation of the child's accomplishments.
5. If a significant difference appears between the child's potential (as expressed by the I.Q.) and the reading score, a diagnosis should be made.
6. A child who is not reaching his grade level in reading should not immediately be labeled as not working up to his potential.

Suggestions for Further Research

The writer offers the following suggestions for further research:

1. An experimental study to determine the types of activities which promote learning in values and relationships.
2. A cross section study of the four upper grades on references and map skills to note if there is proper growth at the upper levels, where the tendency is not to give much work in basic skills.

3. A longitudinal study of the present group for the remaining three years to note growth patterns and study factors related to growth patterns.
4. An experimental study to measure the growth of a superior group and a below average group in work study skills using identical approaches and types of materials.

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APPENDIX I

TABLE 7

SCORES OF PUPILS AS ATTAINED ON INTELLIGENCE TEST, DURKIN PHONICS SURVEY AND THE WIDE RANGE PRONUNCIATION TEST

N - 88

Pupil No.	I.Q.	Wide Range		Phonics Survey
		Raw Score	Grade Equivalent	
1	142	76	8.3	182
2	139	87	10.1	190
3	138	84	9.7	184
4	136	71	7.6	193
5	136	82	9.3	168
6	133	85	9.8	193
7	131	82	9.3	195
8	130	72	7.8	188
9	129	95	11.3	191
10	126	66	6.9	191
11	126	62	6.4	177
12	124	50	5.0	177
13	123	66	6.9	190
14	123	64	6.6	187
15	122	79	8.8	189
16	122	80	9.0	189
17	121	70	7.4	182
18	120	58	5.9	193
19	118	85	9.8	186
20	116	89	10.4	189
21	116	55	5.6	180
22	116	76	8.3	176
23	115	70	7.4	192
24	115	67	7.0	184
25	115	59	6.0	175
26	115	72	7.8	179
27	113	66	6.9	185
28	113	86	10.0	192
29	113	73	7.9	172
30	113	73	7.9	182

TABLE 7 (continued)

Pupil No.	I.Q.	Wide Range		Phonics Survey
		Raw Score	Grade Equivalent	
31	112	73	7.9	192
32	112	55	5.6	173
33	112	82	9.3	185
34	112	64	6.6	195
35	111	70	7.4	192
36	111	65	6.8	194
37	111	71	7.6	178
38	111	78	8.7	193
39	109	75	8.2	182
40	109	76	8.3	185
41	108	64	6.6	181
42	108	63	6.5	177
43	108	54	5.4	186
44	108	61	6.2	181
45	107	56	5.7	182
46	106	62	6.4	178
47	105	62	6.4	178
48	105	40	4.0	158
49	104	56	5.7	194
50	104	51	5.1	181
51	104	81	9.2	190
52	104	52	5.5	176
53	104	75	8.2	176
54	104	79	8.8	190
55	103	48	4.8	162
56	103	79	8.8	189
57	103	62	6.4	173
58	103	46	4.6	175
59	102	66	6.9	176
60	101	59	6.0	195
61	101	63	6.5	170
62	100	50	5.0	158
63	100	54	5.4	174
64	100	63	6.5	174
65	100	51	5.1	162

TABLE 7 (continued)

Pupil No.	I.Q.	Raw Score	Grade Equivalent	Phonics Survey
66	99	66	6.9	185
67	99	66	6.9	182
68	98	83	9.5	179
69	98	52	5.2	170
70	98	55	5.6	180
71	97	40	4.0	155
72	97	52	5.2	184
73	97	46	4.6	156
74	96	46	4.6	159
75	94	60	6.1	173
76	94	55	5.6	177
77	93	64	6.6	183
78	93	53	5.2	178
79	92	63	6.5	172
80	92	57	5.8	186
81	91	49	4.9	155
82	91	45	4.5	164
83	91	45	4.5	164
84	90	47	4.7	176
85	89	46	4.6	168
86	84	45	4.5	160
87	84	46	4.6	170
88	84	47	4.7	170

TABLE 8

SCORES OF PUPILS ATTAINED ON IOWA BASIC SKILLS TESTS

N - 88

Pupil No.	Voc.		Comp.		Maps		Graphs		References	
	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.
1	30	6.6	51	6.6	23	6.8	14	6.3	42	7.0
2	36	7.6	57	7.2	18	5.7	19	7.7	49	8.0
3	27	6.2	45	6.0	18	5.7	9	4.9	41	6.8
4	26	6.1	43	5.9	22	6.6	18	7.5	38	6.5
5	34	7.2	56	7.1	32	8.6	21	8.2	39	6.6
6	37	7.8	66	8.6	31	8.1	17	7.2	51	8.5
7	31	7.8	60	7.6	21	6.3	15	6.6	49	8.0
8	34	7.2	45	6.0	21	6.3	19	7.7	34	6.1
9	35	7.4	58	7.3	26	7.5	15	6.6	48	7.8
10	34	7.2	58	7.3	26	7.5	19	7.7	45	7.3
11	15	4.4	28	4.8	17	5.5	8	4.5	23	6.0
12	23	5.7	47	6.2	21	6.1	14	6.3	33	6.0
13	26	6.1	45	6.0	27	7.7	16	6.9	37	6.4
14	31	6.8	37	5.4	16	5.3	13	6.1	22	4.9
15	32	6.8	54	6.9	25	7.3	17	7.2	46	7.4
16	37	7.8	55	7.0	24	7.0	14	6.3	47	7.6
17	27	6.2	35	5.3	15	5.1	8	4.5	31	5.8
18	37	7.8	60	7.6	25	7.3	15	6.6	49	8.0
19	36	7.6	57	7.2	15	5.1	13	6.1	45	7.3
20	34	7.2	50	6.5	17	5.5	18	7.5	37	6.4
21	29	6.5	30	5.0	15	5.1	13	6.1	34	6.1
22	30	6.6	45	6.0	21	6.3	13	6.1	40	6.7
23	33	7.0	55	7.0	16	5.3	18	7.5	34	6.1
24	25	6.0	42	5.8	19	5.9	13	6.1	34	6.1
25	21	5.4	38	5.5	15	5.1	13	6.1	21	4.8
26	33	7.0	56	7.1	13	4.9	17	7.2	33	6.1
27	26	6.3	42	5.8	21	6.3	18	9.5	42	7.0
28	31	6.8	55	7.0	21	6.3	28	8.4	50	8.2
29	21	5.4	49	6.4	15	5.1	14	6.3	42	7.0
30	34	7.2	27	4.7	14	4.9	15	6.6	18	4.4

TABLE 8 (continued)

SCORES OF PUPILS ATTAINED ON IOWA BASIC SKILLS TESTS

N - 88

Pupil No.	Voc.		Comp.		Maps		Graphs		References	
	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.
31	32	6.9	51	6.6	23	6.8	16	6.9	33	6.0
32	24	5.8	43	5.9	21	6.3	12	5.8	42	7.0
33	29	6.5	35	5.3	18	5.7	9	4.9	34	6.1
34	28	6.3	54	6.9	22	6.6	16	6.9	49	8.0
35	34	7.2	53	6.8	25	7.3	17	7.2	49	8.0
36	30	6.6	48	6.3	23	6.8	12	5.8	40	6.7
37	30	6.6	57	6.6	11	4.1	13	6.1	35	6.2
38	32	6.9	50	6.5	22	6.6	13	6.1	46	7.4
39	22	5.6	36	5.4	14	4.9	13	6.1	39	6.6
40	34	7.2	59	7.5	16	5.3	16	6.6	38	6.5
41	25	6.0	31	5.1	16	5.3	13	6.1	34	6.1
42	32	6.9	49	6.4	20	6.1	11	5.6	43	7.1
43	24	5.8	30	5.0	23	6.8	15	6.6	38	6.5
44	27	6.2	47	6.2	20	6.1	18	7.5	45	7.3
45	20	5.3	27	4.7	15	5.1	11	5.6	27	5.4
46	20	5.3	35	5.3	12	4.4	12	5.8	31	5.8
47	20	5.3	26	4.6	17	5.5	14	6.3	28	5.5
48	22	5.6	23	4.2	12	4.4	13	6.1	39	6.6
49	22	5.6	29	4.9	19	5.9	12	5.8	44	7.2
50	21	5.4	35	5.3	19	5.9	15	6.6	29	5.6
51	31	6.8	58	7.3	25	7.3	17	7.2	48	7.8
52	21	5.4	31	5.0	21	6.3	16	6.9	31	5.8
53	20	5.3	39	5.6	17	5.5	14	6.3	35	6.2
54	36	7.6	52	6.7	23	6.8	17	7.2	35	7.2
55	20	5.3	31	5.0	14	4.9	8	4.5	26	5.3
56	24	5.8	48	6.3	14	4.9	7	4.1	22	4.9
57	15	4.4	28	4.8	12	4.4	9	4.9	33	6.0
58	19	5.2	32	5.1	15	5.1	12	5.8	37	6.4
59	24	5.8	46	6.1	11	4.1	5	3.3	21	4.8
60	26	6.1	41	5.7	19	5.9	9	4.9	26	5.3
61	24	5.8	51	6.6	14	4.9	10	5.3	24	5.1
62	20	5.3	20	3.7	18	5.7	11	5.6	19	4.6
63	29	6.5	36	5.4	14	4.9	10	5.3	29	5.6
64	22	5.6	30	5.0	15	5.1	17	4.1	26	5.3
65	19	5.2	35	5.3	17	5.5	10	5.3	27	5.4

TABLE 8 (continued)

SCORES OF PUPILS ATTAINED ON IOWA BASIC SKILLS TESTS

N - 88

Pupil No.	Voc.		Comp.		Maps		Graphs		References	
	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.	R.S.	G.S.
66	28	6.3	51	6.6	17	5.5	10	5.3	29	5.6
67	34	7.2	48	6.3	24	7.0	13	6.1	30	5.7
68	29	6.5	42	5.8	20	6.1	13	6.1	36	6.3
69	23	5.7	25	4.5	20	6.1	7	4.1	38	6.5
70	22	5.6	31	5.0	15	5.1	10	5.3	22	4.9
71	18	5.1	30	5.0	9	3.5	8	4.5	31	5.8
72	24	5.8	27	4.7	11	4.1	9	4.9	26	5.3
73	21	5.4	28	4.8	17	5.5	9	4.9	27	5.4
74	16	4.7	22	4.1	10	3.8	7	4.1	15	3.9
75	14	4.2	22	4.1	15	5.1	7	4.1	28	5.5
76	18	5.1	32	5.1	12	4.1	9	4.9	20	4.7
77	23	5.7	33	5.2	11	4.1	4	3.0	35	6.2
78	19	5.2	40	5.7	17	5.5	13	6.1	18	4.4
79	24	5.8	42	5.8	20	6.1	13	6.1	41	6.8
80	32	6.9	48	6.3	25	7.3	6	3.7	29	5.6
81	21	5.4	29	4.9	10	3.8	8	4.5	34	6.1
82	19	5.2	37	5.4	21	6.3	12	5.8	14	3.7
83	22	5.6	37	5.4	19	5.9	10	5.3	22	4.9
84	12	3.8	17	3.3	9	3.5	7	4.1	18	4.4
85	15	4.4	21	3.9	11	4.1	6	3.7	10	3.0
86	18	5.1	27	4.7	12	4.4	7	4.1	27	5.4
87	12	3.8	18	3.4	14	4.9	14	6.3	32	5.9
88	19	5.2	46	6.1	15	5.2	17	7.0	37	6.4

R.S. - Raw Score
G.S. - Grade Equivalent

APPENDIX II

PHONICS KNOWLEDGE SURVEY

Response Record

By DOLORES DURKIN and LEONARD MESHOVER

Published by BUREAU OF PUBLICATIONS, Teachers College, Columbia University, New York

NAME _____ BIRTHDATE _____ AGE _____

SCHOOL _____ ROOM _____ GRADE _____

TEACHER _____ DATE OF SURVEY _____

Part 1. NAMES OF LETTERS

SCORING: UNDERLINE UNKNOWN LETTERS.

Can you tell me the names of these letters? (Have child point to letter as he names it. If no letter in the first row is known, ask child: **Can you tell me the names of any of these letters?**)

E	D	H	i	Y	a	l	c	N	W
t	K	B	g	q	p	S	v	Q	O
d	b	h	F	X	A	e	I	f	G
j	M	r	R	L	T	z	m	n	u

Part 2. CONSONANT SOUNDS

SCORING: UNDERLINE UNKNOWN SOUNDS.

Can you tell me the sounds of these letters? (Have child point to each letter as he gives sound. If the first five sounds are not known, ask child: **Can you tell me the sounds of any of these letters?**)

B	F	H	J	K	L	M
N	P	R	T	V	W	Z

Part 3. VOWELS: LONG AND SHORT

SCORING: UNDERLINE UNKNOWN SOUNDS.

Long: O (open), E (eat), A (ape), U (use), I (ice)
Short: O (on), E (end), A (at), U (up), I (in)

These are the vowels in the alphabet. They have long sounds and short sounds.

1. **Can you tell me the long sounds of the vowels?**	O	E	A	U	I
2. **Can you tell me the short sounds of the vowels?**	O	E	A	U	I

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Part 4. VOWEL GENERALIZATIONS

GENERALIZATIONS ABOUT VOWEL SOUNDS ARE ENCLOSED IN BOXES.

SCORING: CHECK APPROPRIATE BLANK.

A When there are two vowels within a syllable, the first is usually long and the second is silent, as in *aid.*

aef

		RIGHT	WRONG
1. **If the letters *a, e,* and *f* were a word, what sound would the letter *a* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Long *a*	_____	_____
2. **What would be the sound of *e?***	2. Silent *e*	_____	_____
3. **Why would *a* and *e* have these sounds?**	3. Why?	_____	_____
4. **How would you say this word?**	4. Blend	_____	_____

B When there are two vowels in a syllable, the second of which is final *e,* the first is usually long and the final *e* is silent, as in *ice.*

ibe

		RIGHT	WRONG
1. **If the letters *i, b,* and *e* were a word, what sound would the letter *i* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Long *i*	_____	_____
2. **What would be the sound of *e?***	2. Silent *e*	_____	_____
3. **Why would *i* and *e* have these sounds?**	3. Why?	_____	_____
4. **How would you say this word?**	4. Blend	_____	_____

C When there is one vowel within a syllable, it is usually short, as in *end.*

em

		RIGHT	WRONG
1. **If the letters *e* and *m* were a word, what sound would the letter *e* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Short *e*	_____	_____
2. **Why would the letter *e* have this sound?**	2. Why?	_____	_____
3. **How would you say this word?**	3. Blend	_____	_____

D When there is one vowel, but it is at the end of a syllable, it is usually long, as in *be.*

bu

		RIGHT	WRONG
1. **If the letters *b* and *u* were a word, what sound would the letter *u* have in that word?** (Have child point to the second letter in the nonsense word.)	1. Long *u*	_____	_____
2. **Why would the letter *u* have this sound?**	2. Why?	_____	_____
3. **How would you say this word?**	3. Blend	_____	_____

Part 5. SOUNDS OF *C* AND *G*

GENERALIZATIONS ABOUT HARD AND SOFT SOUNDS OF **C** AND **G** ARE ENCLOSED IN BOXES.

SCORING: CHECK APPROPRIATE BLANK.

A When *c* is followed in a syllable by *e*, *i*, or *y*, it usually has its soft sound, as in *cent*.

cek

		RIGHT	WRONG
1. **If the letters *c*, *e*, and *k* were a word, what sound would the letter *c* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Soft *c*	_____	_____
2. **Why would the letter *c* have this sound?**	2. Why?	_____	_____

B When *c* is followed in a syllable by any letter except *e*, *i*, or *y*, it usually has its hard sound, as in *cut*.

cuv

		RIGHT	WRONG
1. **If the letters *c*, *u*, and *v* were a word, what sound would the letter *c* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Hard *c*	_____	_____
2. **Why would the letter *c* have this sound?**	2. Why?	_____	_____

C When *g* is followed in a syllable by any letter except *e*, *i*, or *y*, it usually has its hard sound, as in *gas*.

gan

		RIGHT	WRONG
1. **If the letters *g*, *a*, and *n* were a word, what sound would the letter *g* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Hard *g*	_____	_____
2. **Why would the letter *g* have this sound?**	2. Why?	_____	_____

D When *g* is followed in a syllable by *e*, *i*, or *y*, it usually has its soft sound, as in *gem*.

ged

		RIGHT	WRONG
1. **If the letters *g*, *e*, and *d*, were a word, what sound would the letter *g* have in that word?** (Have child point to the first letter in the nonsense word.)	1. Soft *g*	_____	_____
2. **Why would the letter *g* have this sound?**	2. Why?	_____	_____

Part 6. SOUNDS OF Y

GENERALIZATIONS ABOUT SOUNDS OF Y ARE ENCLOSED IN BOXES.

SCORING: CHECK APPROPRIATE BLANK.

A When *y* is the initial letter of a word, it has its consonant sound, as in *yet.*

yad

		RIGHT	WRONG
1. **If the letters *y, a,* and *d* were a word, what sound would the letter *y* have in that word?** (Have child point to the first letter in the nonsense word.)	1. *y*	_____	_____
2. **Why would the letter *y* have this sound?**	2. Why?	_____	_____

B When *y* is the final letter of a one-syllable word with no vowel, it usually takes the sound of long *i,* as in *try.*

bly

		RIGHT	WRONG
1. **If the letters *b, l,* and *y* were a word, what sound would the letter *y* have in that word?** (Have child point to the last letter in the nonsense word.)	1. Long *i*	_____	_____
2. **Why would the letter *y* have this sound?**	2. Why?	_____	_____

C When *y* is the final letter of a multi-syllable word, it usually takes the sound of long *e,* as in *carry.*

adsy

		RIGHT	WRONG
1. **If the letters *a, d, s,* and *y* were a word, what sound would the letter *y* have in that word?** (Have child point to the last letter in the nonsense word.)	1. Long *e*	_____	_____
2. **Why would the letter *y* have this sound?**	2. Why?	_____	_____

D When *y* is in the middle of a syllable that has no vowel, it usually takes the sound of short *i,* as in *myth.*

fyth

		RIGHT	WRONG
1. **If the letters *f, y, t,* and *h* were a word, what sound would the letter *y* have in that word?** (Have child point to the second letter in the nonsense word.)	1. Short *i*	_____	_____
2. **Why would the letter *y* have this sound?**	2. Why?	_____	_____

Part 7. CONSONANT BLENDS

SCORING: UNDERLINE UNKNOWN BLENDS.

These combinations of letters are called consonant blends. Can you tell me the sound of each? (Have child point to each blend as he gives sound.)

sc	**tw**	**sk**	**pl**	**sl**	**sw**	**gl**	**tr**
dw	**sn**	**st**	**fr**	**pr**	**bl**	**gr**	**dr**
fl	**sp**	**br**	**cl**	**cr**	**sm**		

Part 8. DIGRAPHS

SCORING: UNDERLINE UNKNOWN DIGRAPHS.

These combinations of letters are called digraphs. Can you tell me the sound of each? (Have child point to each digraph as he gives sound.)

th **ch** (chair) **ch** (chef)
ph **sh** **wh**

Part 9. VOWEL COMBINATIONS

SCORING: UNDERLINE UNKNOWN COMBINATIONS.

These are vowel combinations. Can you tell me the sound of each? (Have child point to each combination as he gives sound.)

ew **aw** **ou** (out) **au** **oi**
ow (owl) **ow** (grow) **oy**

Part 10. VOWELS FOLLOWED BY *R*

SCORING: UNDERLINE UNKNOWN COMBINATIONS.

Vowels have special sounds when they are followed by *r*, or by *r* and another consonant, at the end of a syllable. If these were words, how would you say them? (Have child point to each syllable as he gives sound.)

ar **ur** **or**
er **ir**

Part 11. SOUNDS OF *QU*

SCORING: UNDERLINE UNKNOWN SOUNDS.

kw (quick), k (conquer)

1. ***Q* is always followed in a word by *u*. What is one sound of *qu*?**
2. **Do you know another sound for *qu*?**

qu

kw k

Part 12. SOUNDS OF *OO*

SCORING: UNDERLINE UNKNOWN SOUNDS.

o͝o (book), o͞o (soon)

1. **When *o* is followed in a syllable by another *o*, the double-*o* can have different sounds. What is one of these sounds?**
2. **Do you know another sound for *oo*?**

oo

o͝o o͞o

Part 13. SOUNDS OF *X*

SCORING: UNDERLINE UNKNOWN SOUNDS.

ks (mix), gz (exam), z (xylophone)

1. **The letter *x* can have different sounds. What is one of these sounds?**
2. **Do you know another sound for *x*?**
3. **Do you know still another sound for *x*?**

x

ks gz z

Part 14. BEGINNING CONSONANT COMBINATIONS

SCORING: UNDERLINE UNKNOWN COMBINATIONS.

kn (knot), gh (ghost), gn (gnaw)
wr (wrong), ps (psalm), rh (rhythm)

Some combinations of consonants have a special sound when they are at the beginning of a word. Can you tell me the sound of each of these if they were at the beginning of a word? (Have child point to each combination.)

kn **gh** **gn**
wr **ps** **rh**

Part 15. SYLLABICATION

GENERALIZATIONS ABOUT SYLLABICATION ARE ENCLOSED IN BOXES.

SCORING: CHECK APPROPRIATE BLANK

A When two consonants are between two vowels, a syllable division is usually made between the consonants, as in *un der.*

idfer

		RIGHT	WRONG
1. **In this section we will be talking about syllables in words. If the letters *i, d, f, e,* and *r* were a word, where would you divide it into syllables?**	1. id fer	_____	_____
2. **Why would you divide it between those letters?**	2. Why?	_____	_____

B When a single consonant appears between two vowels, that consonant is usually in the same syllable as the vowel following it, as in *pu pil.*

nefut

		RIGHT	WRONG
1. **If the letters *n, e, f, u,* and *t* were a word, where would you divide it into syllables?**	1. ne fut	_____	_____
2. **Why would you divide it between those letters?**	2. Why?	_____	_____

C When *x* is preceded and followed by vowels, the *x* is in the same syllable as the preceding vowel, as in *tax i.*

uxot

		RIGHT	WRONG
1. **If the letters *u, x, o,* and *t* were a word, where would you divide it into syllables?**	1. ux ot	_____	_____
2. **Why would you divide it between those letters?**	2. Why?	_____	_____

D When a word ends in *le* preceded by a consonant, that consonant is in the same syllable as the *le,* as in *can dle.*

rinfle

		RIGHT	WRONG
1. **If the letters *r, i, n, f, l,* and *e* were a word, where would you divide it into syllables?**	1. rin fle	_____	_____
2. **Why would you divide it between those letters?**	2. Why?	_____	_____

PHONICS KNOWLEDGE SURVEY

Summary Sheet

By DOLORES DURKIN and LEONARD MESHOVER

Published by BUREAU OF PUBLICATIONS, Teachers College, Columbia University, New York

NAME _____ BIRTHDATE _____ AGE _____

SCHOOL _____ ROOM _____ GRADE _____

TEACHER _____ DATE OF SURVEY _____

SUMMARY SHEET (may be detached). This summary may be filled out after the Survey is completed.

Part 1. NAMES OF LETTERS

Unknown letters (print):

Part 2. CONSONANT SOUNDS

Unknown sounds (underline):

B F H J K L M
N P R T V W Z

Part 3. VOWELS: LONG AND SHORT

Unknown long sounds (underline): **O E A U I**

Unknown short sounds (underline): **O E A U I**

Part 4. VOWEL GENERALIZATIONS		RIGHT	WRONG
A. When there are two vowels within a syllable, the first is usually long and the second is silent, as in *aid.*	Long *a* Silent *e* Generalization Blend (**aef**)		
B. When there are two vowels in a syllable, the second of which is final *e*, the first is usually long, and the final *e* is silent, as in *ice.*	Long *i* Silent *e* Generalization Blend (**ibe**)		
C. When there is one vowel within a syllable, it is usually short, as in *end.*	Short *e* Generalization Blend (**em**)		
D. When there is one vowel, but it is at the end of a syllable, it is usually long, as in *be.*	Long *u* Generalization Blend (**bu**)		

Part 5. SOUNDS OF C AND G		RIGHT	WRONG
A. When *c* is followed in a syllable by *e, i,* or *y,* it usually has its soft sound, as in *cent.*	Soft *c* (**cek**) Generalization		
B. When *c* is followed in a syllable by any letter except *e, i,* or *y,* it usually has its hard sound, as in *cut.*	Hard *c* (**cuv**) Generalization		
C. When *g* is followed in a syllable by any letter except *e, i,* or *y,* it usually has its hard sound, as in *gas.*	Hard *g* (**gan**) Generalization		
D. When *g* is followed in a syllable by *e, i,* or *y,* it usually has its soft sound, as in *gem.*	Soft *g* (**ged**) Generalization		

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Part 6. SOUNDS OF Y		RIGHT	WRONG
A. When *y* is the initial letter of a word, it has its consonant sound, as in *yet.*	Consonant *y* (**yad**)		
	Generalization		
B. When *y* is the final letter of a one-syllable word with no vowel, it usually takes the sound of long *i,* as in *try.*	Long *i* (**bly**)		
	Generalization		
C. When *y* is the final letter of a multi-syllable word, it usually takes the sound of long *e,* as in *carry.*	Long *e* (**adsy**)		
	Generalization		
D. When *y* is in the middle of a syllable that has no vowel, it usually takes the sound of short *i,* as in *myth.*	Short *i* (**fyth**)		
	Generalization		

Part 7. CONSONANT BLENDS

Unknown blends (underline):

sc	**tw**	**sk**	**pl**	**sl**	**sw**	**gl**	**tr**
dw	**sn**	**st**	**fr**	**pr**	**bl**	**gr**	**dr**
fl	**sp**	**br**	**cl**	**cr**	**sm**		

Part 8. DIGRAPHS

Unknown digraphs (underline):

th	**ch** (chair)	**ch** (chef)
ph	**sh**	**wh**

Part 9. VOWEL COMBINATIONS

Unknown combinations (underline):

ew	**aw**	**ou** (out)	**au**	**oi**
ow (owl)		**ow** (grow)		**oy**

Part 10. VOWELS FOLLOWED BY R

Unknown combinations (underline):

ar	**ur**	**or**	**er**	**ir**

Part 11. SOUNDS OF QU

Unknown sounds (underline):

kw k

Part 12. SOUNDS OF OO

Unknown sounds (underline):

o͝o (book) o͞o (soon)

Part 13. SOUNDS OF X

Unknown sounds (underline):

ks gz z

Part 14. BEGINNING CONSONANT COMBINATIONS

Unknown combinations (underline):

kn	**gh**	**gn**	**wr**	**ps**	**rh**

Part 15. SYLLABICATION		RIGHT	WRONG
A. When two consonants are between two vowels, a syllable division is usually made between the consonants, as in *un der.*	**id fer**		
	Generalization		
B. When a single consonant appears between two vowels, that consonant is usually in the same syllable as the vowel following it, as in *pu pil.*	**ne fut**		
	Generalization		
C. When *x* is preceded and followed by vowels, the *x* is in the same syllable as the preceding vowel, as in *tax i.*	**ux ot**		
	Generalization		
D. When a word ends in *le* preceded by a consonant, that consonant is in the same syllable as the *le,* as in *can dle.*	**rin fle**		
	Generalization		

GRADE 5

Iowa Tests of Basic Skills

ITEM PERFORMANCE ANALYSIS

9-66634

SYSTEM _____

BUILDING _____

CLASS _____

■ These Item Performance Analysis report forms are available for *each* of Grades 3-8. They contain 1) *skills* classifications for all four forms, 2) the national mid-year *norms* for item performance, 3) a place to record a subjectively determined *local expectation* index, and 4) a place to record the *per cent correct* for each item.

These report forms may be used for *classes* (home-rooms), for *buildings*, or for the *system* as a whole.

• Performing an Item Analysis for a Class

There are several methods of obtaining item analysis data for a class. Three of these are outlined below.

1. *"Show-of-Hands" Method*

   After answer sheets have been scored, pass them back to the pupils. For the first item, announce the response number for the correct answer, as, for example, "3," and direct pupils who marked "3" to raise hands. Enter the count of hands showing. Proceed to next item, etc.

2. *Scoring Mask Method*

   Prepare a mask on a blank sheet of white paper by placing a correctly marked answer sheet on top of the paper and punching the correct answers. Use this mask to tally the correct answers.

3. *Tally Method*

   This can best be performed with two people working together. The first places a scoring mask on each answer sheet in turn and indicates which answers are correct. The second tallies the correct responses on a list of item numbers.

For all three of these methods, it is necessary to convert "number correct" into per cent. These may then be entered on the Item Performance Analysis report form.

• Houghton Mifflin Scoring Service Item Analysis Reports

A pressure sensitive label has been designed as part of the Houghton Mifflin Scoring Service to fit these booklets. It is necessary only to separate the labels by columns and attach them to the report form. They may be placed over the column headed "Scoring Service Report," or immediately to the right of the item data for the particular form being used (i.e., if Form 1 has been given, place the label to the right, covering up the data for Form 2, etc.)

If item analysis service is ordered on the regular list report form, the per cent correct may be copied from the report, or the report may be cut apart and assembled on the item analysis report form with transparent adhesive tape.

• Samples on Which the Item Norms are Based

The Form 3 item data were secured from the national standardization program. A representative sample of approximately 12.5 per cent of the answer sheets for each grade was employed. (See page 52 of the Manual for Administrators, Supervisors, and Counselors for a description of sampling procedures.) After the per cent answering each item correctly was determined for each grade, the indices thus derived were smoothed and interpolated (or extrapolated) to obtain estimates for midyear performance.

For Forms 1, 2, and 4, samples of answer sheets were selected from Houghton Mifflin Scoring Service users. The answer sheets available were first classified by state, size of system, type of system (public-parochial), form sequence from grade to grade, and percentile rank of composite score. A set of school systems was then selected to be as representative as possible with respect to these variables. Samples of answer sheets

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NEW YORK • ATLANTA • GENEVA, ILL. • DALLAS • PALO ALTO

were then selected by employing a sampling fraction in each grade which would supply slightly over 1000 pupils per grade per form. These answer sheets were then scored and converted, using the 1964 national norms for midyear. From these samples the final samples were selected by randomly selecting 50 cases from each tenth of the distribution of national midyear norms for the composite score. This procedure yielded highly representative samples of 500 cases per grade per form.

• Interpretation of Item Analysis Data

Item analysis data are useful mainly in analyzing the reasons why local test performance may not conform to expectation. However, for item data to be useful, one or both of two kinds of information are necessary for comparison.

The first is some form of subjective "standard." This is an estimate of the per cent of pupils who should reasonably be expected to answer an item correctly. To set such an index of local expectation, it is necessary to take into consideration the placement of the skill in the local curriculum, the amount of local emphasis, the distribution of academic aptitude of the pupils, etc. But it must also be remembered that the per cent of pupils who answer a given item correctly depends not only upon the "inherent" difficulty of the concept tested, but also upon specific and unique characteristics of the item: upon the level of mastery required by the item, the attractiveness of the distractors, etc. Items included in the *Iowa Tests of Basic Skills* were selected to provide considerable range of item difficulty.

The column headed "Local Expectation" may be used to record a subjective index of this type. Then, after the item analysis results have been entered, the nature of discrepancies may be examined in detail.

The same kinds of discrepancies may be noted in comparison to item norms. But it should be remembered that these norms are based upon *representative national samples*. In interpreting the results, it is necessary to take into consideration the characteristics of the local student body, school, community, etc. In other words, comparing the performance of a class, building, or system with item norms requires essentially the same procedures and cautions as does the interpretation of school averages.

As a final caution, instructional follow-up should *not* be centered upon teaching pupils to answer a particular test item or group of items, but rather upon the development of the *skills* which the items measure. It is very easy to teach pupils to answer a particular item correctly. But nothing of lasting educational benefit will result. If the use of the test is to result in genuine improvement, the skill must be developed through the use of completely independent instructional material. ■

TEST V: VOCABULARY, GRADE 5						
Item No.	FORM 1 Norm	FORM 2 Norm	FORM 3 Norm	FORM 4 Norm	Exp'ct'd % Correct	Scoring Service Report
24	87	70	77	72		
25	81	73	88	67		
26	65	73	61	68		
27	73	73	63	59		
28	70	74	70	56		
29	66	64	43	53		
30	72	67	61	65		
31	65	71	35	62		
32	53	77	68	83		
33	71	69	75	70		
34	61	63	70	80		
35	66	74	70	63		
36	51	70	61	61		
37	52	66	49	55		
38	56	70	49	54		
39	63	61	58	72		
40	51	67	73	74		
41	60	57	51	33		
42	48	49	34	39		
43	46	62	38	52		
44	49	63	50	64		
45	55	66	42	38		
46	48	47	43	25		
47	55	52	25	47		
48	49	56	31	22		
49	39	52	57	43		
50	54	57	53	56		
51	36	65	37	39		
52	45	49	49	55		
53	50	48	42	47		
54	49	57	56	34		
55	45	53	50	39		
56	25	47	39	27		
57	48	37	36	29		
58	48	45	48	40		
59	32	40	45	47		
60	39	38	37	42		
61	41	40	39	34		
62	44	45	43	36		
63	30	29	36	35		
64	46	34	37	31		
65	43	28	30	28		
66	45	35	14	14		

TEST R, READING COMPREHENSION, GRADE 5

Item No.	FORM 1 Skill	FORM 1 Norm	FORM 2 Skill	FORM 2 Norm	FORM 3 Skill	FORM 3 Norm	FORM 4 Skill	FORM 4 Norm	Exp'ct'd % Correct	Scoring Service Report
25	D-1*	93	D-1	77	D-2	82	Q-1	87		
26	D-2	65	D-2	80	D-2	73	D-2	83		
27	D-1	69	D-1	79	D-2	50	D-1	71		
28	O-1	55	D-1	80	D-2	59	D-1	84		
29	D-2	62	D-2	74	D-2	56	D-2	71		
30	D-2	74	D-2	78	D-3	61	D-2	71		
31	D-2	81	D-2	46	D-1	65	O-2	58		
32	D-1	68	E-1	65	E-1	65	D-3	70		
33	P-2	37	P-1	62	D-2	67	P-2	59		
34	P-2	83	D-1	81	P-2	78	D-1	83		
35	D-1	66	D-2	81	D-1	67	D-1	71		
36	D-2	70	D-2	81	D-2	61	D-2	58		
37	D-2	72	P-1	65	O-2	80	D-1	84		
38	D-1	77	D-2	72	D-1	50	D-2	59		
39	D-2	71	D-2	42	D-1	43	D-2	50		
40	D-2	67	D-2	62	D-1	69	D-2	38		
41	E-1	66	P-2	53	P-1	73	P-2	59		
42	O-2	63	D-1	75	D-1	58	P-2	75		
43	D-2	62	D-1	81	D-2	58	D-2	64		
44	P-2	62	D-2	50	D-1	66	D-3	42		
45	P-1	64	D-1	45	D-2	53	D-2	69		
46	D-1	53	D-2	55	P-2	52	O-2	39		
47	O-1	60	D-1	71	D-2	44	D-1	47		
48	D-2	43	D-1	67	D-1	69	D-1	43		
49	D-2	45	D-2	33	D-1	53	D-1	36		
50	D-2	66	P-2	51	D-2	45	P-2	41		
51	D-2	62	D-1	63	P-1	74	D-2	46		
52	D-2	67	D-2	64	D-1	62	D-2	29		
53	D-2	73	D-1	49	D-2	66	D-2	40		
54	D-2	71	P-2	78	D-2	46	D-2	63		
55	D-2	65	O-2	76	D-2	38	D-2	56		
56	D-2	64	O-2	65	P-2	46	D-3	70		
57	D-2	61	E-1	67	D-3	55	D-1	51		
58	D-3	45	D-1	61	D-3	53	D-1	51		
59	D-3	47	D-1	58	D-3	49	E-4	47		
60	E-2	40	D-2	66	E-3	45	P-2	79		
61	P-1	72	D-1	64	D-3	56	P-2	60		
62	D-2	45	D-1	66	P-1	64	D-2	41		
63	D-2	53	D-2	73	D-1	70	D-2	45		
64	D-2	64	D-2	49	D-2	64	D-1	61		
65	D-1	51	D-1	50	O-1	71	P-2	43		
66	D-2	50	D-1	59	D-2	45	D-2	31		
67	P-1	69	D-2	34	P-2	35	D-2	30		
68	D-2	33	O-2	55	O-1	38	D-2	37		
69	D-2	62	D-1	48	D-2	33	E-1	31		
70	D-3	49	E-3	37	P-2	43	D-2	44		
71	D-2	46	D-1	53	P-1	52	D-2	52		
72	D-2	42	D-2	56	D-1	54	D-2	64		
73	O-2	56	E-2	49	D-1	64	D-1	46		
74	D-1	40	D-2	62	D-1	71	D-2	52		
75	O-2	44	P-1	43	D-2	29	D-2	59		
76	P-2	48	D-1	64	D-2	33	D-3	46		
77	P-2	50	D-2	48	D-1	33	E-4	54		
78	D-2	39	D-1	58	D-2	50	D-2	52		
79	P-2	27	E-1	49	D-1	39	E-2	32		
80	P-2	33	D-2	48	D-1	61	D-1	62		
81	D-2	55	O-2	47	D-2	55	D-1	36		
82	D-1	43	D-2	39	D-2	28	D-2	46		
83	D-2	30	D-2	43	D-2	36	D-1	38		
84	D-1	33	D-1	39	D-2	44	D-2	48		

TEST R (CONTINUED)

Item No.	FORM 1 Skill	FORM 1 Norm	FORM 2 Skill	FORM 2 Norm	FORM 3 Skill	FORM 3 Norm	FORM 4 Skill	FORM 4 Norm	Exp'ct'd % Correct	Scoring Service Report
85	D-2	41	D-2	41	P-2	30	D-1	36		
86	D-1	38	D-2	34	D-2	46	D-2	41		
87	D-2	37	D-2	25	D-2	33	D-1	25		
88	P-2	36	P-1	31	P-2	47	D-2	47		
89	O-1	24	D-2	32	D-2	37	D-1	29		
90	P-1	27	P-1	39	P-2	31	D-2	29		
91	P-2	32	D-2	45	E-1	28	D-1	35		
92	D-2	39	D-1	27	P-2	44	P-2	43		
93	D-2	40	D-1	33	P-2	28	P-2	50		
94	D-2	22	D-2	38	D-3	27	P-2	31		
95	D-3	38	P-2	31	D-3	46	E-4	40		
96	E-3	46	D-2	23	D-2	15	E-3	29		
97	P-1	29	D-1	29	E-1	40	E-2	30		
98	E-3	44	D-1	21	D-2	20	D-3	26		

*The codes used in the "Skills" columns are explained in the ITBS Teacher's Manual.

TEST L-1: SPELLING, GRADE 5

n	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
4	D	76	Vou	87	Voo	73	O	63		
5	M	72	Ve	74	N	60	N	81		
6	Ve	79	N	87	O	80	L	67		
7	N	74	D	72	L	53	O	59		
8	Vu	60	E	72	Vea	73	Vi	72		
9	E	65	Va	77	D	44	D	72		
0	Vi	67	O	58	Y	69	K	72		
1	Vau	66	Vai	68	O	64	E	61		
2	N	66	Ve	62	O	71	M	69		
3	K	50	D	64	E	64	O	69		
4	Vo	59	M	64	Vee	68	Ve	59		
5	L	55	Vo	62	N	76	Ve	65		
6	O	56	N	82	Ve	51	N	65		
7	Ve	69	S	73	Vea	60	I	55		
8	Vea	57	L	55	M	47	Vo	48		
9	I	62	Vea	49	Vo	45	Vi	49		
0	Vie	42	Vai	73	Voo	64	O	59		
1	L	55	N	68	W	70	Va	58		
2	Ve	50	Vi	68	Vi	50	M	62		
3	N	58	Vo	67	N	80	N	48		
4	Va	48	K	61	Y	58	L	57		
5	K	57	M	61	L	38	Y	63		
6	D	51	Ve	43	I	40	I	35		
7	I	55	Ve	59	O	24	Ve	54		
8	Vo	38	D	51	Vau	34	Vee	31		
9	Ve	55	S	38	Y	62	Ve	56		
0	Vea	50	W	61	I	48	Va	55		
1	S	46	Vu	54	O	50	Vai	48		
2	W	54	D	26	Vo	55	N	33		
3	P	39	Y	48	Vea	52	Vo	47		
4	Vi	15	Va	52	N	72	O	58		
5	O	39	N	65	Vo	47	O	37		
6	N	66	K	39	Y	44	Vee	30		
7	M	44	Vea	44	Veo	55	Y	34		
8	S	37	W	48	K	60	S	45		
9	N	52	K	42	N	44	N	34		
0	O	33	M	42	I	46	Y	47		
1	Vu	27	N	40	M	43	X	43		
2	O	34	Vea	50	D	21	D	36		
3	Y	35	Vai	43	S	45	Vi	38		
4	X	23	D	42	Ve	33	Ve	40		
5	D	29	E	46	Vo	19	Vou	41		
6	Va	62	Vi	26	Vea	38	Vo	21		

TEST L-2: CAPITALIZATION, GRADE 5

Item	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
No.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
19	17	73	5	64	5	67	15	87		
20	N	66	N	80	2	75	11	75		
21	24	58	13	69	12	74	10	77		
22	14	74	10	71	N	77	N	77		
23	2	80	12	68	10	77	21	78		
24	12	65	14	77	13	81	14	54		
25	10	81	N	85	21	46	Ov	62		
26	N	88	13	75	22	58	5	57		
27	13	40	21	50	15	72	12	79		
28	15	69	4	81	17	81	4	69		
29	17	60	14	77	14	40	7	86		
30	Ov	29	3	63	3	61	Ov	36		
31	8	63	8	45	Ov	43	14	47		
32	N	68	N	80	8	51	8	60		
33	21	49	Ov	50	N	73	17	62		
34	13	56	4	52	13	62	19	58		
35	Ov	56	19	48	19	72	N	75		
36	4	49	2	55	4	37	9	75		
37	N	65	Ov	52	3	55	13	43		
38	Ov	60	N	66	Ov	44	3	44		
39	6	42	5	59	10	74	10	71		
40	3	35	13	52	15	77	N	69		
41	2	67	20	55	N	67	17	43		
42	N	69	N	77	21	70	21	54		
43	21	45	14	57	13	67	20	64		
44	16	46	22	65	18	49	18	38		
45	11	41	Ov	44	17	57	13	62		
46	Ov	50	N	69	21	46	3	58		
47	6	39	14	63	N	59	N	52		
48	13	38	19	61	Ov	45	Ov	36		
49	18	38	20	38	2	67	21	57		
50	N	39	19	52	19	48	17	52		
51	19	34	16	30	17	52	19	53		
52	16	25	20	46	N	66	N	39		
53	21	45	N	58	22	40	2	49		
54	Ov	41	Ov	36	Ov	40	Ov	18		
55	20	47	23	30	19	53	19	37		
56	19	41	14	49	21	49	22	50		
57	4	35	13	41	18	39	18	45		
58	26	41	Ov	40	Ov	23	Ov	33		

TEST L-3: PUNCTUATION, GRADE 5

em	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
o.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
19	1b	39	1b	49	2	76	2	70		
20	4c	48	1a	79	1c	52	4a	59		
21	4a	53	N	83	N	85	N	75		
22	2	47	1b	61	2	67	3b	42		
23	N	74	4a	44	4a	48	Ov-1	69		
24	1a	65	N	81	1a	76	1c	67		
25	3b	22	Ov-1	55	4c	58	1a	60		
26	Ov-9	55	1a	72	1b	47	1b	47		
27	2	51	4a	48	N	73	6c	68		
28	4a	35	N	80	1a	69	N	74		
29	3e	65	3b	61	3b	55	1b	52		
30	N	77	3e	52	3e	71	3e	74		
31	3d	65	2	40	Ov-1	31	3d	65		
32	2	49	3d	59	4a	30	2	55		
33	4a	47	6c	46	3d	60	Ov-9	52		
34	N	82	3c	74	2	49	N	80		
35	1b	65	Ov-9	31	4a	50	1b	45		
36	1a	46	N	78	N	71	4c	63		
37	3b	33	1a	65	1b	57	1a	67		
38	2	39	N	79	2	57	4a	57		
39	5a	34	2	49	5a	21	3a	51		
40	N	69	4a	37	3a	60	3b	47		
41	N	69	N	53	N	67	N	65		
42	3a	38	1b	31	Ov-3	51	Ov-3	71		
43	Ov-6	39	3c	64	4b	32	1b	48		
44	Ov-1	43	3b	27	3b	28	7	73		
45	4b	23	N	69	Ov-1	48	Ov-2	57		
46	3j	41	3a	52	Ov-9	52	5a	50		
47	3b	31	4b	34	1b	47	4b	33		
48	N	72	5a	50	3h	21	Ov-1	49		
49	4a	39	1a	62	1a	69	1a	66		
50	3j	27	N	53	N	68	N	65		
51	N	49	Ov-1	48	3b	31	3b	45		
52	3c	49	2	42	3a	45	2	44		
53	3a	40	4b	18	Ov-3	56	Ov 1	47		
54	N	39	3a	58	2	38	4b	26		
55	5b	44	3j	26	3j	37	3a	55		
56	3a	43	Ov-1	45	4b	30	3j	53		
57	3j	40	N	69	N	51	N	52		
58	Ov-3	48	5a	27	Ov-4	38	Ov-4	39		

TEST L-4: USAGE, GRADE 5

Item	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
No.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
23	2a	50	2b	74	2b	63	2a	58		
24	4	64	4	49	1c	76	4	65		
25	N	69	N	73	N	75	N	69		
26	5	59	2c	66	2a	61	1c	68		
27	2c	67	1c	69	5	70	2d	68		
28	2a	67	2a	70	2a	55	2b	39		
29	N	59	2b	39	2c	71	5	61		
30	2c	52	N	67	2c	57	2c	57		
31	2b	46	5	69	2d	51	N	56		
32	1c	64	2a	65	2a	57	2a	55		
33	2a	51	2b	56	2a	48	2c	46		
34	3a	64	N	75	7	49	N	62		
35	2d	56	3c	64	N	53	3d	57		
36	1a	55	1a	60	2d	60	2b	48		
37	N	65	2a	38	4	47	4	55		
38	5	41	4	60	3d	60	2d	56		
39	3c	28	5	61	2c	58	7	26		
40	4	49	2b	48	3c	33	3c	40		
41	N	54	3d	60	5	33	5	59		
42	3a	14	N	70	N	49	N	64		
43	2c	39	2b	40	2b	45	2a	35		
44	2c	52	3c	51	2b	49	2b	54		
45	3a	58	2c	64	N	74	4	52		
46	2d	43	2b	33	1a	65	N	65		
47	2b	27	5	50	5	55	5	60		
48	N	64	N	60	2c	48	3c	36		
49	1a	34	3d	60	4	47	2c	56		
50	3c	25	4	42	3d	53	3d	49		
51	2a	39	1a	63	2d	58	2b	34		
52	1d	30	N	44	3c	35	1a	51		
53	2b	20	2d	49	N	60	5	43		
54	2d	47	2b	39	2b	35	N	61		

TEST W-1: MAP READING, GRADE 5

em o.	FORM 1 Skill	FORM 1 Norm	FORM 2 Skill	FORM 2 Norm	FORM 3 Skill	FORM 3 Norm	FORM 4 Skill	FORM 4 Norm	Exp'ct'd % Correct	Scoring Service Report
12	2c	80	2a	89	2c	73	2a	94		
13	2c	72	2a	72	2a	69	2a	90		
14	2a	52	2a	77	2a	70	2c	72		
15	2a	59	2c	77	2c	51	6a	74		
16	3d	59	3d	39	6a	63	2a	61		
17	2b	62	4	66	2c	53	4	46		
18	2c	79	2a	49	2a	59	2c	44		
19	2a	53	2a	49	1a	57	6a	74		
20	2c	69	3d	64	1c	55	1c	68		
21	2a	65	5	66	1a	57	5	75		
22	2a	81	2a	66	5	70	5	71		
23	3d	61	2a	54	5	57	5	59		
24	5	71	5	59	3d	63	3b	54		
25	3d	67	5	39	5	52	6a	75		
26	2a	48	3b	54	3b	48	6a	60		
27	6a	58	2a	42	2a	28	2a	70		
28	2c	57	3d	56	2a	62	5	52		
29	6a	53	7a	45	7b	51	2c	51		
30	7a	54	6a	43	2c	45	7d	41		
31	7a	46	7a	36	7a	52	7a	57		
32	5	52	3b	40	7a	43	5	46		
33	3b	39	1c	31	3b	51	6a	67		
34	7d	42	5	45	6a	42	7a	43		
35	3d	39	7a	43	2a	50	3b	40		
36	5	49	2a	31	1c	39	5	59		
37	6a	38	1c	31	7a	29	7d	46		
38	3a	36	2c	47	3d	59	2b	55		
39	2b	45	2a	49	6a	36	3a	24		
40	1a	41	2b	41	4	31	2b	52		
41	4	32	4	46	2a	44	3a	18		
42	4	34	2c	17	2a	36	5	35		
43	2c	39	3d	25	3a	32	3d	33		
44	2b	21	3a	27	3d	24	3a	29		
45	2a	27	3a	22	2b	26	2c	35		
46	3a	20	6a	25	1a	24	3d	28		
47	4	17	4	21	3a	22	4	27		

TEST W-2: READING GRAPHS AND TABLES, GRADE 5

Item No.	FORM 1 Skill	FORM 1 Norm	FORM 2 Skill	FORM 2 Norm	FORM 3 Skill	FORM 3 Norm	FORM 4 Skill	FORM 4 Norm	Exp'ct'd % Correct	Scoring Service Report
21	3a	83	3a	75	9	73	3a	44		
22	3a	75	3a	59	9	68	4b	65		
23	3a	70	9	85	9	54	4a	64		
24	7	50	4a	63	3d	32	4b	45		
25	4a	53	4b	55	3a	77	4b	32		
26	3a	52	4a	62	4b	43	4a	65		
27	7	29	4b	21	4b	64	5	30		
28	7	48	3a	47	3d	53	4a	39		
29	3a	48	8	45	3a	38	3b	60		
30	5	51	4b	43	4b	28	1	49		
31	4a	44	4b	40	7	61	5	23		
32	4b	40	7	29	5	26	7	39		
33	3c	50	4b	42	3c	33	3c	51		
34	9	46	9	66	2	46	3c	53		
35	4b	40	3c	62	4b	40	3c	40		
36	4b	39	9	45	7	34	5	36		
37	7	30	8	31	8	51	8	36		
38	3b	44	3a	50	9	51	3a	46		
39	9	36	3a	39	4a	34	8	53		
40	3b	25	4a	30	3b	33	8	34		
41	4b	48	5	44	9	55	3a	52		
42	4b	18	3a	38	5	33	4b	31		
43	5	26	5	32	4b	35	7	43		
44	8	28	3a	28	9	32	7	33		
45	4b	26	4b	33	7	28	5	27		
46	7	19	4a	31	4b	31	8	43		

TEST W-3: KNOWLEDGE AND USE OF REFERENCE MATERIALS, GRADE 5

m	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
7	I	69	I	88	I	61	I	63		
8	I	80	I	75	I	68	I	79		
9	I	69	I	73	I	63	I	69		
0	I	66	I	66	I	61	I	71		
1	I	70	I	74	I	64	I	55		
2	I	57	I	71	I	44	I	64		
3	I	60	I	56	I	65	I	52		
4	I	51	I	45	I	42	I	57		
5	I	64	I	50	I	64	I	62		
6	I	51	I	48	I	57	I	26		
7	C	61	C	51	C	71	C	62		
8	C	53	C	52	C	69	C	57		
9	C	59	C	65	C	53	C	22		
0	C	54	C	60	C	56	C	49		
1	C	62	C	59	C	39	C	57		
2	C	52	C	57	C	64	C	50		
3	R-9	59	R-6	34	R-4	72	R-7	56		
4	R-2	47	R-10	54	R-7	80	R-2	48		
5	R-8	47	R-7	61	R-10	41	R-4	64		
6	R-4	45	R-10	59	R-9	55	R-7	49		
7	R-6	58	R-4	63	R-6	45	R-8	31		
8	R-5	39	R-9	38	R-3	33	R-6	43		
9	R-9	59	R-2	44	R-10	37	R-9	42		
0	R-10	40	R-8	48	R-5	29	R-5	49		
1	D-1	46	D-6	67	D-2	62	D-6	45		
2	D-3	56	D-3	65	D-3	66	D-2	51		
3	D-3	51	D-1	52	D-6	54	D-6	41		
4	D-2	57	D-6	51	D-1	58	D-3	35		
5	D-6	41	D-2	40	D-2	52	D-6	45		
6	D-6	52	D-6	37	D-6	36	D-1	46		
7	D-4	36	D-6	51	D-5	4	D-2	41		
8	D-2	28	D-2	34	D-6	54	D-6	41		
9	D-6	41	D-5	38	D-2	44	D-6	39		
0	D-6	37	D-6	42	D-6	49	D-5	34		
1	E	52	E	52	E	61	E	72		
2	E	42	E	50	E	50	E	51		
3	E	48	E	41	E	47	E	52		
4	E	55	E	35	E	37	E	34		
5	E	43	E	29	E	39	E	43		
6	E	46	E	31	E	23	E	36		
7	A	55	A	54	A	56	A	50		
8	A	57	A	50	A	54	A	59		
9	A	56	A	38	A	49	A	45		
0	A	52	A	40	A	51	A	43		
1	A	33	A	46	A	44	A	49		
2	A	48	A	50	A	41	A	60		
3	A	23	A	31	A	49	A	62		
4	A	28	A	36	A	41	A	48		
5	A	33	A	38	A	47	A	35		
6	A	41	A	34	A	51	A	51		
7	A	39	A	35	A	44	A	44		
8	A	41	A	36	A	38	A	46		
9	A	44	A	37	A	44	A	41		
0	A	27	A	40	A	43	A	40		
1	A	46	A	25	A	39	A	46		
2	A	21	A	27	A	44	A	35		

TEST A-1: ARITHMETIC CONCEPTS, GRADE 5

Item	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
No.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
31	W-6	62	W-1	61	W-6	71	N-3	75		
32	N-3	78	M-5	74	N-4	75	F-5	79		
33	M-2	71	N-3	77	N-3	67	M-7	61		
34	M-5	70	W-6	79	M-2	54	W-7	75		
35	N-3	71	M-2	66	M-2	90	N-3	74		
36	M-2	69	N-5	83	C-2	58	W-6	65		
37	C-4	42	W-7	62	W-1	67	W-1	62		
38	W-7	52	N-1	62	F-1	61	F-1	74		
39	F-1	64	M-2	36	W-6	47	N-3	82		
40	M-5	76	W-6	61	W-7	55	N-4	68		
41	M-2	70	C-4	55	N-3	58	W-7	55		
42	N-4	69	M-4	50	E	52	M-7	41		
43	N-1	58	N-4	67	M-4	55	N-3	62		
44	N-5	58	F-1	70	N-3	61	C-3	49		
45	D-6	55	M-1	63	W-7	75	M-4	66		
46	W-7	44	M-1	54	M-7	47	W-5	49		
47	M-7	59	W-6	55	W-5	49	M-5	66		
48	M-3	55	C-4	57	M-3	45	M-5	49		
49	M-2	54	W-5	50	M-5	50	N-3	58		
50	W-5	43	M-7	44	W-7	44	M-2	50		
51	W-4	49	W-4	45	N-3	48	N-3	48		
52	N-3	60	W-1	35	F-4	42	W-1	49		
53	F-4	27	D-6	57	W-1	64	N-3	56		
54	R	56	N-3	50	W-5	41	W-5	61		
55	F-4	40	F-1	46	F-5	42	M-7	50		
56	F-2	36	G-4	46	C-4	46	N-3	55		
57	M-2	48	F-5	36	M-2	49	C-4	46		
58	F-4	23	M-7	28	M-4	41	F-4	49		
59	M-2	46	N-3	45	N-3	52	M-2	45		
60	M-5	46	M-3	43	N-3	44	N-5	40		
61	F-2	38	N-3	48	M-5	44	F-5	46		
62	W-3	49	M-7	20	M-7	52	W-8	37		
63	M-4	43	F-4	37	W-7	49	W-4	30		
64	F-2	37	F-2	26	F-4	39	M-3	44		
65	M-4	46	M-5	36	W-3	44	F-2	39		
66	F-1	36	F-1	39	W-4	38	N-3	44		
67	W-6	49	F-2	26	N-5	37	F-2	32		
68	F-4	47	F-4	25	W-3	32	R	39		
69	F-3	25	M-5	38	F-1	31	F-4	42		
70	W-1	42	F-3	18	W-5	38	W-8	24		
71	F-3	19	M-2	28	F-2	39	F-1	31		
72	F-5	28	F-3	11	F-3	31	M-5	28		

TEST A-2: ARITHMETIC PROBLEM SOLVING, GRADE 5										
em	FORM 1		FORM 2		FORM 3		FORM 4		Exp'ct'd %	Scoring Service
o.	Skill	Norm	Skill	Norm	Skill	Norm	Skill	Norm	Correct	Report
26	C-a	70	C-a	49	C-a	76	C-a	81		
27	C-as	52	C-d	38	C-s	70	C-as	58		
28	C-ma	61	C-m	68	C-m	71	C-s	48		
29	C-m	56	C-s	67	C-d	51	C-m	47		
30	C-a	53	C-a	66	C-a	51	C-a	55		
31	C-m	51	C-s	64	C-d	33	C-d	49		
32	W-m	68	W-a	60	W-s	70	W-s	62		
33	W-s	59	C-m	55	W-s	77	C-s	51		
34	M-d	36	W-s	52	W-a	51	W-d	58		
35	W-d	46	C-s	63	M-s	60	C-m	65		
36	C-m	44	C-s	32	C-a	53	W-d	52		
37	C-s	51	C-m	61	C-s	52	C-s	50		
38	C-a	58	C-a	53	C-m	70	W-m	63		
39	C-d	45	C-d	46	C-d	48	C-a	52		
40	C-m	45	C-dm	48	C-m	48	C-s	60		
41	W-d	31	C-d	28	C-d	32	W-d	27		
42	C-m	32	C-ms	31	C-m	47	F-a	47		
43	C-d	37	C-a	40	C-a	51	C-sm	21		
44	C-s	34	C-s	49	C-m	40	C-m	58		
45	W-a	38	C-d	18	C-as	38	W-d	33		
46	W-d	37	C-ma	36	F-s	27	W-m	41		
47	C-ma	30	C-m	36	C-m	45	W-m	38		
48	C-m	37	W-d	19	M-md	25	W-d	34		
49	W-d	30	C-m	22	W-d	32	F-s	27		
50	C-as	30	C-s	28	C-ma	24	W-a	33		
51	C-sd	40	C-as	27	C-m	40	C-ma	20		
52	C-a	39	F-s	21	F-a	46	W-s	39		
53	C-d	14	F-a	42	W-s	35	C-ma	22		
54	W-ms	22	C-ms	22	W-d	27	W-d	24		