BOTTHOF, RICHARD NELS

READING STRATEGIES AND COMPREHENSION OF AVERAGE SECOND-GRADE READERS READING A BASAL TEXT WITH OR WITHOUT ILLUSTRATIONS

The University of Oklahoma PH.D. 1980

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

READING STRATEGIES AND COMPREHENSION OF AVERAGE SECOND-GRADE READERS READING A BASAL TEXT WITH OR WITHOUT ILLUSTRATIONS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

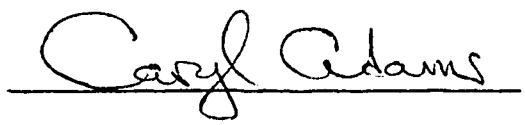
BY

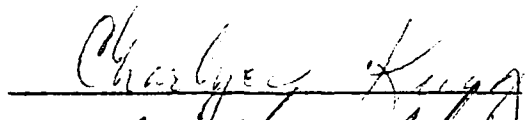
RICHARD NELS BOTTHOF

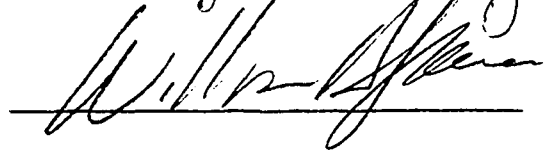
Norman, Oklahoma

1980

APPROVED BY







DISSERTATION COMMITTEE

ACKNOWLEDGEMENTS

It is with pleasure that I begin this document with recognition and gratitude for the special people who assisted in the organization, implementation, and preparation of this study. Without their aid this effort would have been stillborn.

Dr. Richard P. Williams deserves a whole page of "thanks" of his own. He served as my chairman; but after so many assists large and small, so much advice and urging, he has become a very special friend. He has helped me in dark hours of need and has given me opportunities for professional growth, of which this dissertation is only one. He has had a confidence in me that has allowed me to carry this project through to its fruition. I will always be thankful to him.

Dr. Caryl Adams, Dr. William Graves, Dr. Charlyce King, and Dr. Robert Ragland served as committee members, read the manuscript and provided guidance for style, design, and analysis.

Dr. Jack Miller assisted in locating the testing sites and provided the testing materials. Mr. Bob Martin, Mr. Bob McCalla, and Mr. Mark Richardson, principals of the schools in this study, took time from a busy schedule to give invaluable assistance. Forty well-mannered and cooperative second-graders took time from their busy schedule to provide the data base.

I would like to thank Mrs. Martha Thompson for her proofreading assistance. I must also thank GMJ for giving me the spirit and essence and inspiration to press on in spite of obstacles.

TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

LIST OF FIGURES

READING STRATEGIES AND COMPREHENSION OF AVERAGE SECOND-GRADE READERS READING A BASAL TEXT WITH OR WITHOUT ILLUSTRATIONS

CHAPTER I

INTRODUCTION AND PROBLEM

Introduction

In the mid-seventeenth century Johannes Comenius wrote Orbis Sensualium Pictus, which was a first effort to give school children a collection of things in the world that are picturable together with their names. Obviously it was Comenius' belief that pictured things conveyed more meaning to children learning to read than simply words by themselves. Since then picture dictionaries for children have persisted and a proliferation of illustrated children's books have arisen in cultures throughout the world, the most important of which are the illustrated beginning reading books, commonly known as basal readers.

Relatively recently, however, the use of illustrations in beginning readers has been questioned and a few researchers have turned their scientific attentions to this question. Somewhat limited in scope, the research efforts to date have not yielded definitive results. By

intimation, however, it appears that in spite of inconsistent and largely insignificant results, the burden of proof for value resides in the use of illustrations rather than in neutral territory. In effect, to this date, research efforts have relied upon verbal measurement of pictorial material to the extent that if the pictorial material does not have a positive effect upon verbal content, then the pictorial material can be judged at fault. In short, there is a general proclivity among the educated to give prominence to verbal literacy over what has been termed "visual literacy."[1] Hewes has noted this tendency from an anthropological perspective:

> Since the majority of the world's peoples, in all cultures, possess normal vision and are exposed to the world of visible phenomena in which there are worldwide consistencies it might be argued that visual literacy is simply the general human condition. If so, the notion of visual literacy is superfluous, whereas literacy with respect to being able to read and write is significant. However, there is perhaps a sense in which we can think of visual literacy as at least a continuum from very restricted competence, even where vision is normal, to high competence.[2]

It was with similar notions to the above that the author originally approached the question of the use of illustrations in basal readers. A review of the research literature revealed a verbal dominant approach. Quite obviously, since the basal materials are used to teach reading, the verbal material should be given emphasis in evaluation of reading achievement. At the same time, however, it was clear that the materials used for evaluation of reading achievement were quite restrictive: multiple-choice

---

[1]Gordon W. Hewes, "Visual Learning, Thinking, and Communication in Human Biosocial Evolution," in Visual Learning, Thinking, and Communication, ed. by B.S. Randhawa and W.E. Coffman (New York: Academic Press, 1978), p. 9.

[2]Ibid.

tests, recall, sentence completion, all involving an experimenter variable.[1] Also, as Elley points out, we still know little of the construct "reading comprehension."[2]

It seemed that the most valid approach to a research question embracing pictorial and verbal materials would be to find a measurement instrument that took both into consideration, with emphasis given to verbal over pictorial information as representative of basal materials. In the rather recently developed psycholinguistic viewpoint of reading theory, miscue analysis seemed to offer the broadest perspective available.

In its most essential form miscue analysis is a recognition of the use of demonstrated specific strategies in the reading errors of children learning to read. The fact that these strategies are so apparent in reading errors led Goodman to rename "errors" as "miscues" and conclude that mistakes in reading were not random but caused, not merely the result of ignorance or carelessness but motivated by "cues" to which the learner responds.[3] These "cues" are not necessarily simple or observable items, as one might at first relate, but are rather cue systems, which are extensive and for which Goodman has noted four general categories: within words, in the flow of language, external to language and the reader, and within the reader.[4] The basis for his cue systems is the psycholinguistic notion

---

[1]Warwick B. Elley, "Tests and Reviews: Reading," in Eighth Mental Measurements Yearbook, ed. by O.K. Buros (New Jersey: The Gryphon Press, 1978), p. 1175.

[2]Ibid.

[3]Kenneth S. Goodman, "A Linguistic Study of Cues and Miscues in Reading." Elementary English, XLII (1965): p. 639.

[4]Ibid.

of the reader as an interactive element in a communications transaction. Smith, a leading proponent of the psycholinguistic approach to reading processes, maintains, for example, that the reader "must make a contribution at least as great as that of the transmitter if communication is to occur."[1] Smith further posits four important points for his theoretical structure of the reading process:

> 1. Reading is not a passive activity—readers must make a substantial and active contribution if they are to make sense of print.
> 2. All aspects of reading, from the identification of individual letters or words to the comprehension of entire passages, can be regarded as the reduction of uncertainty.
> 3. Fluent reading requires the use of redundancy—or of information that is available from more than one source—so that prior knowledge can reduce the need for visual information.
> 4. Reading can be a risky business.[2]

Of the four points, redundancy most clearly defines the basic motivation behind this research effort. "Redundancy" is defined, or exists, "whenever information is available from more than one source."[3] Smith refines this definition in the following way:

> ...redundancy is information that is available from more than one source only when one of the alternative sources is in the reader's head. Put another way, there is no utility in redundancy in the text if it does not reflect something the reader knows already, whether it involves the visual, orthographic, syntactic, or semantic structure of written language. Redundancy, in other words, can be equated with prior knowledge.[4]

It is the author's opinion that from Smith's discussion illustrations can be a source of redundancy, or prior knowledge, and in fact they

---

[1]Frank Smith, Understanding Reading (New York: Holt, Rinehart and Winston, 1978), p. 12.

[2]Ibid.

[3]Ibid., p. 17.

[4]Ibid., p. 19.

are an element of one of the cue systems of Goodman.[1] It remains to discover just what function these illustrations have in the beginning reading process.

For this study it was considered feasible that pictures could contribute to prior knowledge on an immediate basis; that is, that the pictures could clarify meanings and relationships and also add to the reader's knowledge on a visual rather than verbal level. It would seem reasonable then to assume that the reader using available illustrations would have the advantage of bringing more prior knowledge to his reading task than a reader without such additional information.

Problems Investigated by the Study

Second graders seem to fit best into that group of students who are still close to heavy reliance upon illustrations for context clues and for clues to word recognition. At the same time, they have reached a level of reading performance which permits sustained reading of fairly long passages. Using this group of students should permit an investigation of varieties of reading strategies and retelling performances.

The problems to be investigated are a reflection of the generally acknowledged uses of illustrations in children's texts. There will be an attempt to discern differences in oral reading strategies between those students reading from a basal reader with illustrations uncovered and those reading from a basal reader with the illustrations covered. It is assumed that these differences will be reflected by differences in the following miscue responses: graphic similarity, sound similarity,

---

[1]Goodman, "Linguistic Study of Cues and Miscues," p. 639.

grammatical function, nonwords, corrections, grammatical acceptability, semantic acceptability, meaning changes, repeated and multiple miscues, and corrections of multiple miscues.

The problem of this study is to determine whether the presence or absence of illustrations from a basal text has any effect upon the reading performance of second grade readers. Reading performance will be measured according to the reading miscue patterns in the above noted categories. It will also be measured in terms of retelling scores, which reflect the student's ability to retell the story read in his or her own words.

Significance of the Problem

At least three factors contribute to the significance of research generated by this study. The first concerns the fact that the majority of students in American education learn to read through the use of basal readers. The second factor is the observable evidence that the overwhelming majority of basal readers use illustrations with the texts of stories and informative articles and promote these illustrations as a useful and integral part of the basal reading program.

The third factor is that judgments regarding the value of illustrations in basal texts either have not been consistent with research findings, have not been based on definitive research findings, or have been based on research that does not reflect the milieu being judged. Miller, for example, in one of the earliest and most often quoted research efforts using basal readers as the basis of his research found no significant differences in reading responses of second-grade readers reading

from basal texts with or without illustrations. Yet, in his conclusions, he uses the findings of no significant differences to support arguments against the use of pictures:

> The data secured in this study show that the children who read without pictures understood what they read as well as did the children who read the same material with the use of pictures. This statement is made within the limits of the small sampling of pupils and the character of the tests used. Such a conclusion supports some of the arguments against the use of pictures presented previously.[1]

Weintraub, another investigator using basals for the basis of his research, recognized the limitations of his own findings which were on "rather limited comprehension skills checked."[2] He also noted in his review of the research than none of the other studies using similar techniques yielded "the final answer or even provides direction."[3]

Other research efforts, using materials and situations that are presumed analagous to classroom teaching with basal readers have yielded inconsistent results. Although these studies represent a relatively coherent research pattern, there is, depending upon one's theoretical perspective, a question concerning the presumed analagous similarity of reading situations. For the most part they are studies of how beginning readers acquire an initial sight word vocabulary, the investigators using subjects for these studies who are carefully screened by pretesting to ensure that none of them have as yet any reading skills. These subjects are then taught from four to sixteen words from a variety of word lists and usually with a "picture" and "no-picture" treatment

---

[1]William A. Miller, "Reading With and Without Pictures," Elementary School Journal, XXXIXX(1938): p. 682.

[2]Sam A. Weintraub, "Illustrations for Beginning Reading," Reading Teacher, XX (1966): p. 61.

[3]Ibid.

condition. Word learning in most of these studies can be considered as "sight-word" recognition learning, which in itself is certainly an area of valid inquiry but also questionable with regard to the use of illustrations in basal readers beyond the first stages of learning to read. From the perspective of psycholinguistic theory, the relationship is highly questionable, the amount of material alone sufficiently condemning the research to some other area besides "reading."

Because of the factors stated it would appear that further research into the possible merits of illustrations in basal readers should contribute to the clarification of an important but ill-defined area of instruction. Should the study add statistical credibility to judgments for or against the use of illustrations, scientific support will have been added to an area of concern to educators, administrators, and researchers.

Statement of Hypotheses

Making definitive statements and arriving at defensible conclusions necessitated the stating and testing of hypotheses. In order to answer previously stated questions and arrive at conclusions most pertinent to the study it was necessary to formulate eleven alternative hypotheses, each of which was restated in null form in order to facilitate testing. The hypotheses were

Ha_1: The retelling scores will be significantly different for students who read from a text accompanied by illustrations from those of students who read from a text without accompanying illustrations.

Ho_1: There will be no significant difference between the retelling scores of students reading from a text accompanied by illustrations and the retelling scores of students reading from a text without accompanying illustrations.

Ha_2: The number of miscues that are graphically similar to the text produced by students reading from a text without accompanying illustrations will be significantly different from the number produced by students reading from a text accompanied by illustrations.

Ho_2: There will be no significant difference between the number of miscues that are graphically similar to the text produced by students reading from a text without accompanying illustrations and the number produced by students reading from a text accompanied by illustrations.

Ha_3: The number of miscues that have sound similarity to a written text produced by students reading from a text without accompanying illustrations will be significantly different from the number produced by students reading from a text accompanied by illustrations.

Ho_3: There will be no significant difference between the number of miscues that have sound similarity to a written text for those students reading from a text without accompanying illustrations than for those students reading from a text accompanied by illustrations.

Ha_4: The number of miscues that have the same grammatical function as the written text produced by students reading from a text without accompanying illustrations will be significantly different than for those students reading from a written text accompanied by illustrations.

Ho_4: There will be no significant difference in the number of miscues with the same grammatical function as the text for students reading from a written text accompanied by illustrations than for students reading from a written text without accompanying illustrations.

Ha_5: The number of nonword miscues produced by students reading from a written text accompanied by illustrations will be significantly different from the number produced by students reading from a written text without accompanying illustrations.

Ho_5: There will be no significant difference between the number of nonword miscues produced by students reading from a written text without accompanying illustrations than those produced by students reading from a written text accompanied by illustrations.

Ha_6: The number of corrections for miscues for students reading from a written text accompanied by illustrations will be significantly different than the number for students reading from a text without accompanying illustrations.

Ho_6: There will be no significant difference between the number of corrections for miscues for students reading from a written text accompanied by illustrations than for students reading from a written text without accompanying illustrations.

Ha_7: The number of miscues of grammatical acceptability produced by students reading from a written text accompanied by illustrations will be significantly different from the number produced by students reading from a written text without accompanying illustrations.

Ho_7: There will be no significant difference in the number of miscues with grammatical acceptability produced by students reading from a written text accompanied by illustrations than produced by students reading from a written text without accompanying illustrations.

Ha_8: The number of miscues with semantic acceptability produced by students reading from a written text accompanied by illustrations will be significantly different from the number produced by students reading from a written text without accompanying illustrations.

Ho_8: There will be no significant difference in the number of miscues with semantic acceptability produced by students reading from a written text accompanied by illustrations than produced by students reading from a written text without accompanying illustrations.

Ha_9: The number of miscues with meaning changes produced by students reading from a written text accompanied by illustrations will be significantly different from the number produced by students reading from a written text without accompanying illustrations.

Ho_9: There will be no significant difference in the number of miscues with meaning changes produced by students reading from a written text without accompanying illustrations than for students reading from a written text accompanied by illustrations.

Ha_{10}: The number of repeated and multiple miscues produced by students reading from a written text accompanied by illustrations will be significantly different from the number produced by students reading from a written text without accompanying illustrations.

Ho_{10}: There will be no significant difference in the number of repeated and multiple miscues for students reading from a written text without accompanying illustrations than for students reading from a written text accompanied by illustrations.

Ha_{11}: The number of corrections to multiple miscues for students reading from a text accompanied by illustrations will be significantly

different from the number produced by students reading from a written text without accompanying illustrations.

Ho_{11}: There will be no significant difference in the number of corrections to multiple miscues for students reading from a written text accompanied by illustrations than for students reading from a written text without accompanying illustrations.

Definition of Terms

1. Average-ability second-grade student: a second-grade student whose classroom performance is judged average according to teacher evaluation and whose standardized reading ability score is within approximately one standard deviation of the mean of the population tested.

2. Retelling score: the student's total composite retelling score based on the Reading Miscue Inventory categories of character analysis, events, plot, theme, specifics, generalizations, and major concepts.

3. Written text with illustrations: an illustrated story published in a basal reader.

4. Written text without illustrations: a story published in a basal reader with the illustrations covered.

5. Miscue: a deviation from the text in oral reading.

6. Reading strategies: "those interactions with written material which are available to the unaided reader" in his or her attempt to gain meaning from the printed page.[1] These have qualitative and quantitative dimensions.

7. Graphic similarity: how much the miscue looks like what was expected from the text.

8. Sound similarity: how much the miscue sounds like what was expected from the text.

9. Grammatical function: whether or not the grammatical function of the miscue is the same as the grammatical function of the word in the text.

10. Nonword: a miscue produced that is not a recognizable English word.

11. Corrections: when a miscue is corrected by a reader.

---

[1] Yetta M. Goodman and Carolyn L. Burke, Reading Miscue Inventory Manual Procedure for Diagnosis and Evaluation (New York: The Macmillan Company, 1972), p. 97.

12. Grammatical acceptability: the miscue occurs in a structure which is grammatically acceptable.

13. Semantic acceptability: the miscue occurs in a structure which is semantically acceptable.

14. Meaning changes: the miscue results in a change of meaning from that intended by the text.

15. Repeated and multiple miscues: any time a text item is involved in more than one miscue it is counted as a multiple miscue.

Assumptions

1. The available data in the school records for each student would indicate a valid assessment of educational performance with respect to the criteria of "average."

2. Teacher assessment of classroom reading performance would be a valid indication of reading performance level when combined with the level determined by readability analysis of currently assigned textbook placement for each child.

3. The subjects were assumed to be representative of the average second-grade population attending a Midwestern suburban community.

4. The number of responses assessed as miscues was assumed to reflect reading performance for each child.

5. The final evaluation and the generalizations derived from this study were assumed to be valid only when applied to the school districts included in the study or to school districts with comparable pupil populations.

Delimitations of the Problem

1. Because of the need for principals' and teachers' judgments concerning each students' abilities, only those students attending school

for the entire school term were considered for the study.

2. Criteria for selection of the subjects as "average" students was limited to available school records that reflected performance and abilities determined at the beginning of the school term.

3. Subjects' reading levels were assessed according to level placement in textbooks and teacher estimates.

4. Assessed readability levels of textbooks proved highly variable.

5. The study was undertaken in three different school districts, two of which used different basal programs, and one of which used an identical program. Although students reported non-familiarity with the materials used, it would seem reasonable to assume that those students taught with the same basal program would perform differently than those taught with other programs.

6. In some instances the testing environment was not ideal and not without limited distractions.

Overview of Subsequent Chapters

Chapter II will present a review of literature and research related to research regarding the use of text and illustrations. Chapter III will present the design and procedures of the study. Chapter IV will present the findings of the study and Chapter V will be concerned with the summary, conclusions, and recommendations of the study.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The present investigation was designed to explore the possible effects of illustrations in basal readers upon the reading performance of average ability second-grade children. This has been achieved by (1) contrasting two methods of text presentation, with illustrations and without illustrations; and (2) by employing miscue analysis to detect possible differences in reading strategies. Average ability students were used because, as Levin points out, they are the most sensitive to changes in methods or materials.[1]

This chapter contains a review of the literature which is relevant to this investigation. Thus, the chapter has been organized to present an intensive review of studies related to determining the value and effects of illustrations upon reading behavior. In addition, there are discursive treatments of psycholinguistics and miscue analysis, readability, and pictorial illustrations.

---

[1]Joel Levin, What Have We Learned About Maximizing What Children Learn? (Arlington, Va.: ERIC Document Reproduction Service ED101318, 1974), p. 4.

Review of the Literature

Earlier research efforts that have influenced the rationale for the present study of the effects of illustrations on the reading performance of average second-grade readers are those which have focused on the picture-reading relationship. The intensive review of that research comprises two major parts: (1) studies of the effects of pictures on the reading comprehension of readers reading from texts with-or-without illustrations, and (2) studies of the effects of pictures on word recognition. Both of these areas are included since researchers in both areas claim to be investigating "reading."

Comprehension Studies

Studies of the picture-comprehension relationship can be divided into two classes: (1) those studies using commercially published basal readers, and (2) those studies using basal-like, or "comparable," texts and illustrations or materials adapted especially for the research. In the first class there are only two studies, one by Miller in 1938 and one by Weintraub in 1960, the former probably the most frequently cited investigation in the literature.

The durability and popularity of Miller's study probably lies in his statement of rationale justifying his investigation, a statement the essence of which is reiterated in some form or other in almost every succeeding investigation, a statement worth the effort of preserving once more:

> There are arguments both for and against the use of illustrations in primary readers. It is said that bright pictures make a book attractive to children who are beginning to read, and studies of children's choices of books verify this statement. Teachers feel that pictures

> are necessary in primary readers. When one hundred teachers were asked if they thought children could learn to read by means of books without illustrations as well as by means of books with illustrations, the answer was invariably "No." The teachers explained that pictures are necessary to introduce characters in the story, to arouse and sustain interest, to clarify unfamiliar concepts appearing in print, and to furnish clues to word recognition. These teachers also felt that well-illustrated books are more attractive and interesting to children.
>
> There is, however, no lack of arguments against the use of pictures in primary books. One artist has expressed opposition to illustrations in children's readers. In one school system duplicate copies of first-grade material with no illustrations were read by the children with no apparent lack of interest. Many teachers use reading charts which are based on the experiences of the children. Although these charts have no illustrations, they are read with interest. Unless there is only a line or two of reading material on a page, the illustration usually does not carry clues to all the ideas expressed on the page. In fact, it is probable that many illustrations leave much to be desired in furnishing clues to the reading material which they accompany. Anyone who has watched beginning readers at work has seen them shift their eyes from a printed word which they did not recognize to the picture, trying to get a clue to the word from the picture. Such shifting of the attention is considered by some persons to be an interference with reading.[1]

Miller's study attempted to "determine whether children who read a basal set of primary readers with the accompanying illustrations secure greater comprehension of the material read than do pupils who read the same material without the accompanying pictures."[2] Six hundred subjects in grades one, two, and three from three elementary schools were used, with fifteen teachers participating. The children were given standardized reading tests prior to the beginning of the second semester, using the Gates Primary Reading Test for grades one and two and the reading section of the Stanford Achievement Test for grade three. Each class was then divided into two groups of equal reading ability, according to test scores.

---

[1] Miller, "Reading With and Without Pictures," p. 676-677.

[2] Ibid., p. 677.

A "widely used series of primary readers was selected as the basal textbook in reading."[1] The pictures in half of the books were permanently covered by pasting paper over them. The other half of the textbooks were unaltered. One group read stories from the readers with the pictures covered; the other group read the same stories from the readers with the pictures uncovered. Each classroom contained both experimental and control groups and were taught by the same teacher. Teaching methods were not described, but Miller gave assurance that each group received identical treatment.

Although it seemed that the reading comprehension tests for the individual stories would be necessarily unique, Miller operationalized reading comprehension by devising the following test:

> Children were required to choose, from a group of words, a word spoken by the teacher; to select a phrase from two phrases when one phrase was spoken by the teacher; to cross out an extraneous word from a group of three words; to complete sentences after reading a paragraph; and to put in proper sequence the happenings recorded in a paragraph to be read.[2]

The test for each story was administered to both the picture and non-picture groups just before reading a given story, and the same test was given again just after the reading. Comprehension was then measured as the difference between pre- and posttest scores over individual stories and the difference between posttest scores across grades and treatments. Also, to measure gains in gross reading ability, he used alternate forms of a standardized achievement test given at the beginning and the close of the semester. This test was administered before any reading in the

---

[1] Miller, "Reading With and Without Pictures," p. 678.

[2] Ibid.

books was done and again when all the material in the basal textbook had been read.

Miller concluded that "any difference between the two groups on any retest is statistically insignificant...and that...neither group was superior to the other on any of the eighteen stories."[1] Miller's final conclusion was that "all that can be said is that the absence of pictures did not cause the children to read the material with less comprehension."[2]

Bluth has questioned Miller's design paradigm, finding three design factors as confounding the interpretation of results:

> (1) the questionable degree of relevance of the illustrations to the questions asked about each story, (2) the interaction of the subjects in the two experimental groups within the same classroom and (3) the efficiency of the method used to measure comprehension.[3]

Koenke was even more critical of Miller's study and elaborated the following factors as confounding the results:

> (1) the relationship of picture to questions was not considered; (2) the results of the comparison across grades on individual stories was confounded since the story content, the pictures, the readability levels, and the questions on the test varied while the second measure, the standardized test, might not have been sensitive enough for the within-semester comparison of reading achievement which Miller wanted; (3) the experimental groups shared teacher, space, and time; and one wonders how many subjects actually did not see most or all ot the pictures or hear another subject's response to a teacher's question concerning a relevant portion of the content of a picture. Since the groups were matched on reading ability, it is possible that both groups were present in each reading circle or group and were taught at the same time.[4]

---

[1]Miller, "Reading With and Without Pictures," p. 679.

[2]Ibid., p. 682.

[3]Linda Fran Bluth, "A Comparison of the Reading Comprehension of Good and Poor Readers in the Second Grade with and without Illustrations" (unpublished Ed.D. dissertation, University of Illinois, 1972), p.3.

[4]Karl Koenke, The Effects of a Content-Relevant Picture on the Comprehension of the Main Idea of a Paragraph. (Arlington, Va.:ERIC Document Reproduction Service ED024540, 1968), p. 2.

Miller's results are not surprising, considering the problems pointed out above.

The only other researcher to use commercially published basal readers for his study was Weintraub, who used the Sheldon basal series and second-grade subjects.[1] He measured comprehension of the main points of the stories by use of a ten-question multiple-choice test on each of three different stories in the basal reader. The questions concerned the movements, descriptions, and reasons for action of the characters in the stories. A separate condition was used for each of the three stories; one story presented unaltered, the next with illustration covered, and the final story with text covered and only the illustrations visible. A sample of 62 second-grade students from a suburb of Cleveland was used, chosen from five second-grade classes in one school with a total second-grade population of 104 students. Each subject was observed under all three conditions. Weintraub concluded that comprehension was greatest when the pictures were covered and only the text was seen. Another finding was that text with pictures yielded higher comprehension than pictures alone. He also found that poor readers did better with text only than with either text and pictures or pictures alone. Good readers appeared to do as well with text or with text and pictures, but better with either of these treatments than when they had pictures only.

Although Weintraub reported significant findings to support his conclusions, Koenke, checking the results later, found a subtraction error between means compared in the Duncan Range Test and concluded that there

---

[1]Samuel Weintraub, "The Effect of Pictures on the Comprehension of a Second Grade Basal Reader." (unpublished Ed.D. dissertation, University of Illinois, 1960), p. 26.

was no significant difference. Koenke concluded that Weintraub's conclusions were correct on the basis of "a gross comparison of means; but the difference, according to his own choice of a post hoc test, was not significant."[1]

Weintraub listed six limitations of his study: (1) the stories and tests were too brief. (2) the texts were limited to those of one publisher. (3) the illustrations were used as they appeared in the text without differentiating between illustrations and the function they served. (4) the stories ranged one-half grade level in reading ability below and above beginning second grade, whereas some children in the study were reading above or below the range tested. (5) no attempt was made to select an interesting story although story interest is considered a motivation factor. (6) the selected sample was not representative of the population of second graders, since the subjects were primarily upper-middle class children.[2]

One other study was conducted in 1941 with culturally disadvantages children in Kentucky, using basal-like material that was written and illustrated for a project that attempted to disseminate dietary information through supplementary basal readers. The materials created constituted a "basal" series of three readers at three reading ability levels, with some eight to ten chapters, or stories, per reader. The study by Halbert, utilizing these materials, was intended to determine (1) the extent to which illustrations contribute to the comprehension of reading matter, and (2) the extent to which the stories and illustrations in the

---

[1]Koenke, The Effects of a Content-Relevant Picture, p. 2.

[2]Weintraub, "Effects of Pictures on Comprehension," p. 6-7.

readers are adapted to the environmental backgrounds and experiences of the children for whom the readers were prepared.[1]

A rather unique study, in that Halbert's sample was selected mostly from one-room schools in Jackson County, Kentucky, an area 100% rural according to the 1941 U.S. census, it is nevertheless quite pertinent to the question of picture-comprehension effects. Halbert states that the study is closely related to that of Miller.[2] Unlike Miller, though, Halbert tested the subjects individually with a one-shot approach.

Subjects were placed in three groups, each group equated on the basis of reading age and divided into three subgroups corresponding to the three levels of reading ability covered by the readers. A story, considered representative, with its accompanying illustrations, was selected from one reader in each series. The version given to a subject in a subgroup was one of three conditions: (1) text and illustrations, (2) text alone, or (3) illustrations alone. Comprehension was measured by the number of ideas stated by the subject after reading the selection orally or, in the case of illustrations only, after having looked at the pictures. The responses were classified as relevant or irrelevant, by comparing them with a list of story and picture ideas prepared in advance by the investigator. Operationally, relevant responses were sentences that contained a close description of a detail, an event, or a principle, stated in the child's own language. Irrelevant ideas were statements that were not related to the text or to the illustrator's stated topic for a

---

[1]Marie Halbert, "An Experimental Study of Children's Unverstanding of Instructional Materials," Bulletin of School Service, XV (1943): p. 7.

[2]Ibid., p. 9.

picture. Halbert used descriptive statistics and no tests of significance were performed on the data.

The results of the study indicated that the greatest number of relevant idea responses were associated with the picture and text format. The next greatest number of relevant ideas were associated with the text only format; and the least number of relevant responses were associated with the picture only format. Pictures only, however, evoked the greatest number of idea responses, but most of these responses were irrelevant. Halbert concluded from her results that "children get significantly more relevant ideas from a story with pictures than from the story alone or from the pictures alone," even when the "pictures used with the story yield relatively few relevant ideas when seen alone."[1] She considered the results all the more significant when it is noted that the materials were presented to the children without instructions to focus specifically upon the pictures. She also noted an almost complete absence of irrelevant ideas for the story with pictures. A further conclusion was that "when the stimulating effect of pictures is directed by reading matter, there is an increase in the number of relevant ideas."[2] A final conclusion was that "to the extent that memory for ideas is a measure of comprehension, to that extent pictures contribute to the comprehension of reading materials."[3]

The three studies just discussed are particularly pertinent to the present study in that they all use a similar technique of covering the illustrations, they all used subjects in the elementary and primary grades, they all used basal readers or highly similar materials, and

---

[1]Halbert, "Children's Understanding of Materials," p. 48.

[2]Ibid., p. 57.

[3]Ibid.

they all attempted to measure the effects of illustrations on comprehension. Halbert's study is expecially noteworthy in that she opted for a "free expression" type of response as a "satisfactory approach to measurement of comprehension" for the children of her study.[1] The term "free expression" refers to allowing the children to respond in their own language, with grading for meaning rather than exactness. Miller and Weintraub, for example, used an exact method of comprehension check, whereby the children's responses were graded according to a preset answer scheme. Weintraub noted that depending upon the criteria used for comprehension, various results have been obtained, and he recommended the measurement of broader aspects of comprehension.[2]

Other investigations of the effects of pictures on comprehension have been undertaken utilizing materials other than that of basal readers. Perhaps the earliest investigation was a series of three studies by Goodykoontz in 1936.[3] Since she did not describe her sample, question format, or specific aspect of comprehension tested, nor did she use statistical probability to test her findings, her studies are mostly of historical interest.

In all three studies the subjects read silently a twelve-page illustrated booklet about cork. In the first experiment, 294 children in seven different classes ranging in grades from 6th to 8th were used as subjects. They were given directions to read the material very carefully

---

[1] Halbert, "Children's Understanding of Materials," p. 59.

[2] Samuel Weintraub, "Illustrations for Beginning Reading," Reading Teacher, XX (1966): p. 63.

[3] Bess Goodykoontz, "The Relation of Pictures to Reading Comprehension," Elementary English Review, XIII (April, 1936): p. 125.

but were not told specifically to look at the pictures. The subjects were then tested with 13 questions about the text and 13 questions about the pictures. All children were given the same materials. Goodykoontz also asked the subjects to tell her whether they had looked at the pictures during the reading. She found that 6% had not looked at the pictures, 25% had looked at some of the pictures for fun after reading the text, and 50% had looked at the pictures as they came upon them in the text. The results of the testing showed no difference between the groups on questions concerning the text, an average of 9 out of 13, but a difference of 2 points on questions about the pictures, 2 of 13 as opposed to 4 of 13 correct, the higher score for those who had looked at the pictures. Goodykoontz concluded that it was necessary to direct the subjects to look at the pictures.

In a second study, Goodykoontz used ninety 6th-grade subjects to determine how effectively they could answer main point questions answered by the pictures when presented the text with the pictures. They read a short section from the same booklet on cork and then answered questions based on the text but answered specifically by the pictures. The group answered a median of 8 out of 13 questions correctly and Goodykoontz concluded that "if this proportion of comprehension of subject matter added by pictures, they seem to have considerable justification besides their decorativeness."[1]

In the third study, the same 6th-grade subjects read another section of the booklet about cork and then were asked to summarize all

---

[1]Goodykoontz, "The Relation of Pictures to Reading," p. 126.

the information they gained from looking at two pictures given to them after the reading. Goodykoontz found that a median of 2 points per child was added by information gained from the pictures beyond that of the text. Since 9 points and 7 points were possible for each picture respectively, Goodykoontz was somewhat disappointed by the results.

In a series of studies in 1953 and 1954, Vernon undertook a similar investigation of the effects of pictures on the reading comprehension of English school children. In an attempt to overcome the deficiencies of previous studies, Vernon installed many controls upon her investigation that were not used by earlier investigators. The first two studies were exploratory in nature, with the question asked: "Do pictures help or hinder the acquisition of knowledge from the text?"[1] The subjects were chosen from students attending an English grammar school, 14 boys and 21 girls, ages 16 to 18. Two informative articles of 700-800 words were used as reading materials, each rewritten to yield two versions of each article. Article A described the causes and cure of TB, and article B described causes of illness in young children. A_1 and B_1 were written in "popular" style and illustrated by "four rather striking photographs."[2] A_2 and B_2 were written "more objectively and scientifically" and were accompanied by graphs. Half the subjects read A_1 and B_2 and the other half read A_2 and B_1. After 10 minutes for reading and study of the articles and illustrations, each subject was asked to recall orally what the articles were about. The oral reports were scored

---

[1] Magdalen D. Vernon, "The Value of Pictorial Illustration," British Journal of Educational Psychology, XXIII (1953): p. 180.

[2] Ibid., p. 181.

for the number of major points recalled, the number of details, and then graded A through D for general coherence and logical consistency.

The second series of this investigation compared the amount of information remembered with and without pictorial illustrations. Two more versions of the articles were used here, A_3 and B_3 and A_4 and B_4, identical to the first versions but without illustrations. The subjects in this series were 24 boys and girls, ages 15 to 16 from a modern school. Task and method of scoring were the same as for the first series of studies, and the results of both series were comparably the same. The differences of percentage of major points recalled between illustrated and non-illustrated versions were not significant for both series of studies. Vernon did note, however, that "certain points in the text directly illustrated by pictures were recalled significantly better than those same points in the unillustrated version."[1]

On the basis of the studies performed, Vernon concluded that "although the pictures may weight some part at the expense of other, their effect upon a coherent recall of the whole was neither favorable nor unfavorable."[2] It should be noted, however, that 17% of the girls in series 1 and 25% of the boys in series 2 experiments found the "popular" versions of test A_1 and B_1 were too difficult, to the extent that they apparently "had not gained any coherent general idea of what the articles were about."[3] Their reports were graded "D" and an additional 39% and 23% of the reports on these articles were graded "C." It would appear,

---

[1]Vernon, "Value of Illustrations," p. 182.

[2]Ibid., p. 183.

[3]Ibid., p. 184.

therefore, that even with the careful controls in these experiments, the results are somewhat confounded by readability problems.

Vernon's second series of experiments in 1954 emphasized the instructional aspects of the picture-text relationship. In the first series, twenty-four girls ages 11 to 12 were used as subjects. Two fact articles were used, one concerning the process of publishing a newspaper, the other describing how ships are docked and unloaded. The texts were 755 and 940 words respectively. The selections were read under two conditions: (1) text with eight full-page illustrations and (2) text with eight black-and-white line drawings "of some objects mentioned in the text."[1] According to Vernon, the latter drawings gave much less information than the pictures but preserved the appearance of the booklets in terms of format and interest.[2] Subjects were asked six general questions after reading and studying the booklets. Vernon found no significant differences in the results between treatments. Again, though, it should by noted that the texts were so difficult that "only about half the possible statements were made correctly on the average."[3] Vernon concluded that "with material which is difficult to assimilate, pictures are not of much assistance."[4]

In the second experiment, the subjects were read to while they studied pictures relating to the text. The material concerned the change of inventions over time, the articles about 300 words long with

---

[1]Magdalen D. Vernon, "The Instruction of Children by Pictorial Illustration." British Journal of Educational Psychology, XXIV (1954): p. 171.

[2]Ibid.

[3]Ibid., p. 173.

[4]Ibid.

"simplified" language. The illustrations given to the subjects for study were one of three types: (1) ten pictures cut from the book and mounted separately, (2) three or four simple outline drawings on a single card, or (3) four photographs on a single card. The experimenter either presented or pointed to the appropriate picture while reading the related context. The task was to recall as much as possible of the sequence of events or the cause and effect relationship. No significant differences were found among treatments of material as measured by the comprehension test. On a scale of 0 to 100, 71% of the girls scored 40 or lower, whereas 25% of the boys scored 50 or lower. It would seem again that readability was a confounding factor.

Vernon concluded that the results of her experiments did not show that "pictures assisted either understanding or remembering of the verbal text."[1] She did note, however, that ther was a tendency for isolated items to be remembered better when they were specifically presented in pictures.

Koenke, noticing the "dubious quality and the conflicting results of previous investigations of the effects of pictures on reading comprehension," undertook an investigation to determine the extent that pictures can carry a main idea message and the extent that content-relevant pictures can aid the comprehension of the main idea of a paragraph.[2] His research was designed to overcome the shortcomings of previous efforts and controlled for readability of materials, sex and grade level of subjects, and the effect of giving directions to look at the pictures. He

---

[1] Vernon, "Instruction by Pictorial Illustration," p. 178.

[2] Koenke, Effect of a Content-Relevant Picture, p. 6.

dealt with a specific, rather than global, aspect of comprehension and carefully described the relationship between pictures and written materials.

The sample was balanced with an equal number of boys and girls, 60 each from the third grade and 60 each from the sixth grade, a total of 240 subjects. All subjects were tested individually by the investigator. Five combinations of material format and directions were used: (1) pictures only, (2) text only, (3) pictures and text with no directions to look at the pictures, (4) pictures and text with minimum directions to look at the pictures, and (5) pictures and text with maximum directions to look at the pictures. Three black-and-white ink drawings were done by a professional illustrator to illustrate the main ideas in three four-sentence paragraphs developed at first-, third-, and sixth-grade readability levels. The subjects were required to state main ideas in their own words. Their responses were then scored by comparing them to a previously prepared list of main ideas, with partial credit given. No significant differences were found between treatments.

Koenke concluded from the results that "pictorial representations of a main idea do not necessarily evoke adequate main idea responses."[1] He further concluded that directions to use the pictures do not enhance responses, that sex or grade placement has no effect, and that lowering the readability level of the material below that attained by the subject enhances responses.

In a later study, Koenke and Otto sought answers to two questions

---

[1]Koenke, Effect of a Content-Relevant Picture, p. 24.

in an investigation intended to duplicate as close as possible a typical reading situation: (1) will pictures help pupils formulate and state the main idea of a paragraph when it is accompanied by a picture, and (2) will the main ideas be enhanced by explicit rather than general pictures?[1] The subjects were 180 boys and girls from third and sixth grades. They were randomly selected from a population of 240 pupils and randomly assigned by grade and sex, with an equal number of boys and girls assigned to each cell in a 2x3x3 factorial design. The effect of pictures was examined under two conditions of readability: (1) with the third graders reading fifth-grade material and (2) with the sixth graders reading the same fifth-grade material.

Three passages of 198 words were adapted for the study from Reader's Digest Reading Skill Builders. The main ideas of each passage for purposes of scoring were consensus statements of adults who had read the passages for main ideas. Each subject was tested individually with no directions given to look at the pictures. The subjects read silently and were then asked to state in one sentence what they had read meant to them. Three modes of presentation were used: (1) text with a picture specifically relevant to the main idea, (2) text with a picture generally relevant to the main idea, and (3) text without picture.

For the sixth graders, significantly higher scale ratings were noted for responses of pupils who read the easy-material text with pictures than for those who read the easy-material text without pictures. No significant differences were noted for third graders who had read the

---

[1] Karl Koenke and Wayne Otto, "Contribution of Pictures to Children's Comprehension of the Main Idea in Reading," Psychology in the Schools, VI (1969): p. 298.

difficult material, either with or without pictures. The authors concluded that sixth graders will "look at an accompanying picture and use it to enhance their understanding of the main idea..." and that "as long as pictures have general relevance to a topic, their presence is likely to enhance main idea responses even in the absence of explicit directions to attend to them."[1]

Koenke's earlier findings, which indicated no enhancement of main idea through accompanying pictures, were attributed to the possible effect of the use of short passages (50 words or less) as opposed to the longer passages used in this study (200 words).[2] The authors suggested the possibility of a decoding problem for third graders reading difficult materials, which prevented them from grasping enough of the passage content to make use of the pictures. They did not feel that third graders were inherently incapable of giving "higher level responses."[3]

The cloze test procedure has been used as the measurement criteria in two studies of the effects of illustrations on comprehension. The first was by Rankin and Culhane using a 50-item cloze test for a text-with/text-without illustration experiment. The subjects were 57 sixth graders and 22 graduate students. A fact article was taken from the World Book Encyclopedia and two versions developed: (1) printed text with illustrations and (2) typed text without illustrations. For the entire article ther were 17 color and black-and-white illustrations—"seven of which were pertinent directly to the topic of the passage upon

---

[1]Koenke and Otto, "Contribution of Pictures to Comprehension," p. 301.

[2]Ibid.

[3]Ibid.

which the cloze test was based."[1] The sixth graders were assigned randomly to the two format groups and the graduate students were assigned on an odd-or-even-number basis. The groups reading from the printed version with illustrations answered the cloze items as they read the article, whereas the groups reading the typed version answered the cloze items after reading the passage.

Results indicated that only graduate students made significantly higher cloze test scores using the printed format with illustrations. The authors concluded that "it is apparent that pictures may facilitate comprehension among graduate students who have learned to use pictures as contextual clues"...but that "intermediate-grade children do not use pictures as aids to comprehension."[2]

Bluth used a cloze test passage with and without illustration to investigate the reading comprehension of good and poor readers in the second grade. She used a total of 80 subjects chosen at random from the public schools of a Midwestern city. Children scoring within the top three stanines were referred to as good readers and those scoring within the lowest three stanines were referred to as poor readers. Subjects were selected from a group of 234 second-grade children by use of the subtest "Paragraph Meaning" of the Stanford Achievement Test.

Two different passages of 126 words each with every fifth word deleted, one with illustrations, one without, were used as test materials. Her results indicated that "the difference between passage with

---

[1]Earl F. Rankin and Joseph W. Culhane, "One Picture Equals 1,000 Words?" Reading Improvement, VII (1970); p. 38.

[2]Ibid., p. 40.

illustration and passage without illustration within poor readers was not significant." But "the difference between passage with illustration and passage without was significant with good readers in favor of illustration."[1] Her results are in contrast to Weintraub's findings regarding poor readers and so do not support the conclusion of Rankin and Culhane that only graduate students are sophisticated enough in reading techniques to benefit from illustrations.

Summary of Comprehension Studies

It seems evident from the research cited that no final statement concerning the picture-reading comprehension relationship can be drawn. Further, and perhaps more important, it appears that the common element in the relationship, if indeed one exists, has not as yet been identified. Miller, using basal readers, a large sample, and a unique test of comprehension, failed to attain significant results. Weintraub, also using basal readers, concluded in favor of text alone. Yet, Halbert, using basal-like materials and a limited measure of comprehension, concluded in favor of text with pictures. Koenke and Otto, also using a limited test of comprehension, supported Halbert's conclusions. Vernon, on the other hand, using a limited measure similar to Halbert, did not conclude that pictures enhanced comprehension. Weintraub has argued in favor of a more global measure of comprehension. Both Rankin and Culhane and Bluth, using a global measure of comprehension, have found significant differences in favor of text with illustrations, but only for specific parts of their samples, Bluth for good readers only, Rankin and Culhane for graduate students.

---

[1]Bluth, "A Comparison of Reading Comprehension," p. 37.

Grade level is apparently not crucial. Rankin and Culhane concluded that graduate students were sensitive to the presence of illustrations but that sixth graders were not. Koenke and Otto, however, attained significant results in the responses of sixth graders but found no main-effect differences among third graders. Bluth, on the other hand, found significant main-effect differences among second graders.

Directions to look at the illustrations, considered by Goodykoontz to be a necessary consideration, have not been a crucial factor in the study by Halbert nor in the investigations of Koenke and Koenke and Otto, the latter pointedly controlling for this factor. The relevance of picture to text, considered important by Vernon and Weintraub, was tested by Koenke and Koenke and Otto and not found to be significant.

Disappointing performances of subjects were noted by Goodykoontz and Vernon, with difficulty of reading materials alluded to as causative. Halbert controlled for readability and matching ability levels and noted satisfactory responses within the language limitations of the subjects. Koenke and Koenke and Otto, also controlling for readability, found that material below the reading ability level of the subjects enhanced responses. The differences were not considered crucial, however, unless extreme. Passage length was considered a limiting factor in Koenke's study, but the limitation apparently applies only to very short (paragraph length) passages. Bluth used passages of just over 100 words, Koenke and Otto, of approximately 200 words, and Halbert and Weintraub, full chapters--all finding significant differences in their results. Goodykoontz and Miller, on the other hand, using long passages did not achieve significant differences. It seems apparent that some control for readability

levels is necessary to avoid confounding results on this dimension.

Word Recognition Studies

Other investigations have studied the effect of pictorial material in learning to recognize words. Usually these studies have measured the ability of children and adults to learn to recognize isolated words with or without the aid of pictures. As Weintraub points out, however, "it must be emphasized that this is quite a different problem."[1] Nevertheless, the question of whether illustrations in beginning reading materials have any value or function is often answered based upon results of these studies. Yet a review of the literature in this area discloses inconsistent and contradictory findings.

The allure of these studies is that structurally they constitute a definable research tradition with a number of common elements. Most of the studies, for example, use a similar population of kindergarten or first-grade beginning readers, pretesting to ensure no knowledge of the words to be learned, comparable stimulus materials, word lists of four to sixteen words, a trials-to-criterion learning paradigm, acquisition trials alternated with test trials; and they are usually considered studies of sight-word recognition learning. The dependent variables are usually time-to-criterion, the number of test trials to criterion, the number of words correct on acquisition trials and on test trials, and the number of words correct on posttests or retention tests.

One of the first studies in this tradition was that of King and Muehl in 1965. They asked the general research question: "What sensory

---

[1]Weintraub, "Illustrations for Beginning Reading," p. 65.

cues, or combination of cues, make for the most effective learning situation when children are being taught sight words?"[1] Using 210 kindergarten children as subjects assigned to 10 groups, they attempted to teach lists of four similar sight words and four dissimilar sight words using five methods: (1) word with picture, (2) word and auditory cue, (3) word with picture and auditory cues, (4) word with auditory cue and echoic response, (5) word with picture and auditory cues and echoic response. The results of their study indicated that when the words were similar, a picture accompanying the printed words aided in learning; but when the words were dissimilar, the auditory method was best. They concluded that "the findings do not support the view that pictures whould be dispensed with in teaching sight words or in beginning reading materials."[2]

Samuels has taken exception to the findings of King and Muehl, stating that "their conclusion is probably valid only when the procedure used in their study is followed."[3] After reviewing the literature, Samuels concluded that "there is general agreement that pictures interfere with the acquisition of a sight vocabulary."[4] In his own study, in 1967, to determine the effect of pictures on learning to read words, Samuels conducted both a laboratory and a classroom study with two groups of randomly assigned kindergarten children.[5] In the laboratory study, the children

---

[1]Ethel M. King and Siegmar Muehl, "Different Sensory Cues as Aids in Beginning Reading," The Reading Teacher, XIX (1965): p. 163.

[2]Ibid., p. 167.

[3]Samuels, "Effects of Pictures on Learning to Read," p. 402.

[4]Ibid.

[5]S. Jay Samuels, "Attentional Processes in Reading: the Effect of Pictures in the Acquisition of Reading Responses," Journal of Educational Psychology, LVIII (1967): p. 337-342.

learned to read four words either with a picture or without a picture. For the learning trials in the picture condition, a relevant picture accompanied the word which was printed on a card. In the no-picture condition, only the word appeared on the card used for instruction. On test trials, only the printed words appeared on the cards.

Subjects were 30 kindergarten children, randomly assigned to one of three experimental treatments, 10 subjects each in a no-picture, simple-picture, and complex-picture group. Subjects were pretested to assure no knowledge of the words to be learned. The words were typed on cards, one word per card. The simple picture was a black-and-white drawing of the object symbolized by the word; the complex picture was a colorful picture taken from a reading primer. The subjects were given learning and test trials individually, with 4 seconds as time-to-criterion, 10 learning and 10 test trials alternated. Results indicated that in acquisition trials, subjects in the simple-picture and complex-picture groups gave significantly more correct responses. In test trials, however, the no-picture group gave significantly more correct responses. Samuels noted that subjects in the picture conditions tended to use pictures rather than words as cues and concluded that pictures functioned as distracting stimuli.[1]

In the second experiment, 52 first graders were used in a classroom setting, with 26 subjects in a picture condition and 26 in a no-picture condition. The groups were matched according to pretest scores, half of each group below and half above the median. The test consisted of 50 words from a 106-word story, which was read under both conditions. One

---

[1]Samuels, "Attentional Processes in Reading," p. 340.

picture accompanied the text in the picture condition. Both groups were given instruction similar to regular classroom instruction. During the reading, if a child didn't know a word, the examiner whispered the word in the child's ear. The posttest was administered immediately following the reading.

Results indicated no significant differences between treatments for above-median subjects, but significant differences for below-median subjects in favor of the no-picture condition. Samuels concluded that "considering the effect which pictures had on reading acquisition of naive and less capable students, one may wonder if it is good practice to put pictures in reading primers."[1]

One of the basic assumptions for his research is that "although pictures may be used as prompts when the student cannot recognize a word in the text, pictures may miscue and divert attention from the printed word."[2] The basis for this assumption lies in the central role of attentional processes in learning. Pavlov, for example, found that competing distracting stimuli had to be eliminated in order to classically condition an animal. Other investigators have noted the interference with learning of distracting background stimuli for humans as well as animals, and have implicated the ability to withold attention selectively from irrelevant and distracting background stimulation in reading disability.[3] The reason frequently offered to explain why pictures are detrimental to word learning is that pictures distract the reader's attention from

---

[1]Samuels, "Attentional Processes in Reading," p. 341.

[2]Samuels, "Effects of Pictures on Learning to Read," p. 398.

[3]Samuels, "Attentional Processes in Reading," p. 337.

distinctive features of the printed stimulus so that when, on testing, pictures are removed, pupils who have learned with pictures perform less well than pupils who have learned with words alone. This position and related positions have come to be characterized as the "focal attention hypothesis:"

> The focal attention hypothesis acknowledges that pictures or context can cue or prompt a correct response to printed words; but, if the reader depends upon these cues to anticipate the unknown words, he may not acquire appropriate responses to the graphic features of the word itself. Consequently, in connected discourse, he may seem to know the word because he correctly anticipates it; but when tested on the word in isolation, his inability to identify the word will reveal that he did not acquire an accurate response to the word itself.[1]

In 1973, Singer, Samuels, and Spiroff undertook a study that attempted to resolve the focal attention versus the context controversy, a contrasting hypothesis attributed to Goodman. "Goodman's contextual hypothesis states that children do not need to have the word presented in isolation--that presenting new words in context is all that is needed for children to acquire correct oral responses to them."[2] The authors reduced the controversy to "the question of what instructional conditions will best help a child learn to recognize a new word."[3]

Subjects in the study were randomly assigned to four experimental conditions: (1) word-picture, (2) word-no-picture, (3) sentence-picture, (4) sentence-no-picture. For the word-picture and word-no-picture conditions, four words were printed on separate cards in an artificial

---

[1]Harry Singer, S. Jay Samuels, and Jean Spiroff, "The Effect of Pictures and Contextual Conditions on Learning Responses to Printed Words," Reading Research Quarterly, IX (1973-1974); p. 556.

[2]Ibid.

[3]Ibid., p. 557.

alphabet, with pictures of the objects named pasted on the word-picture cards. For the sentence-picture and sentence-no-picture conditions, the same words were used in sentences of three to four words length, printed in standard English alphabet, the sentence-picture cards including a picture pasted above the sentence.

The subjects were examined individually, asked to look at the word, put a finger under it, and say the word. A limit of 7 seconds was allowed for a response.

The results indicated that the word-no-picture condition required significantly fewer trials to criterion. The authors also found that as the number of cues associated with the target word increased, the number of trials to criterion consistently increased. They concluded that Samuels' focal attention hypothesis was supported by the results of the study.

The results of other studies are also supportive of Samuels' position. Braun investigated the differential effects in rate of acquisition and retention of textural responses involving varying sensory modalities: a word plus auditory cue and a word plus auditory-picture cues. Using 240 kindergarten children as subjects and two sets of four sex-typed words presented in two conditions, he found significant differences in favor of word plus auditory cue. The results of retention testing also favored auditory cuing only. Braun concluded that pictures as cues are distracting, especially for low ability pupils.[1] Harris, in a

---

[1]Carl Braun, "Interest Loading and Modality Effects on Textural Response Acquisition," Reading Research Quarterly, IV (1969); p. 428-444.

study similar to Braun's, investigated the rate of acquisition and retention of interest-loaded words by low socioeconomic kindergarten children. Whereas Braun found significant differences in acquisition and retention of interest-loaded words, Harris found no significant difference on interest-loading. On the other hand, Harris' findings agreed with those of Braun concerning the picture-word presentation methods, with the simultaneous presentation of picture and word resulting in lower acquisition of words. Harris concluded that picture cues "may serve as distracting stimuli during initial acquisition."[1] Harzem, Lee, and Miles investigated the effects of pictures on learning to read under four treatment conditions: (1) word with picture of the object named by the word, (2) word with a picture of an object unrelated to the word, (3) word with a nonsense picture not resembling any object, and (4) word without a picture of any kind. Using 20 subjects from primary school and 16 words selected from a popular reading series, with four words randomly assigned to each of the four conditions, they tested for rate of acquisition and for retention. They found that the no-picture condition was most favorable for learning to read. That condition was also best for retention. Their results indicated that the adverse effect of pictures depends on how close the picture is related to the word, with a direct equivalence least favorable.[2] Ollila and Olson investigated the effectiveness of three different methods of presenting new words to children: (1) word with auditory cue,

---

[1]Larry A. Harris, "A Study of the Rate of Acquisition and Retention of Interest-Loaded Words by Low Socio-economic Kindergarten Children," (unpublished Doctoral Dissertation, University of Minnesota, 1967), p. 155.

[2]P. Harzem, I. Lee, and T.R. Miles, "The Effects of Pictures on Learning to Read," British Journal of Educational Psychology, XLVI (1976): p. 318-322.

(2) word with picture, (3) word with an object that represented the word. Using 150 kindergarten children for subjects and four words from a high-frequency list, they tested rate of acquisition with a 5 second time-to-criterion. Results indicated a significant difference in favor of the word only method for boys. They concluded that the word method was the most efficient means for learning.[1]

Kiraly and Furlong, on the other hand, investigated the effects of four presentation treatments on rate of word acquisition and denied the distraction effect on the basis of their methodology. Presenting words in four stimulus conditions: picture, initial word sound, word configuration, and geometric figure--they tested 40 kindergarten children for rate of acquisition of four words with a 4 second time-to-criterion. The results indicated no significant differences. They concluded that three commonly used methods for teaching reading are equally effective. In denying the distraction effect, they stated that Samuels, Harris, and Braun used pictures as incidental cues in instruction of new words, but that when used in a direct method, as in their study, all cue-word combinations were effective. The initial word sound treatment tended to be the most effective.[2] Hartley investigated the effects of list types and cues on the learning of word lists, using 137 first-grade subjects who had no prior reading instruction. Three types of cues were considered: (1) word only, (2) word with picture cue, and (3) word with contest cue. The word

---

[1]Lloyd O. Ollila and James H. Olson, "The Effect on Learning Rate of Pictures and Realia in the Presentation of Words to Kindergarteners," The Journal of Educational Research, LXV (March, 1972): p. 312-314.

[2]John Kiraly Jr. and Alexandra Furlong, "Teaching Words to Kindergarten Children with Picture, Configuration, and Initial Sound Cues in a Prompting Procedure," The Journal of Educational Research, LXVII (March, 1974): p. 297.

list types were minimal contrast words (alike except for one element) and maximal contrast words (no elements alike). Subjects were taught and tested individually, with study and test trials alternated, 10 each in one day. Results of posttest scores indicated that the word plus picture facilitated learning of maximum contrast list words. Results of transfer-test scores indicated that the word plus picture condition facilitated learning on both the minimum and maximum contrast word lists. Hartley concluded that a picture cue may facilitate learning of an initial reading vocabulary.[1]

The most serious challenge to Samuels' findings and focal attention hypothesis comes from a study by Montare, Elman, and Cohen. They replicated Samuels' 1967 experiments and found no significant differences on test trials. Significant differences in favor of simple-picture over complex-picture presentation during acquisition trials, they said, was confounded by verbal feedback for error responses. They found that the no-picture group required 88% of the total amount of feedback provided by the experimenter. Only 1% of the feedback was required by the simple-picture group and 11% by the complex-picture group.[2] They also believed that in Samuels' word list the same initial consonants for the words boy and bed were a source of confusion. They used his list to determine the relative frequency of first-consonant confusion for the three treatments. The no-picture group confused the words 24 times, while the other groups

---

[1]Ruth N. Hartley, "Effects of List Types and Cues on the Learning of Word Lists," Reading Research Quarterly, VI (1) (1970): p. 120.

[2]Alberto Montare, Elaine Elman, and Jeanne Cohen, "Words and Pictures: a Test of Samuels' Findings," Journal of Reading Behavior, IX (1977): p. 275.

had no confusions at all. The difference was significant.[1] They concluded that a picture can help distinguish initial consonants in teaching. Based on the significant differences in favor of simple-picture treatment during acquisition trials, they concluded that "the only test of attentional differences that appears to be experimentally sound is that of the comparison between the simple and complex picture groups."[2]

They also replicated Samuels' second experiment but found no significant differences between picture and no-picture treatments. Their final conclusion was that pictures do not lower the reading performance of young children. "To the contrary, significantly higher levels of performance were demonstrated in the present study and in the Samuels' original study that indicate pictures facilitate the initial acquisition of reading responses to printed words."[3]

Summary of Word Recognition Studies

It is readily apparent in a review of word recognition studies that the findings are far too inconsistent and contradictory to support any final statement regarding the effects of pictures on word recognition. It is also apparent that any generalization of those findings to the effects of pictures on reading is both premature and supererogatory.

The issue of the effects of presentation of pictures and words on the learning of similar and dissimilar word lists is confounded by contradictory findings. King and Muehl found pictures facilitative in the

---

[1] Montare, Elman, and Cohen, "Words and Pictures," p. 276.

[2] Ibid.

[3] Ibid.

learning of similar words, but Hartley found pictures facilitative in the learning of dissimilar words. Ollila and Olson found no significant differences. Kiraly and Furlong also found no significant differences; but based on the performance of their subjects, they concluded that pictures with words or word configuration methods were better than the method of presenting words alone. Studies by Harzem, Lee, and Miles; Samuels; Singer, Samuels, and Spiroff using dissimilar word lists have found the method of presenting word only better than that of presenting the word with a picture.

The picture/no-picture dimension is also confounded by a questionable temporal order of cueing. Montare, Elman, and Cohen discovered that in most studies the picture cue and word are presented simultaneously, but the verbal cue is provided as feedback. They concluded that the method may confound results because type of presentation may influence word learning. They also believed that the medium of presentation (picture or no-picture) and voice feedback have been confounded. They found in their study that the simultaneous presentation of the picture with the word to be learned did not require much verbal feedback since the picture prompted the correct response. In contrast, in the no-picture condition the graphic features of the word were insufficient to prompt the correct response, so much more feedback was necessary.

Certainly the significant findings of King and Muehl, and Hartley, and the observations of Kiraly and Furlong seriously challenge Samuels' focal attention hypothesis, giving cause to limit its applicability to studies using pictures as incidental cues in the instruction of new words. For purposes of this study, it seems that the conclusion

of Singer, Samuels, and Spiroff concerning the dichotomous hypotheses of Samuels and Goodman casts a proper light on the issue:

> Goodman's results can be attributed to the process of reading, in which semantic and syntactic constraints can be used for predicting unknown words. With a minimum of sampling of the unknown words, a high percent of accuracy in identifying them can be attained. The present study emphasizes the processes of learning in which focal attention on the unknown words is a prerequisite to such subsequent processes as discrimination, hooking-up responses to graphemes, and reinforcement of correct responses. Thus, the Goodman-Samuels controversy can be at least partially resolved by realizing that they are referring to 2 different, but interrelated, processes: the reading process and the learning process.[1]

Psycholinguistics and Miscue Analysis

The underlying thesis of the present investigation is based on the psycholinguistic perspective of reading as propounded by Goodman and Smith. Such a perspective allows the reader, whether proficient or beginner, to be conceived of as potentially fluent in the language of the text.[1] Also this perspective no longer necessitates the treatment of pictorial information as either adjunct or antagonistic. In fact, by utilizing the models of skilled reading set forth by Goodman and Smith, a trade-off between visual and non-visual information can be postulated so that the more of the latter that the reader can contribute, the less of the former he need sample in order to identify a word correctly or comprehend the author's meaning. In this view, pictures are a partial contribution to the non-visual, or subjective redundancy, and introduce additional information that the reader can and will use. In summary, this is a view of a reader who will piece together pictorial cues along with

---

[1]Kenneth S. Goodman, "Analysis of Oral Reading Miscues: Applied Psycholinguistics," in Psycholinguistics and Reading, ed. Frank Smith (New York: Holt, Rinehart, and Winston, 1973), p. 159.

semantic, syntactic, and graphic cues to derive a tentative notion of the author's meaning and narrative intent and predict thereby the identity of words in context.

The models of the reading process set forth by Goodman[1] and Smith[2] are models of skilled reading based on what fluent readers do. In these models, identification of a word during fluent reading is seen to result from an interplay of information from various sources. Smith's basic model of the reading process postulates a duality in the information available to the reader during the reading process. On the one hand, there is the "visual information" which is derived from the printed page and "seen through the eyes, " and on the other hand, there is "non-visual information" which lies behind the eyes and is "seen with the brain."[3] The distinction between visual and non-visual information is given first importance in psycholinguistic theory because the relationship is reciprocal and ultimately necessary. Reading, to occur, requires some degree of both to be present. And when both are present, "within certain limits, one can be traded off for the other," the more of one that is available, the less of the other that is needed by the reader. On that basis, Smith states that non-visual information lies at the core of reading.[4]

The fluent reader is used as the basis for the reading model because "what fluent readers are able to do is...precisely what

---

[1]Kenneth S. Goodman, "Reading: a Psycholinguistic Guessing Game," in Theoretical Models and Processes of Reading, eds. H. Singer and R.B. Ruddell (Newark, Del.: International Reading Association, 1970)

[2]Frank Smith, Understanding Reading, p. 9

[3]Ibid., p. 5.

[4]Ibid., p. 7.

beginning readers must learn to do."[1] The model has relevance for second-grade readers because "fluency" in psycholinguistic theory is defined by a demonstrable process that can occur at any reading level within the limits of expected interaction. The fluent reader is that reader who relies increasingly on his knowledge of sequential redundancy (visual, orthographic, syntactic, and semantic) and only minimally on information in the graphic array. His fluency as a reader depends upon his use of non-visual information to reconstruct the message encoded in the display by the writer. Since reading relies on some recognition of the graphic display, the trade off between visual and non-visual information must be seen as partial rather than complete. Because some readers are unable to exploit the total constraint or structure that exists in the reading material, it can be said that "subjective redundancy" (the amount of usable constraint available) is far less than that of the skilled reader. In order to reduce the gap between subjective and objective redundancy, some additional information must be introduced into the task.

There is ample evidence that children achieve a good measure of success in understanding pictures and that pictures facilitate understanding. Bruner and Mackworth, for example, have noted that "children are smarter with pictures than words."[2] Levin has concluded from his summary of research of children's learning that they learn better when materials are presented in pictures.[3] And Lesgold and De Good found that 1st graders

---

[1]Smith, Understanding Reading, p. 9.

[2]Jerome Bruner and N.H. Mackworth, "How Adults and Children Search and Recognize Pictures," Human Development, XIII (March, 1970): p. 171.

[3]Levin, Maximizing What Children Learn? p. 28.

lacking skills or capacities for efficiently organizing their memories for verbally presented information benefit from illustrations which provide a simple external memory.[1] The introduction of an additional source of information in the form of a picture can be viewed as a means of increasing the subjective redundancy of the task. This view is postulated on the theoretical consideration that "a reader's comprehension of the whole can contribute to comprehension of the parts, and even to the learning of words that are unfamiliar."[2]

In miscue analysis reading is considered a language process, the reader regarded as a user of language and in search of meaning from what he reads. All acts of the reader are considered caused and reading errors reflect the way the reader is processing language for meaning. A miscue, as opposed to an error, is any observed response (OR) that is different from an expected response (ER) to print. The reader is regarded as a competent user of the language and miscues a reflection of an attempt to be efficient while reading.[3]

Psycholinguistic theory is a means to interpret OR and ER. Goodman sees the comparison of OR and ER in miscues as "a powerful means of inferring the process readers are using in dealing with specific reading tasks."[4] When reading is as expected (ER) the process is not discernible, but when it has produced miscues (OR) then the information used by

---

[1]Alan M. Lesgold and Hildrene De Good, Pictures and Young Children's Prose Learning, (Arlington, Va.: ERIC Document Reproduction Service ED123604, 1976), p. 11.

[2]Smith, Understanding Reading, p. 19.

[3]Kenneth S. Goodman, "Miscue Analysis: Theory and Reality in Reading," in New Horizons in Reading, ed., John E. Merritt (Newark Del.: International Reading Association, 1976), p. 15.

[4]Ibid., p. 19.

readers and the ways in which they use it is revealed.

A taxonomy for analysis of miscues has emerged, with a series of questions to be asked about each miscue. Each question is asked independently. What emerges from this inquiry is the "pattern of how the cueing systems are used" during reading.[1] The taxonomy is suitable for depth research on small numbers (three to six) of subjects. A simpler form has been developed by Yetta Goodman and Carolyn Burke with only the more significant questions. It is known as the Reading Miscue Inventory and is suitable for research or diagnosis.[2]

For purposes of this study, the Reading Miscue Inventory (RMI) was used as the measurement instrument. The RMI approach to diagnosing reading behavior is unique in that it is derived directly from a theory of reading which is supported by a substantial amount of research evidence.[3] The assessment, based on the psycholinguistic theory, would reflect the reader's background; his language development, dialect, and previous experience.[4] As Singer points out, the strength of the RMI is that it is based upon and is consistent with the psycholinguistic theory of reading.[5] The rationale for evaluation of miscues "is based not only on their departures from expected responses but also on whether they result in changes from textual meaning and whether the reader tests for

---

[1]Goodman, "Miscue Analysis," p. 16.

[2]Ibid., p. 17.

[3]Nicholas J. Anastasiow, "Tests and Reviews: Reading—Oral," in Eighth Mental Measurements Yearbook, ed. by O.K. Buros (New Jersey: The Gryphon Press, 1978), p. 1318.

[4]Ibid.

[5]Harry Singer, "Tests and Reviews: Reading--Oral," in Eighth Mental Measurements Yearbook, ed. by O.K. Buros (New Jersey: The Gryphon Press, 1978), p. 1320.

meaning consistency and attempts to self-correct miscues."[1] The analysis, using the RMI, evaluates the unexpected responses produced in oral reading by asking questions about the substitutions, omissions, insertions, and reversals of clause, phrase, words or word parts which readers produce while reading. There are nine RMI questions that evaluate

> 1. the degree of graphic, phonemic, syntactic, and semantic similarity of word substitutions;
> 2. the degree to which miscues result in sentences which are semantically and syntactically acceptable;
> 3. the type of grammatical transformations which result from miscues; and
> 4. the degree to which miscues change the meaning and grammatical structure of a given text.[2]

In addition to the nine RMI questions the inventory provides for evaluation of the reader's retelling ability and general comprehension of the material read.

The weaknesses of the RMI arise mainly from the lack of standardization. Variations in materials used by the tester in terms of novelty, level of difficulty, and comprehensibility—will adversely affect reliability and validity of the diagnosis and restrict generalizability of results.[3] Although, as Singer notes, the RMI manual advises teachers "to select any material that is 'novel' to the reader, one grade level above material 'usually' assigned in class to the reader," that would appear to place the student in material at his or her frustration level.[4] Singer recommends the "use of a survey test to determine a student's

---

[1]Singer, "Tests and Reviews," p. 1320.

[2]Yetta M. Goodman, "Miscues, Errors, and Reading Comprehension," in New Horizons in Reading, ed., John E. Merritt (Newark, Del.: International Reading Association, 1976), p. 86.

[3]Singer, "Tests and Reviews," p. 1320.

[4]Ibid.

level of reading ability" and the application of a readability formula "to select and confirm that a reading selection is one level above the student's reading level."[1] For purposes of this study, classroom materials currently in use for each student were used to determine the student's instructional level of reading, the level that was used for testing. Available standardized test results of reading performance were used to identify "average" ability students, a readability formula was applied to classroom reading materials to determine instructional level, and a readability formula was applied to material selected for use with the RMI to ensure a matching instructional level.

Readability

Definitions of readability usually stress three aspects of the reading process: comprehension, fluency, and interest.[2] Since the three factors are very different and bear little relationship to one another, the measures of readability "we encounter often involve only one of the elements in the definition," that which leads to comprehension, that is, "upon the understanding of words and phrases, and the relating of ideas in the passage to our experience."[3]

Gilliland has identified three alternative methods of assessment of readability which involve: (1) determination of the ease of reading, (2) determination of interest or compellingness, and (3) determination of ease of understanding.[4] Ease of reading is really a measure of

---

[1]Singer, "Tests and Reviews," p. 1321.

[2]John Gilliland, Readability, (Warwick Lane, London: Hodda and Stoughton, Ltd. St Paul's House, 1972), p. 13.

[3]Ibid., p. 14.

[4]Ibid., p. 83.

visibility and legibility of the printed text; interest and compellingness measures human interest, density of ideas, or aesthetic judgments of style; understanding or comprehension measures characteristics of words and sentences, such as length, frequency of occururece, and complexity. The most frequently adopted method is that of measuring understanding or comprehension, since for theoretical, technical and practical reasons, it presents fewer problems and offers greater possibilities for wide and frequent usage.[1]

Harris is in agreement with the general definition of readability and its elements, as stated above, and has opted for the use of basal reader series, a practice common in the United States, for the development of his own formula.[2] The Harris-Jacobson readability formulas[3] were used for this study, since the materials used in it were basal readers. These formulas were based on the Basic Elementary Reading Vocabularies developed in 1972 by A.J. Harris and M.D. Jacobson, using six basal reader series. Readability was narrowly defined, as those characteristics of reading material which make for ease or difficulty in reading comprehension. Harris considers the most important element in the difficulty of reading material is the difficulty of the vocabulary employed, and the readability formulas are a means to measure the percent of words not found on a list of common, easy words.[4]

---

[1]Gilliland, Readability, p. 84.

[2]Albert J. Harris, "Some New Developments on Readability," in New Horizons in Reading, ed., John E. Merritt (Newark, Del.: Internation' al Reading Association, 1976), p. 332.

[3]Albert J. Harris and Milton D. Jacobson, "The Harris-Jacobson Readability Formulas," in How to Increase Reading Ability, Albert J. Harris and Edward R. Sipay (New York: David McKay Company, Inc., 1975), p. 662.

[4]Harris, "New Developments on Readability," p. 335.

The two formulas have the same high multiple-correlation coefficient with the criterion, represented by an R of .90. The relative accuracy of prediction from that correlation is .81, with a standard error of estimate of .384 for formula 1, which was used for this study.[1]

Pictorial Illustrations

Since this is a study of the effect of illustrations upon reading performance, it seemed rather pertinent to review the major findings of investigations regarding preferences and functions of illustrations in books for children, a task none of the basal studies attended to. Apparently, previous investigators have either relied upon conventional wisdom, which is that children like books that have pictures with very brilliant colors, or upon the judgment of professional illustrators, or have taken for granted that illustrations of any kind contribute to the reading task at hand. None of the studies referred to have mention of a rationale for choice of illustration beyond the commentary that the illustrations depicted what was in the text.

As Weintraub points out, pictures may serve different purposes, such as being merely "pretty," or depict what is in the text, or supplement or add to the information found in the story.[2] Malter, after analyzing eight available preference studies, concluded that children must like color over black-and-white illustrations and that there was a marked preference for story-telling qualities as opposed to static illustrations, that is, children preferred a picture that contained a number of

---

[1]Harris-Jacobson, "Readability Formulas," p. 663.

[2]Weintraub, "Illustrations for Beginning Reading," p. 63.

interacting objects.[1] To Malter's conclusions may be added those of Rudisill, who investigated the preferences of children concerning five types of illustrations: uncolored photograph; colored photograph; colored drawing, realistic; outline drawing, realistic; colored drawing, decorative but unrealistic. Her results indicated that realism was a more important factor than color, given similar realistic content. If the colors are constant, the realistic style is preferred; if the subject matter is the same, children prefer an uncolored illustration which gives them the impression of reality to a colored one that does not conform to reality. In terms of amount of color, children prefer realistic pictures even if they have less color. Rudisill concluded that adults have over-emphasized color as a child's primary basis of preference and that children apparently seek first to recognize content. Assuming a certain content, any picture "proves satisfying to a child in proportion to its success in making that content appear real or lifelike."[2]

Whipple supports Rudisill's conclusions, with several refinements. In addition to realism, children prefer illustrations with a center of interest; that depict action, especially sequential action; that are larger and more in number; and that deal with eventful topics.[3] Although preference for colors persists, Amsden has shown that younger children prefer light

---

[1]Morton S. Malter, "Children's Preferences for Illustrative Materials," Journal of Educational Research, XLI (5) (January, 1948): p. 383.

[2]Mabel Rudisill, "Children's Preferences for Color Versus Other Qualities in Illustrations," Elementary School Journal, LII (April, 1952): p. 451.

[3]Gertrude Whipple, "Appraisal of the Interest Appeal of Illustrations," Elementary School Journal, LIII (January, 1953): p. 269.

tints or dark shades to bright colors.[1] It would seem that a choice of materials that contained realistic, colorful pictures that told a story in sequential action would offer the most influence on reading behavior.

---

[1]Ruth Amsden, "Children's Preferences in Picture Story Book Variables," Journal of Educational Research, LIII (April, 1960): p. 310.

CHAPTER III

DESIGN AND PROCEDURES

The purpose of this study was to investigate the possible relationship between reading comprehension and reading strategies of average ability second-grade readers reading a basal text with or without illustrations. The testing procedure began in Andover, Rose Hill, and Augusta, Kansas elementary schools during the month of April, 1978. Using available school records, a list was generated for the total population of second-grade children then in attendance at these schools, with name of student and standardized test score for reading level/grade level or I.Q./grade level. From this list, 156 children were selected as the "average" population, representing children scoring between the 15th and 85th percentiles on standardized tests. With the assistance of the schools' principals, this selected population was further reduced to 130 students by excluding children with hearing or visual defects of a severity to alter reading performance, children with emotional adjustment problems, or children recently transferred into the school systems. From the children qualified as average second-grade pupils, 40 were selected at random for this study.

The sample of 40 children was randomly divided into a control and experimental group. The control group was given material with

illustrations and the experimental group was given the same material without illustrations. A detailed discussion of subjects and sampling procedures appears in a later section of this chapter.

After permission slips for testing were returned, each of the 40 pupils was tested individually, the oral reading and retelling being taperecorded for later appraisal. The students were tested in numerical order without regard for assignment to control or experimental group. Each pupil was asked to read a story orally and then recall the story in his or her own words. When the reading and retelling was over, the examiner asked questions according to the quidelines of the Reading Miscue Inventory to elicit further responses and thus exhaust the pupil's knowledge of the story. Testing conditions are described in detail in a later section of this chapter.

Classroom reading materials and test materials were assessed for grade level by use of the Harris-Jacobson Readability Formula. The materials to be used for testing were from the Houghton-Mifflin reading series, copyright 1976. These materials were selected because they represent a widely used basal series with stories long enough for analysis with the Reading Miscue Inventory and containing enough illustrations for an effect to be observed. The stories used were fictional. Readability and materials are discussed fully in a later section in this chapter.

Setting and Subjects

The sample for this study, comprised of 19 girls and 21 boys, was drawn from the population of average children attending second grade in the public schools in Augusta, Rose Hill, and Andover, Kansas. These three communities represent a composite pupulation of rural, suburban,

and urban low to upper-middle socioeconomic class families.

For the purposes of this study, the population of average students was defined according to teacher-principal assessment, available standardized test scores, and classroom reading level estimation. The population was limited to those children who had attended these schools for the full term beginning in the Fall, 1978-1979 school term. Children with hearing or visual defects of a severity to alter reading performance or with emotional adjustment problems were not included in the study. Neither were children enrolled in speech correction or learning disability classes.

The students were selected from among 220 second-grade children, 93 from Andover, 83 from Rose Hill, and 44 from Augusta, by generating a list of average students based upon scores from available standardized tests. Approximately one standard deviation from the mean was used to determine "average." The first list generated in this manner in the Andover schools, using the 16th and 84th percentiles as parameters, yielded 53 students, based on local percentile norms. Since that number constituted only 57% of the total second-grade population in the school, and since additional screening was to occur, more generous parameters were established: from the 15th to the 85th percentiles. The list submitted for screening then consisted of 68 students. In the same way, 58 students were selected at Rose Hill, and 30 students were selected at Augusta.

The lists thus generated were then submitted to the principals for review and screening. At Andover, 8 students were excluded based on criteria for acceptance; at Rose Hill, 18 students were excluded; and at Augusta, 0 students were excluded. The final list of average students

consisted of 130 students, 60 from Andover, 40 from Rose Hill, and 30 from Augusta. Students on the final list were assigned identifying numbers and the sample was selected from this list at random.

Table 5 in Appendix A lists the characteristics of the subjects chosen for the sample. Standardized test scores for subjects 001 through 059 are based on results of the Stanford Achievement Test, 1973 edition, Primary 1B, administered September, 1978. The scores reported are for total reading and local percentile. Teacher estimated reading level is derived from basal reader placement and application of the Harris-Jacobson readability formula to the indicated section of book placement.

For students 062 through 099, the standardized test scores for initial selection are from the SRA Test of General Ability (TOGA), K-2, 1960 edition, administered April, 1978. The scores reported are I.Q. and grade equivalent, where available. Teacher estimated reading level is that submitted by teachers based upon classroom performance and calculated according to the Harris-Jacobson readability formula, as noted previously.

For students 102 through 129, the standardized test scores for initial selection are from the Stanford Achievement Test, 1973 edition, Primary 1B, administered September, 1978. The scores reported are for total reading and national percentile. Teacher estimated reading level is that submitted by teachers based upon classroom performance and calculated according to the Harris-Jacobson readability formula, as noted previously.

Since these school systems had not developed an extensive or

consistent testing program for children in the early primary grades, there was a general paucity of information available in student folders. The principals, without exception, were highly cognizant of students' performances and progress and were a more reliable source for assessment than test scores, which were dated by almost ten months. It was assumed for the purposes of this study that reliable estimates of reading level for each student in the sample could be obtained from reported teacher estimates combined with calculated readabilities of basal reader placement. Table 5 in Appendix A indicates for each student in the sample the title of the assigned basal reader, the student's placement in that reader by 1/3's of the book, and the calculated readability level for that portion of the reader. Readability data for all basals used in the classrooms appears in Table 6 in Appendix B.

TABLE 1

GRADE LEVEL AND READABILITY DISTRIBUTION
FOR CONTROL AND EXPERIMENTAL GROUPS

Group	$\bar{X}$ Grade	Number at Readability Level			
		1st Rdr.	Low 2nd	High 2nd	Low 3rd
Control	2.94	1	6	9	4
Experimental	3.03	0	5	14	1

Two sub-groups, a control group and an experimental group, were formed randomly from the final sample. The control group consisted of 8 girls and 12 boys; the experimental group consisted of 11 girls and 9 boys. Table 1 presents the mean grade levels for each group, based on the results of the standardized tests mentioned previously; and the

number of students in each group at the classroom readability levels.

Treatment Conditions

Each subject was asked to read orally a story from a basal reader with the illustration either covered or uncovered, depending on the subject's group assignment. The control group read a story with illustrations, and the experimental group read a story in which the illustrations were covered. The subjects were called to read individually and in numerical order. The principal investigator tape-recorded the reading. The time limit for each subject was twenty minutes, including the reading and retelling. Students were expected to read the entire story or as much as they could before they became too fatigued to continue. In all cases, students were required to read to the end of complete story units.

Stories to be read by each student were pre-selected based upon classroom assignment to basal reader. A total of six stories in three basals, ranging in readability level from Primer to High 3rd, were available for use, but only one story at a time was presented to the subject. The subject was given no assistance whatsoever during the reading. If the subject exhibited too great a facility or too great a difficulty with the initial story presented to him or her for reading, the examiner asked the subject to stop, explained the particular situation to the subject, and asked the subject to begin over with a more appropriate story. In all, the stories for eight subjects were reduced from Low 2nd-High 2nd to 1st Reader level, for one subject, from 1st Reader to Primer level, and for one subject, increased from 1st Reader to Low 2nd-High 2nd. Stories were changed only once.

After the oral reading of the story, each subject was required to retell the story in his or her own words. The examiner tape-recorded the retelling. After the initial retelling, the subject was urged by the examiner to expand or clarify elements of the retelling, according to the instructions for "guiding the retelling" in the Reading Miscue Inventory manual. No scoring was done during the reading or retelling procedures. Story outlines were used by the examiner to check the student's retelling for details of character development, descriptions of characters, and events. The story outlines used are included in Appendix B.

Description of Materials

The Houghton-Mifflin 1978 basal reader series was chosen as the source for stories to be read for this study. Three basals of the series were used: Tapestry, Sunburst, and Honeycomb. The stories from Tapestry were "Bascombe: Fastest Hound Alive" and "Pip Squeak: Mouse in Shining Armor." One story from Sunburst was used: "Ginger's Upstairs Pet," and one story from Honeycomb: "Can a Mouse Really Help?" The stories from this series were selected because of the realism of the illustrations, the profusion of illustrations, and the straightforward story-line. Table 2 below indicates the number of words per story, number of sentences, of pages and of illustrations. In each story an illustration appears on every page.

Readability levels were established for all stories through use of the Harris-Jacobson Readability Formula 1, which is used with material that is thought to be below fourth-grade level in difficulty. Two sections of each story were measured for readability. Selection of the sections used was based on avoidance of first and last pages for inclusion

TABLE 2

STORY STRUCTURE: WORDS, SENTENCES
PAGES AND ILLUSTRATIONS

Story	Words	Sentences	Pages	Illustrations
Can a Mouse Really Help?	566	99	17	17
Ginger's Upstairs Pet	742	106	11	11
Bascombe: Fastest Hound Alive	1530	156	25	25
Pip Squeak: Mouse in Shining Armor	977	80	14	14

in measured text. Table 3 lists the readabilities found for each story.

TABLE 3

STORY READABILITIES

Title	Pages Tested	Level
Can a Mouse Really Help?	31-37	Primer (1.53)
	39-45	Primer (1.52)
Ginger's Upstairs Pet	28-30	1st Reader (1.79)
	34-37	1st Reader (1.90)
Bascombe: Fastest Hound Alive	101-103	Low 2nd (2.38)
	112-114	Low 3rd (3.28)
Pip Squeak: Mouse in Shining Armor	188-190	Low 3rd (3.09)
	192-194	Low 3rd (3.07)

Four-color illustrations were used in three of the stories: "Can a Mouse Really Help?" "Ginger's Upstairs Pet," and "Bascombe: Fastest Hound Alive." In the story "Pip Squeak: Mouse in Shining Armor," line

drawings were used throughout, with an occasional addition of one shade of color to a prominent feature in an illustration, such as coloring the toad, "Hopper," green. None of the illustrations were abstract and all depicted events occurring, characters addressed, or things being referred to in the accompanying text. None of the illustrations overlapped the text; however, illustrations appeared on different areas of each page, sometimes splitting the text, sometimes curling around the text, but usually appeared above or below the text.

Two separate texts were used for each story used: one text had the illustrations covered over with construction paper, cut to allow only the text to appear and fastened to the page by paperclips. The other text was unaltered, with full text and illustrations clearly visible.

Manipulation of Materials

The examiner introduced himself to the subject and assured the subject that what was to be undertaken was not a test. The subject was then informed that he or she would read a story orally to the examiner and that the story would be recorded. The subject was then handed a book with the pre-selected story, either with or without illustrations.

If the illustrations were uncovered, as for a control, the subject was told that he or she could use the illustrations as they had been using them in the classroom. If the illustrations were covered, the subject was told that he or she had been chosen to read a story without illustrations and should not try to peek at them.

All students were then told that they should try to read the entire story and that they would be asked to retell the story in their own words afterwards. For the story "Bascombe: Fastest Hound Alive,"

they were shown the three parts and told that they should read at least one entire part, all three if possible, but not necessarily, depending upon whether or not they were fatigued. Also they were told that they would not receive any aid during the reading, that they should do their best, using any strategies they had learned in their classrooms, guessing if they wanted to, and as a last resort skipping a hard word. Finally, they were reminded that they should read for meaning and that they would be asked to retell the story in their own words after the reading.

The examiner then turned on the tape-recorder and the subject began reading. The subject was allowed to adjust the book to the most comfortable position for easy reading.

After the reading, the subject was allowed to rest for a few moments and was then asked to retell the story in his or her own words. The subject was given time to retell as much as he or she could remember without prompting or interruption. When the subject indicated that he or she had completed the retelling, the examiner asked the subject to expand, clarify, describe in further detail, or define points of the retelling which were not totally clear according to the story outlines. The subjects were not allowed to see the outlines.

Selection of the Variables

The dependent variables in the study were the total retelling score and the number of miscues for each category in the problem statement. The independent variables were reading performance under the conditions of reading a written text with illustrations or without illustrations.

Description of Testing Materials

For this study, the Reading Miscue Inventory was used as the principal measurement instrument. It consists of an instruction manual, the Reading Miscue Inventory Manual: Procedure for Diagnosis and Evaluation, and published Coding Sheets, which were used to categorize the data for evaluation. In addition to these published items, type scripts, typewritten duplicates of the selections read, were developed for the initial recording of responses, and story outlines were made to guide the retelling and to score retelling responses. Both of these were developed according to the instructions given in the manual. A tape recorder was used to record the oral readings, and type scripts were marked later according to the replayed oral readings.

The instruction manual contains directions for selecting materials, preparing for the taping and retelling of the oral reading, guiding the retelling, marking the type scripts, coding the miscues, scoring the retelling, and interpreting the reading patterns. Once preparations have been made, actual administration of the text requires informing the reader and tape-recording the oral reading. All further work is done from the recorded tapes, the type scripts, and coding sheets.

In essence the Reading Miscue Inventory is designed to analyze three language systems: (1) semantics, (2) grammar or syntax, and (3) graphic/sound symbols. First, the involvement of each system is analyzed separately by the nine inventory questions, then the interrelationships of the systems with respect to each miscue are analyzed to determine a reader's patterns of strengths and weaknesses. This process begins when the miscues are selected for coding. For this study only the first

analysis was performed and then tested for significance.

The nine Reading Miscue Inventory questions are asked to determine the effect of language cueing systems operating. These questions refer to (1) dialect: sound, vocabulary, and grammatical variations based on the reader's dialect; (2) intonation: shift in pitch, stress, or pause; (3) graphic similarity: printed appearance, print cues; (4) sound similarity: pronunciation and sound variation; (5) grammatical function: structural syntax within text; (6) correction: corrected miscue with grammatical and syntactical acceptability; (7) grammatical acceptability: occurance of miscue within a grammatically acceptable structure; (8) semantic acceptability: occurance of a miscue within an understandable structure: and (9) meaning changes: resulting change of sentence meaning. Each miscue is analyzed with reference to all nine of the above questions. The analysis is performed while transferring the responses from the type script to the coding sheets. Space is provided on the Coding Sheet for each of the above questions.

The type scripts were double-spaced, typewritten copies of the stories read. Responses were marked on the type scripts according to the marking system instructions given in the Reading Miscue Inventory manual. An outline of each story was developed for guiding and scoring the retelling. The outline was developed according to the story material format given in the manual for fictional materials. It consisted of a listing of the characters involved in the story, with information concerning physical appearance, attitudes, feelings, behavior, and relationship to other characters; the sequence of actual happenings in the story; a description of the plot, or plan of organization for the sequence of events; and a

statement of the theme, or generalization, of the story. Point distribution for scoring the retelling followed that given in the manual: Character Analysis--recall (15 points), development (15 points); Events--30 points; Plot--20 points; Theme--20 points. The complete outlines and point distributions are included in Appendix C.

Analysis of the Data

All analyses of this study were based on the number of miscues and retelling scores recorded on the Reading Miscue Inventory Coding Sheets. The number of miscues for each category and the retelling scores were tabulated for each student in both the control and experimental groups. The data collected for each subject included: retelling score, the number of graphically similar miscues, the number of sound similarity miscues, the number of nonword miscues, the number of corrections of miscues, the number of grammatically acceptable miscues, the number of semantically acceptable miscues, the number of meaning change miscues, the number of repeated and multiple miscues, and the number of corrections to multiple miscues.

The total retelling score was comprised of subscores for (1) character analysis, (2) events, (3) plot, and (4) theme. The total retelling scores for all subjects in the study were compiled and arranged as experimental-group scores and control-group scores. An independent measures t-test was used to test hypothesis number one for significance.

Testing of hypotheses two, three, four, six, seven, eight, and nine required the comparison of the number of miscues (dependent variable) for each category of miscue listed in the Reading Miscue Inventory

for both the control and experimental groups. The reading performance of these groups under conditions of text with illustrations and text without illustrations was the independent variable. The total number of miscues for graphic similarity, sound similarity, grammatical function, corrections, grammatical acceptability, semantic acceptability, meaning changes, and multiple miscues for all subjects in the study were compiled and arranged as experimental-group scores and control-group scores. An independent measures t-test was then used to test each category for significance. That information was used to test hypotheses two, three, four, six, seven, eight, and nine.

The Reading Miscue Inventory makes provisions for the consideration of partial miscues for all categories except nonwords, repeated or multiple miscues, and corrections of repeated miscues. For purposes of this study partial miscues were considered a distinct category and were not computed in the total miscues for any of the given categories.

The total number of nonwords, repeated or multiple miscues, and corrections of repeated miscues for all subjects in the study were compiled and arranged as experimental-group scores and control-group scores. An independent measures t-test was used to test hypotheses five, ten, and eleven for significance.

Independent measures t-tests for each hypothesis were computed according to the Texas Instruments program for TI-58/59 calculators. For this study, the alpha level of .05 was accepted as the criterion level of significance.

CHAPTER IV

FINDINGS AND DISCUSSION

It is the purpose of this chapter to analyze each stated null hypothesis and to present the findings in the same order as the hypotheses were presented in Chapter One. Following presentation of findings is a discussion of the results of this study.

Hypothesis #1 stated that there was no difference in retelling scores for those students who read from a text accompanied by illustrations from those of students who read from a text without accompanying illustrations. The retelling score reflects the degree of meaning that the student has gained from the reading, the ability of the student to interrelate, interpret, and draw conclusions from the context. To test this hypothesis, it was necessary to tabulate total retelling scores for each pupil in each group. The total retelling score is a composite. A detailed statement of the point distribution and expected responses is included in Appendix C.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean retelling score for the control group and the mean retelling score for the experimental group ($t = -.46$; $df = 38$; $p > .05$).

TABLE 4

MEANS, STANDARD DEVIATIONS, AND t-TEST
FOR READING SCORES BY GROUPS

Variable	Control Group (With Illustration)		Experimental Group (Without Illustration)		Test Test
	Mean	S.D.	Mean	S.D.	t
*Nonwords	0.80	1.03	1.10	1.22	-.82
Graphic Similarity. . .	6.45	2.99	6.50	4.02	-.04
Sound Similarity. . .	4.10	3.22	4.35	3.23	-.24
Grammatical Function. . . .	10.35	2.99	9.95	2.20	.47
Correction. . . .	12.30	4.44	9.80	4.41	1.74
Grammatical Acceptability..	11.55	2.96	12.90	3.32	-1.32
Semantic Acceptability..	9.00	2.83	8.75	2.72	.28
*Meaning Change. .	5.80	3.20	6.50	3.17	-.68
*Repeated Miscues. . . .	17.60	14.65	18.65	12.27	-.24
Correction of Repeated Miscues. . . .	5.00	4.55	4.50	3.65	.37
Retelling Score.	43.10	11.07	45.10	15.58	-.46

*Indicates a category in which a lower score is a more desirable condition. All other, a higher score is more desirable.

It was concluded that the retelling score as computed according to the Reading Miscue Inventory did not reflect a difference in responses for

students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #1, predicting no difference between groups was not rejected.

Graphic similarity refers to the physical appearance of the printed word in a text and reflects the quality of the reader's use of graphic cues in anticipating an item or attack on unknown words. Hypothesis #2 stated there is no difference between the number of miscues that are graphically similar to the text produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. To test this hypothesis, it was necessary to tabulate the number of miscues that indicated graphic similarity to the printed text for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of graphically similar miscues for the control group and the mean number of graphically similar miscues for the experimental group ($t= -.04$; $df= 38$; $p > .05$). It was concluded that the number of graphically similar miscues as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #2, predicting no difference between groups, was not rejected.

Hypothesis #3 stated there is no difference between the number of miscues that have sound similarity to the text produced by students

reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. Sound similarity refers to the proximity of the sound assigned by the reader to various letters and letter combinations to the expected sound commonly used by fluent readers. To test this hypothesis, it was necessary to tabulate the number of miscues that indicated sound similarity to the printed text for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of miscues having sound similarity to the textual items for the control group and the mean number of miscues having sound similarity for the experimental group ($t = -.24$; $df = 38$; $p > .05$). It was concluded that the number of miscues having sound similarity as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #3, predicting no difference between groups, was not rejected.

Since there is a limited variety of grammatical functions that will fit into any one position in a sentence, words in context can usually be categorized intuitively by readers as to grammatical function. Grammatical function, with respect to miscues, refers to the use of a word in a given context. The reader's intuitive grasp of language structure and grammatical restrictions allows the reader to anticipate grammatical function on the basis of preceding structure. Hypothesis #4 stated that there is no difference between the number of miscues that have the same

grammatical function as the text produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. To test this hypothesis, it was necessary to tabulate the number of miscues having the same grammatical function as the text for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of miscues having the same grammatical function for the control group and the mean number of miscues having the same grammatical function for the experimental group ($t = .47$; $df = 38$; $p > .05$). It was concluded that the number of miscues having the same grammatical function as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #4, predicting no difference between groups, was not rejected.

Hypothesis #5 stated that there is no difference between the number of non-word miscues produced by students reading from a text without illustrations and the number of non-word miscues produced by students reading from a text with illustrations. A non-word refers to a substitution for a word in the text of a "word" having no graphic or sound similarity to a word in the English language. To test this hypothesis, it was necessary to tabulate the number of non-word miscues for each pupil in each group.

Means and standard deviations for control and experimental groups

were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of non-word miscues for the control group and the mean number of non-word miscues for the experimental group ($t = -.82$; $df = 38$; $p > .05$). It was concluded that the number of non-word miscues as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #5, predicting no difference between groups, was not rejected.

As readers become aware of miscues they make judgments concerning which miscues should be corrected. Generally a certain amount of text is re-read in making corrections. This regression suggests both the size of the language units being processed by the reader and the cues which caused him to correct the given miscue. Corrections, in this sense, are a reflection of the reader's thinking processes during the reading act. However, the amount of regression and the quality of thinking reflected in the length and type of material in the regression cannot be readily quantified. Hypothesis #6 and #11, therefore, refer to the actual corrections only.

Hypothesis #6 stated there is no difference between the number of corrections for miscues produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. The corrections referred to here are to those for all categories of miscues mentioned except for multiple miscues. To test this hypothesis, it was necessary to tabulate the number of corrections for miscues for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of corrections for miscues for the control group and the mean number of corrections for miscues for the experimental group ($t= 1.74$; $df= 38$; $p > .05$). It was concluded that the number of corrections for miscues as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #6, predicting no difference between groups, was not rejected.

Hypothesis #7 stated there is no difference between the number of miscues of grammatical acceptability produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. Words in a sentence are organized both grammatically and semantically, and a word can be acceptable grammatically without having acceptable meaning. Even nonsense structures can appear to have grammatical acceptability. Grammatical acceptability refers to miscues that occur in a structure that is grammatically acceptable, that is, in a sentence that is grammatically acceptable. To test this hypothesis, it was necessary to tabulate the number of grammatically acceptable miscues for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of grammatically acceptable miscues

for the control group and the mean number of grammatically acceptable miscues for the experimental group ($t = -1.32$; $df = 38$; $p > .05$). It was concluded that the number of miscues having grammatical acceptability as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #7, predicting no difference between groups, was not rejected.

If a reader is gaining meaning from a given context, he will exhibit an intuitive grasp of meaningful relationships. Semantic acceptability refers to the ability of the reader to produce understandable structures. Miscues in this category reflect the degree of meaningful relationship to the text. Hypothesis #8 stated that there is no difference between the number of miscues of semantic acceptability produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. To test this hypothesis, it was necessary to tabulate the number of semantically acceptable miscues for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of semantically acceptable miscues for the control group and the mean number of semantically acceptable miscues for the experimental group ($t = .28$; $df = 38$; $p > .05$). It was concluded that the number of miscues having semantic acceptability as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied

by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #8, predicting no difference between groups, was not rejected.

Hypothesis #9 stated there is no difference between the number of miscues with meaning changes produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. Meaning changes refer to miscues that change the meaning of the sentence in which it appears and reflect the reader's understanding of the author's intent. To test this hypothesis, it was necessary to tabulate the number of meaning change miscues for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of miscues with meaning changes for the control group and the mean number of miscues with meaning changes for the experimental group ($t = -.68$; $df = 38$; $p > .05$). It was concluded that the number of miscues with meaning changes as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #9, predicting no difference between groups, was not rejected.

Hypothesis #10 stated there is no difference between the number of multiple miscues produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. Repeated miscues reveal the reader's strategies to

discover a word as more awareness of context is gained and the word appears in a variety of semantic and grammatical environments. They also reveal habitual associations the reader may have between two words. Multiple miscues refer to repeated miscues with individual words that appear with varying frequency throughout the text. To test this hypothesis, it was necessary to tabulate the number of multiple miscues for each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of multiple miscues for the control group and the mean number of multiple miscues for the experimental group ($t= -.24$; $df= 38$; $p > .05$). It was concluded that the number of multiple miscues as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #10, predicting no difference between groups was not rejected.

Hypothesis #11 stated there is no difference between the number of corrections to multiple miscues produced by students reading from a text without illustrations and the number of those produced by students reading from a text with illustrations. The corrections to multiple miscues referred to here are those that occurred for repeated miscues only. Corrections to repeated miscues generally reflect the changes in the reader's habitual response to certain words in the text and to words surrounding those words in the text. To test this hypothesis, it was necessary to tabulate the number of corrections to multiple miscues for

each pupil in each group.

Means and standard deviations for control and experimental groups were computed and differences between means were analyzed by use of an independent measures t-test. As shown in Table 4 there was no significant difference between the mean number of corrections for repeated miscues for the control group and the mean number of corrections for repeated miscues for the experimental group ($t= .37$; $df= 38$; $p > .05$). It was concluded that the number of corrections for multiple miscues as computed according to the Reading Miscue Inventory did not reflect a difference in responses for students reading orally from a text accompanied by illustrations from the responses for students reading orally from a text not accompanied by illustrations. Therefore, hypothesis #11, predicting no difference between groups, was not rejected.

Discussion

The analysis of data for this study necessitated as a first step the tabulation of data according to the instructions and coding forms of the Reading Miscue Inventory. The results were an extensive frequency count of miscues and corrections and a total retelling score. Usually these frequencies are translated into percentages, graphed and used to display a reader profile that indicates proclivities toward the use of certain reading strategies as opposed to others. For this study, however, the frequencies were used as base data and tested for significance with an independent measures t-test. Since the study was designed to search for possible influences of illustrations on reading performance, a two-tailed test was used with $p > .05$.

The results of the analyses indicated that there is no

detectable difference in retelling scores as a measure of reading comprehension for readers reading orally from a text with accompanying illustrations from those scores of readers reading orally from a text without accompanying illustrations. Also no significant difference was indicated for miscue categories graphic similarity, sound similarity, grammatical function, grammatical acceptability, semantic acceptability, meaning change, non-words, or multiple miscues for readers reading orally from a text with accompanying illustrations and readers reading orally from a text without accompanying illustrations. Finally, there were no significant differences indicated for corrections of miscues or corrections of multiple miscues for readers reading orally from a text with accompanying illustrations and readers reading orally from a text without accompanying illustrations.

There is no indication in the results of this study that pictures as cues have a discernible effect upon reading performance, either as a source of assistance or as a source of distraction. There does not appear to be any justification, based on the findings of this study, to support or deny the use of illustrations in basal readers on the grounds that such illustrations assist or detract the reader or aid or interfere with either comprehension or word recognition. No trend was evident nor were there any appreciable differences across the 11 score variables.

In view of the findings of others, as discussed previously, it would seem possible that the matter of illustrations accompanying text is more complex than anticipated. Learning styles and the effects of illustrations on learning styles was not explored. Neither was long term retention. It would seem possible that there is more to this than reading scores.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Although illustrations as used in basal readers have been criticized as distracting elements and recommendations have been forwarded for the discontinuance of the use of pictures in these texts, there have been few investigations that have used basal materials as the basis for the research effort. Those studies that have incorporated basal texts into the research design have not proved definitive in the sense of achieving unquestionably significant results. A search of the literature revealed that there was a possibility for fruitful study of the issue by using a different measurement instrument than had previously been tried.

This study was exploratory and investigated the possible differences in reading responses for children reading a basal text with illustrations covered or with illustrations uncovered. Two groups of twenty children each were randomly established, one group selected as the control group and assigned a text with the illustrations unaltered and visible. The other group was considered the experimental group and assigned a text with the illustrations covered. Each group read the story orally

on an individual basis and then retold the story in his or her own words. The reading and retelling was tape-recorded.

The sample for the study consisted of forty second-grade students from three school districts in Kansas. There were 19 girls and 21 boys in the sample used for testing. For the purposes of this study, the population of average students from which the sample was selected were defined according to teacher-principal assessment, available standardized test scores, and classroom reading level estimations based on basal reader placement and teacher assessment.

The Reading Miscue Inventory was used as the measurement instrument with the assumption that a high degree of validity would be achieved by controlling the readability of the reading material so that each student tested would be reading at his or her instructional level. Stories to be read were selected from a basal reader that contained at least one illustration per page of text to be read. The illustrations were all realistic and reflected the story content.

The Reading Miscue Inventory Coding Sheets were used to record and tabulate responses. Miscues were assessed during the replay of the tape-recorded readings and noted on the Coding Sheets. The total number of responses for each category of miscue were tabulated from the Coding Sheet, mean scores, standard deviations, and t-tests were computed between means to determine significance of differences between means for the two groups.

The analysis of the data resulted in the following findings:

1. There was no significant difference between the mean retelling scores for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations

covered ($t = -.46$; $df = 38$; $p > .05$).

2. There was no significant difference between the mean number of graphically similar miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -.04$; $df = 38$; $p > .05$).

3. There was no significant difference between the mean number of miscues having sound similarity for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -.24$; $df = 38$; $p > .05$).

4. There was no significant difference between the mean number of miscues having the same grammatical function for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = .47$; $df = 38$; $p > .05$).

5. There was no significant difference between the mean number of non-word miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -.82$; $df = 38$; $p > .05$).

6. There was no significant difference between the mean number of corrections for miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = 1.74$; $df = 38$; $p > .05$).

7. There was no significant difference between the mean number of grammatically acceptable miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -1.32$; $df = 38$; $p > .05$).

8. There was no significant difference between the mean number of semantically acceptable miscues for students who read from a text

with the illustrations visible and those for students who read from a text with the illustrations covered ($t = .28$; $df = 38$; $p > .05$).

9. There was no significant difference between the mean number of miscues with meaning changes for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -.68$; $df = 38$; $p > .05$).

10. There was no significant difference between the mean number of multiple miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = -.24$; $df = 38$; $p > .05$).

11. There was no significant difference between the mean number of corrections to multiple miscues for students who read from a text with the illustrations visible and those for students who read from a text with the illustrations covered ($t = .37$; $df = 38$; $p > .05$).

Conclusions

The following conclusions were made as a result of the analysis of the data obtained in the study:

1. No significant difference was reflected in the miscue analysis of oral reading performance for students reading basal reader stories with or without illustrations. It was concluded that miscues reflect responses to the surrounding text to a greater extent than they reflect responses to alternative cues, such as illustrations. It would seem that illustrations have less immediate influence upon recognition responses as that of graphic stimuli, such as the words immediately preceding and immediately following the miscue. Apparently the partial contribution to subjective redundancy made by illustrations is too slight to be measured by

miscue analysis.

2. No significant difference was found between the mean number of corrections to miscues for children reading from a text with the illustrations visible and those for children reading from a text with the illustrations covered. The linguistic or contextual hypothesis for word recognition was the perspective for the analysis. The hypothesis suggests that contextual constraints facilitate word recognition, that syntactic and semantic constraints of the sentences provide cues for anticipating unknown words. This portion of the hypothesis would offer explanation for the non-significant results concerning miscues. However, the hypothesis also suggests that if a confirming response, based in meaning, occurs, the reader will progress. Or, if negative feedback occurs with a selected word response, as tested for consistency of meaning with the direction of thought, then correction of the erroneous response would occur spontaneously. It was concluded that the results of this study do not support this hypothesis, based on the criterion level $p > .05$. However, there is evidence in the t-test results for hypothesis #6 that at the criterion level $p > .10$ a significant difference was attained in favor of illustrations, suggesting that picture cues do indeed influence corrections of miscues.

3. There were no significant differences between the mean number of corrections for multiple miscues for children reading orally from a text with or without illustrations. In view of the comments above, it was concluded that multiple miscues occur beyond the threshold of spontaneous correction, are probably a reflection of habitual thought generated when the meaning association between word and storyline are not matched significantly by the reader.

4. No significant difference was achieved between mean and

retelling scores for children who read from a text with illustrations and for children who read from a text without illustrations. It was concluded from the results of this study that illustrations neither contribute to nor detract from the comprehension of a written text by second-grade average ability readers.

Recommendations

The following recommendations are offered on the basis of this study:

1. There appears to be some justification for further investigation of the effects of illustrations upon correction-of-miscue behavior in average second-grade children, Although the non-significant results at $p > .05$ in this study can be interpreted as an indication that illustrations have no effect upon this kind of reading behavior, the fact that the results were significant at $p > .10$ should warrant further consideration, since this was an exploratory study.

2. Future studies should use materials with more highly controlled readability, since the stories used for this study varied considerably. In reference to this recommendation, it should be noted that the effects of readability on miscue behavior has not been sufficiently investigated to allow judgments as to the variances to be expected from this effect.

3. For further study of this problem, it is recommended that more emphasis be placed upon homogeneity of prior teaching methods. It is quite possible that the results of this study were influenced by different methods and emphases in teaching reading in the different school systems.

BIBLIOGRAPHY

Books

Buros, Oscar K. Eighth Mental Measurements Yearbook. New Jersey: the Gryphon Press, 1978.

Chall, Jeanne. Learning to Read: The Great Debate. New York: McGraw-Hill, 1967.

Gilliland, John. Readability. Warwick Lane, London: Hodda and Stoughton, Ltd. St Paul's House, 1972.

Goodman, Yetta M. and Burke, Carolyn L. Reading Miscue Inventory: Manual Procedure for Diagnosis and Evaluation. New York: The Macmillan Company, 1972.

Harris, Albert J. and Sipay, Edward R. How to Increase Reading Ability. New York: David McKay Company, Inc., 1975.

Merritt, John E. ed. New Horizons in Reading. Newark, Deleware: International Reading Association, 1976.

Randhawa, B. S. and Coffman, W. E. Visual Learning, Thinking, and Communication. New York: The Academic Press, 1978.

Singer, Harry and Ruddell, Robert B. eds. Theoretical Models and Processes of Reading. Newark, Deleware: International Reading Association, 1976.

Smith, Frank, ed. Psycholinguistics and Reading. New York: Holt, Rinehart and Winston, 1973.

Smith, Frank. Understanding Reading. New York: Holt, Rinehart, and Winston, 1978.

Periodicals

Amsden, Ruth. "Children's Preferences in Picture Story Book Variables." Journal of Educational Research, LIII (April, 1960), 309-312.

Braun, Carl. "Interest-loading and Modality Effects on Textual Response Acquisition." Reading Research Quarterly, IV (1969), 428-444.

Bruner, Jerome and Mackworth, N. H. "How Adults and Children Search and Recognize Pictures." Human Development, XIII (March, 1970), 149-177.

Goodman, Kenneth S. "A Linguistic Study of Cues and Miscues in Reading." Elementary English, XLII (Oct., 1965), 639-643.

Goodykoontz, Bess. "The Relation of Pictures to Reading Comprehension." Elementary English Review, XIII, 1936, 125-130.

Halbert, Marie. "An Experimental Study of Children's Understanding of Instructional Materials." Bulletin of School Service, 1943, 15, 7-60.

Hartley, Ruth N. "Effects of List Types and Cues on the Learning of Word Lists." Reading Research Quarterly, VI (1) (1970), 97-121.

Harzem, P., Lee, I., and Miles, T. R. "The Effects of Pictures on Learning to Read." British Journal of Educational Psychology, XL (November, 1976), 318-322.

King, Ethel M. and Muehl, Siegmar. "Different Sensory Cues as Aids in Beginning Reading." The Reading Teacher, XIX, 1965, 163-168.

Kiraly, John Jr. and Furlong, Alexandra. "Teaching Words to Kindergarten Children with Picture, Configuration, and Initial Sound Cues in a Prompting Procedure." The Journal of Educational Research, LXVII (March, 1974), 295-298.

Koenke, K. and Otto, W. "Contribution of Pictures to Children's Comprehension of the Main Idea in Reading." Psychology in the Schools, VI, 1969, 298-302.

Miller, W. "Reading with and without Pictures." Elementary School Journal, XXXVIII, 1938, 676-682.

Montare, Alberto, Elman, Elaine, and Cohen, Jeanne. "Words and Pictures: a Test of Samuels' Findings." Journal of Reading Behavior, IX (Fall, 1977), 269-285.

Malter, Morton S. "Children's Preferences for Illustrative Materials." Journal of Educational Research, XLI (5) (Jan., 1948), 378-385.

Ollila, Lloyd O. and Olson, James H. "The Effect on Learning Rate of Pictures and Realia in the Presentation of Words to Kindergarteners." The Journal of Educational Research, LXV (March, 1972), 312-314.

Rankin, E. F. and Culhane, J. W. "One Picture Equals 1,000 Words?" Reading Improvement, VII, 1970, 37-40.

Rudisill, Mabel. "Chidren's Preferences for Color Versus Other Qualities in Illustrations." Elementary School Journal, LII (April, 1952), 444-451.

Samuels, S. Jay. "Attentional Processes in Reading: The Effect of Pictures in the Acquisition of Reading Responses." Journal of Educational Psychology, LVIII (December, 1967), 337-342.

Samuels, S. Jay. "Effects of Pictures on Learning to Read, Comprehension and Attitudes." Review of Educational Research, XXXX, 1970, 397-407.

Singer, Harry, Samuels, S. Jay, and Spiroff, Jean. "The Effect of Pictures and Contextual Conditions on Learning Responses to Printed Words." Reading Research Quarterly, IX (1973-1974), 555-565.

Vernon, Magdelen D. "The Value of Pictorial Illustration." British Journal of Educational Psychology, XXIII, 1953, 180-187.

Vernon, Magdelen D. "The Instruction of Children by Pictorial Illustration." British Journal of Educational Psychology, XXIV, 1954, 171-179.

Weintraub, Samuel. "Illustrations for Beginning Reading." Reading Teacher, XIX, 1966, 61-67.

Whipple, Gertrude. "Appraisal of the Interest Appeal of Illustrations." Elementary School Journal, LIII (January, 1953), 262-269.

Articles

Anastasiow, Nicholas J. "Tests and Reviews: Reading--Oral." Eighth Mental Measurements Yearbook. Edited by O.K. Buros. New Jersey: The Gryphon Press, 1978.

Elley, Warwick B. "Tests and Reviews: Reading." Eighth Mental Measurements Yearbook. Edited by O.K. Buros. New Jersey: The Gryphon Press, 1978.

Goodman, Kenneth S. "Reading: a Psycholinguistic Guessing Game." Theoretical Models and Processes of Reading. Edited by Harry Singer and Robert B. Ruddell. Newark, Deleware: International Reading Association, 1976.

Goodman, Kenneth S. "Analysis of Oral Reading Miscues: Applied Psycholinguistics." Psycholinguistics and Reading. Edited by Frank Smith. New York: Holt, Rinehart, and Winston, 1973.

Goodman, Kenneth S. "Miscue Analysis: Theory and Reality in Reading." New Horizons in Reading. Edited by John E. Merritt. Newark, Deleware: International Reading Association, 1976.

Goodman, Yetta M. "Miscues, Errors, and Reading Comprehension." New Horizons in Reading. Edited by John E. Merritt. Newark, Deleware: International Reading Association, 1976.

Harris, Albert J. "Some New Developments on Readability." New Horizons in Reading. Edited by John E. Merritt. Newark, Deleware: International Reading Association, 1976.

Harris, Albert J. and Jacobson, Milton D. "The Harris-Jacobson Readability Formulas." How to Increase Reading Ability. Albert J. Harris and Edward R. Sipay. New York: David McKay Company, Inc., 1975.

Hewes, Gordon W. "Visual Learning, Thinking, and Communication in Human Biosocial Evolution." Visual Learning, Thinking, and Communication. Edited by B.S. Randhawa and W.E. Coffman. New York: Academic Press, 1978.

Singer, Harry. "Tests and Reviews: Reading--Oral." Eighth Mental Measurements Yearbook. Edited by O.K. Buros. New Jersey: The Gryphon Press, 1978.

Unpublished Sources

Bluth, Linda Fran. "A Comparison of the Reading Comprehension of Good and Poor Readers in the Second Grade with and without Illustrations." Unpublished Ed.D. dissertation, University of Illinois, 1972.

Harris, Larry A. "A Study of the Rate of Acquisition and Retention of Interest-loaded Words by Low Socio-economic Kindergarten Children." Unpublished doctoral dissertation, University of Minnesota, 1967.

Koenke, Karl R. The Effects of a Content Relevant Picture on the Comprehension of the Main Idea of a Paragraph. Arlington, Va.: ERIC Document Reproduction Service. ED 024540, 1968.

Lesgold, Alan M. and DeGood, Hildrene. Pictures and Young Children's Prose Learning. Arlington, Va.: ERIC Document Reproduction Service. ED 123604, 1976.

Levin, Joel R. What Have We Learned About Maximizing What Children Learn? Arlington, Va.: ERIC Document Reproduction Service. ED 101318, 1974.

Weintraub, Samuel. "The Effect of Pictures on the Comprehension of a Second-Grade Basal Reader." Unpublished doctoral dissertation, University of Illinois, 1960.

APPENDIX A

TABLE 5

ASSESSMENT OF STUDENTS BASED ON AVAILABLE STANDARDIZED TEST SCORES AND READABILITY LEVELS OF ASSIGNED BASAL READERS

Student Number	Standardized Test Scores End 1st Gr.		Teacher Estimated Level	Basal Title	Basal Placement by 1/3's			Calculated Readability
	Tot. Read.	%tile			1	2	3	—
001	3.0	34	2^2_1	On We Go		X		Low 2nd
008	3.4	53	3^1_2	Going Places			X	Low 3rd
009	1.9	15	2^1_1	Going Places		X		High 2nd
014	3.6	66	3^1_1	Going Places		X		High 2nd
015	3.1	37	3^1_1	Going Places		X		High 2nd
018	3.7	75	3^1_1	Going Places		X		High 2nd
020	3.7	75	3^1_2	Going Places			X	Low 3rd
024	3.1	37	2^2_2	On We Go	X			Low 2nd
026	3.5	60	2^2_2	Going Places		X		High 2nd
030	3.3	46	1^2_2	On We Go	X			Low 2nd
032	2.3	22	2^2_2	On We Go	X			Low 2nd
033	3.3	46	1^2_2	On We Go	X			Low 2nd
035	2.6	27	2^2_1	On We Go		X		Low 2nd
038	3.6	66	3^1_1	Going Places		X		High 2nd
041	3.4	53	3^1_1	Going Places			X	Low 3rd
042	3.7	75	3^1_1	Going Places		X		High 2nd
045	3.2	41	3^1_1	Going Places		X		High 2nd
050	3.5	60	2_1	On We Go	X			Low 2nd
053	3.4	53	3^1_2	Going Places		X		High 2nd
059	3.5	60	2^2	On We Go		X		Low 2nd
	G.E.	I.Q.						
062	-	91	2.2	Believe It		X		Low 2nd
071	2.2	108	2.6	Feelings			X	High 2nd
075	1.3	95	2.4	Feelings			X	High 2nd
078	1.6	99	2.6	Feelings			X	High 2nd
081	1.6	107	2.3	Believe It		X		Low 2nd
082	2.2	108	2.6	Feelings			X	High 2nd
090	1.7	97	2.5	Feelings			X	High 2nd
091	2.8	116	2.6	Feelings			X	High 2nd
092	-	84	1.9	Ups & Downs		X		1st Reader
095	-	112	4.9	Secret Spaces	X			Low 3rd
097	-	109	1.9	Believe It		X		Low 2nd
099	-	106	3.6	Secret Spaces	X			Low 3rd

TABLE 5 Continued

Student Number	Standardized Test Scores End 1st Gr.		Teacher Estimated Level	Basal Title	Basal Placement by 1/3's			Calculated Readability
	Tot. Read.	%tile			1	2	3	
102	3.1	56	3.1	Tapestry	X			High 2nd
103	3.3	62	3.3	Tapestry		X		High 2nd
105	3.9	78	3.9	Tapestry		X		High 2nd
112	3.6	72	3.6	Tapestry		X		High 2nd
116	2.3	28	2.3	Tapestry	X			High 2nd
122	3.5	68	3.5	Tapestry	X			High 2nd
123	3.5	68	3.5	Tapestry	X			High 2nd
129	3.2	58	3.2	Tapestry		X		High 2nd

APPENDIX B

TABLE 6

SCHOOL BASAL READER READABILITIES

Title	Pages	Level
Ups and Downs	11-19	Primer (1.73)
	41-45	1st Reader (1.85)
Believe It!	7-10	Low 2nd (2.15)
	40-43	Low 2nd (2.06)
	73-75	1st Reader (1.85)
	112-113	Low 2nd (2.34)
Feelings	10-13	Low 2nd (2.07)
	45-48	1st Reader (1.90)
	88-98	High 2nd (2.46)
	116-119	1st Reader (1.92)
Secret Spaces	10-11	High 2nd (2.81)
	26-27	Low 3rd (3.12)
	53-55	High 2nd (2.74)
	59-60	1st Reader (1.98)
On We Go	9-10	Low 2nd (2.36)
	46-48	Low 2nd (2.18)
	112-114	Low 3rd (3.01)
	177-199	Low 2nd (2.06)
Going Places Seeing People	20-23	Low 2nd (2.16)
	67-69	High 2nd (2.66)
	125-126	Low 3rd (3.25)
	232-234	High 2nd (2.59)
Tapestry	57-58	Low 2nd (2.23)
	86-88	High 2nd (2.62)
	109-112	Low 3rd (3.28)
	192-194	Low 3rd (3.07)
Sunburst	28-30	1st Reader (1.79)
	95-98	Low 3rd (2.89)
	113-114	High 2nd (2.43)
	123-124	Low 2nd (2.06)
Honeycomb	31-37	Primer (1.53)
	39-45	Primer (1.52)

APPENDIX C

TABLE 7

RAW SCORE DATA

Student Number	Non-words	Graphic Similarity	Sound Similarity	Grammatical Function	Correction	Grammatical Acceptability
001	0	9	6	10	13	7
014	2	8	7	11	7	15
015	2	7	5	9	2	16
020	4	9	5	11	15	15
030	1	6	4	11	2	16
032	0	1	1	10	10	8
033	0	4	3	8	16	10
038	1	3	2	8	5	16
042	3	12	9	10	14	11
053	1	7	3	7	5	16
071	2	7	2	14	12	14
075	0	6	3	9	13	8
082	3	11	8	13	2	15
091	2	9	8	9	10	18
097	0	2	1	10	9	12
102	0	2	0	14	14	11
105	0	2	2	6	12	11
116	0	7	4	8	13	8
122	0	17	17	13	9	16
129	1	1	1	8	13	15

TABLE 7 Continued

Student Number	Semantic Acceptability	Meaning Change	Repeated Miscues	Correction of Repeated Miscues	Retelling Score
001	7	9	18	10	70
014	11	3	8	4	45
015	7	8	46	6	37
020	6	8	17	6	50
030	12	5	22	0	25
032	8	8	9	7	66
033	9	7	3	3	17
038	13	5	9	1	25
042	5	4	20	0	54
053	12	4	9	0	41
071	7	7	35	10	43
075	7	10	9	5	37
082	6	8	30	1	20
091	12	3	27	5	47
097	11	2	10	4	61
102	7	10	19	6	53
105	8	3	5	1	52
116	4	15	35	14	73
122	10	8	37	4	34
129	13	3	5	3	52

TABLE 7 Continued

Student Number	Non-words	Graphic Similarity	Sound Similarity	Grammatical Function	Correction	Grammatical Acceptability
008	0	7	5	5	6	14
009	1	7	3	6	16	8
018	0	2	1	7	8	14
024	0	3	2	11	13	11
026	0	6	2	14	8	15
035	1	4	3	12	19	17
041	2	8	3	12	18	9
045	1	14	12	12	10	13
050	0	4	1	8	15	11
059	0	6	3	13	14	13
062	0	8	6	11	19	6
078	2	10	11	11	5	9
081	0	7	2	12	12	12
090	0	4	3	9	14	7
092	4	4	0	13	10	11
095	1	8	4	12	14	14
099	1	9	5	6	15	7
103	0	1	1	6	17	14
112	2	8	6	16	8	14
123	1	9	9	11	5	12

TABLE 7 Continued

Student Number	Semantic Acceptability	Meaning Change	Repeated Miscues	Correction of Repeated Miscues	Retelling Score
008	12	1	6	0	40
009	7	7	8	6	46
018	11	1	10	2	45
024	10	7	12	8	66
026	10	3	17	5	35
035	13	7	11	1	38
041	5	7	6	4	53
045	10	2	19	1	42
050	10	9	9	3	45
059	9	8	12	5	35
062	5	13	28	21	61
078	4	8	50	2	38
081	10	10	21	8	41
090	6	8	15	5	50
092	8	8	20	7	60
095	13	4	6	0	29
099	4	3	5	3	26
103	10	2	11	10	53
112	12	4	64	4	30
123	11	4	22	5	29

APPENDIX D

FIGURE 1

OUTLINE FOR RETELLING AND SCORING

Title: Can a Mouse Really Help?

Character Analysis

Recall		Development	
15 points		15 points	
3	Mouse	3	Lonely, friendly, helpful
3	Rabbit	3	Self-centered
3	Squirrel	3	Busy
3	Tiger	3	Fierce
3	Lion	3	Proud

Theme: Pride goeth before the fall.
(20 points)

Plot: How can a mouse ever help a lion?
(20 points)

Events:
(30 points)

5 Mouse needs someone to play with. Rabbit wants to jump. Squirrel has work to do. Both say he's too little.

3 Mouse is scared of Tiger. Runs to lion for help.

3 Tiger meets Lion. Both laugh when Lion says mouse told her he would help her in return for her help.

9 Lion gets caught in trap. Tiger tries to help. Tiger asks squirrel to help. Too busy. They get rabbit to help but none can get Lion out.

10 Mouse comes by. They tell him to go away. Mouse wants to help. He chews a hole in the net. Lion is free and proclaims mouse as biggest help of all. All agree.

FIGURE 1 Continued

Title: Ginger's Upstairs Pet

Character Analysis

Recall		Development	
15 points		15 points	
4	Ginger	5	Little girl: likes pets, feeds pets
4	Ginger's mother	5	Little girl's mother: lets her have food, but thinks she's eating it herself.
4	Giraffe	3	Giraffe: tall, friendly, looks in window
3	Man from zoo	2	man form zoo: friendly, giraffe's attendant

Theme: Don't doubt someone until you check for yourself.
(20 points)

Plot: Does Ginger really have a pet upstairs?
(20 points)

Events:
(30 points)

10 Ginger comes downstairs (5 times) for cake, apples, carrots, milk and green leaves for her pet.

8 Her mother thinks Ginger is eating all the food and will get fat, but guesses that the pet must be a pig, a kitten or a rabbit.

4 When Ginger asks for green leaves, her mother decides to go upstairs to see what the pet is. She discovers a giraffe standing in the back yard and looking in Ginger's bedroom window.

2 Man from zoo knocks on the door and Ginger goes downstairs to see who is there.

4 He asks if she's seen a giraffe and Ginger admits that it's in the back yard. The man takes the giraffe back to the zoo. Tells her they have green leaves at the zoo.

2 Ginger's mother promises to take Ginger to the zoo the next day.

FIGURE 1 Continued

Title: Bascombe: fastest hound alive

Character Analysis

Recall		Development	
15 points		15 points	
3	Bascombe	6	Bascombe: basset hound, long floppy ears, short stubby legs bent like horseshoes; lazy and sleeps all day, friendly
3	Mr. Winston	2	Owns Bascombe; wants to sell him
3	Herbert and Sam	2	Rabbits; Sam is fastest in countryside.
3	Neighbors	1	men like Mr. Winston
3	Neighbors'dogs	4	Neighbors' dogs are short, tall, fat, thin, brown, black, all sort of mixed.

Theme: No matter how hopeless your problem, with a little help from your friends you can solve it.
(20 points)

Plot: How can Bascombe keep from being sold?
(20 points)

Events:
(30 points)

2 Bascombe is so lazy he only opens one eye to watch a caterpillar walk across his nose.

2 Herbert and Sam find out about Bascombe's problem and teach him how to run fast in the meadow.

10 Mr. Winston takes Bascombe hunting in competition with all the neighbors' dogs. Nobody believes Bascombe can run fast but he uses the techniques taught him (spread ears, wrinkle nose and point it, and push off with hind legs) and runs so fast after the rabbit, he looks like a blur.

1 He chases the rabbit into a hole in the tree.

5 Sam discovers Herbert already in the tree. Herbert and Sam discover that Bascombe is chasing them; they jump out of the tree and run around the meadow, Bascombe close behind. He chases them through the bushes.

FIGURE 1 Continued

4 Bascombe chases the rabbits so fast that all the other dogs, the neighbors, and Mr. Winston get tired and go home. During the chase a tall dog lands in the middle of the bushes trying to jump over them.

3 Bascombe catches the rabbits in the hole in the tree. Herbert and Sam remind Bascombe that they had taught him to run fast and Bascombe admits that he was only trying to fool the others.

3 Bascombe and the rabbits go home and Bascombe goes back to sleep on the porch steps. Mr. Winston is so tired he vows never to go hunting again.

FIGURE 1 Continued

Title: Pip Squeak: Mouse in Shining Armor

Character Analysis

Recall		Development	
15 points		15 points	
3	Pip Squeak	4	Mouse with mighty big ears, armor, a green toad to ride on.
1	Hopper	2	a green toad
2	Sir Prise	2	Head knight
2	Sir Pose	2	2nd knight
2	Dreadful Dragon	2	Of Foe Fum Forest; fierce
3	Sir Press Sir Pass Sir Port Sir Plus Sir Pent	2	Five remaining knights
1	Witch		
1	Owl	1	both of forest

Theme: Little people can sometimes be more effective than big people.
(20 points)

Plot: How can a mouse defeat a dragon when knights can't do it?
(20 points)

Events:
(30 points)

3 Mouse come to castle and wants to help. They say it's a job for a man not a mouse.

9 Sir Prise rides off; his horse returns. Sir Pose rides off; his horse returns. The other five knights ride off; their horses return. Mouse and Hopper ride off to Foe Fum Forest.

5 Mouse meets a witch. She asks if he's going to fight the dragon. She offers a lucky charm. He doesn't need it.

1 They follow a path with well marked signs.

4 Mouse meets an owl. Owl questions mouse's decision to fight the dragon. Mouse says every dragon has his weakness.

8 Mouse meets the dragon. Dragon flees when he recognizes that the mouse is a mouse. Mouse frees knights. They return to the castle and the mouse is dubbed a knight. Hopper is given a special place in the stable.