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THE EFFECT OF THE PLACEMENT OF DETAIL AND INFERENCE
QUESTIONS ON SECOND GRADERS' COMPREHENSION

by

Margaret Jean Glaser

A Dissertation Submitted to the Faculty of the

DEPARTMENT OF READING

In Partial Fulfillment of the Requirements
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In the Graduate College

THE UNIVERSITY OF ARIZONA

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STATEMENT BY AUTHOR

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SIGNED:

Margaret J. Glaser

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ABSTRACT

This study investigated the effect on second graders' comprehension of posing detail, inference, both detail and inference, or no questions prior to their reading a passage.

Three hypotheses were tested. The first predicted that there would be no differences on literal, inferential, or on total comprehension when certain questions were posed before a passage was read or when no questions were posed before reading. The second predicted that the type of question posed prior to reading would not channel the responses on either literal, inferential, or total comprehension toward the type of question posed prior to reading. The third predicted that subjects would respond equally well to questions to which they were exposed prior to reading as to those they met only after they had read a passage.

The sample consisted of eighty second grade children selected from twelve classrooms in the Tucson, Arizona, metropolitan area, which is an urban, multi-cultural area. Only those children were included who scored between 2.5 and 3.0 on the Paragraph Meaning subtest of the Stanford Reading Achievement Tests and who had not repeated a grade in school. None of the subjects had been trained by the investigator to read for

specific information through the use of pre-reading questions. Nor had they been trained to draw inferences from what they read.

The data-collecting instrument consisted of four stories written by the researcher. Each story was followed by eight questions, four detail and four inference. The passages, type of questions pre-posed, and the specific questions pre-posed were rotated to control for any effect of interest or treatment type of one upon the other. Each subject read each story, and each subject received each treatment type: two detail questions posed prior to reading one passage, two inference questions posed before reading another passage, one of each type of question before a third passage, and no questions before a fourth. Scores for each passage were recorded for literal, inferential, and total comprehension.

A repeated measures type of analysis of variance was used to test differences occurring on each of the three types of comprehension under each of the four treatment types. Whether questions posed prior to reading channeled the comprehension of the passages to the type represented by the pre-posed questions was also tested. And finally, whether comprehension of the passage was channeled so as to cover only the content included in the pre-posed questions was analyzed. Findings showed that there were no significant differences on comprehension scores when questions were posed before reading and when they were not. The type of question posed prior to reading did not channel

comprehension to the type represented by the pre-reading questions. The subjects responded equally well to questions posed before reading and to those they encountered only after they had read. Interaction was found between responses to some questions and their placement before or after reading. This interaction was the result of both differential item difficulty and differences in group ability.

Findings supported these conclusions:

1. Posing questions prior to reading a passage neither aids nor impedes literal, inferential, or total comprehension.
2. The type of question posed prior to reading does not channel comprehension of a passage to the type of comprehension required by the question type.
3. The nature of specific questions influences the advantage of their placement either before or after reading.
4. Differences in students' ability influence the advantage of placing questions either before or after reading.

CHAPTER 1

THE PROBLEM

The purpose of this chapter is to present the (1) background of the study, (2) statement of the problem, (3) importance of the study, (4) assumptions, (5) limitations, and (6) definitions of terms.

Background

Reading is generally considered to be a complex process-- as complex as the process of thinking, for reading is a thinking act. Numerous skills have been identified as contributing to the process of reading. These skills have been categorized, listed, and defined in various ways by individual authorities in the field of reading and related areas. Although there is little agreement among these authorities, close scrutiny of their works reveals two major categories of skills: word recognition and comprehension.

These two large categories are interrelated and interdependent. Without word recognition, there can be no comprehension. Without comprehension, some words may not be recognized, and those that are decoded, serve no purpose. However, to meet the needs of study and research, it is possible to concentrate on

one or the other category. It was to the area of comprehension that this study turned.

Within the category of comprehension, identification, grouping, listing, and defining skills differ vastly from one author to another. Betts (1946, pp. 94-95), for example, listed twenty-two main factors of comprehension, several of which have subheadings. Barrett (in Clymer 1968, pp. 19-23) divided comprehension into five major categories, each of which is divided in up to fourteen subheadings. Smith (1963, pp. 262-264) had four major skill areas in comprehension: literal comprehension, interpretation, critical reading, and specific word meanings. In the Wolf, Huck, and King (1967) study, two major divisions were used: literal comprehension and critical reading.

This researcher has culled and synthesized from the literature yet another classification scheme for the skills of comprehension. These skills, it seems, can be grouped as: literal comprehension, inferential comprehension, and evaluative comprehension. As with the skills of word recognition and comprehension, the skills represented in these sub-categories are interrelated. However, in this study, literal and inferential comprehension will be isolated for the purpose of determining what effect the nature and placement of questions have on this comprehension.

The effect of questions on inferential comprehension has been largely ignored in other studies. In spite of this, the

literature in the area of reading is consistent in considering inferential comprehension to be an important part of comprehending at higher levels. How children can be helped to draw inferences and whether or not second graders are able to do so needs to be examined.

The most frequently used activity for teaching comprehension listed in the teachers' manuals of basal reader series is teacher questioning. The importance placed on teachers' questions is borne out in the works of numerous authors and researchers. It is generally considered by these authorities that the level of children's thinking that is elicited is directly related to the type of questions asked. Those studies which deal with the nature of teachers' questions have found that most of the questions asked in classrooms are on the literal level. That is, teachers usually ask questions that require pupils to respond with a fact that is stated in the passage of reading material. These questions most frequently occur after the passage has been read.

The effect of placing questions either before or after a passage is a matter of disagreement. Studies by Rothkopf (1966), Rothkopf and Bisbicos (1967), and Frase (1967, 1968) indicate that when subjects see questions before reading, they perform poorer on a test covering the material read than those who see the questions after reading. On the other hand, Anderson (1960)

and Niles (1968) suggested that questions should precede reading in order to give purpose and direction to the reading.

Drawing inferences is generally considered to be a higher level thinking skill, and therefore reading skill, than the recognition and recall of stated facts. Whether or not children as young as second graders can be taught to use this skill has been studied by Taba, Levine, and Elzey (1964) and by Wolf et al. (1967). The results of these studies are inconclusive since Taba et al. do not report scores for second grade on the test of inferential thinking. In the Wolf et al. study, drawing inferences was considered a part of critical reading and no separate measure was obtained.

This study developed as an outgrowth of consideration given to the implications of the above statements as well as of a survey of a number of teachers' manuals.

Statement of the Problem

It was the purpose of this experimental study to explore the effect of the nature and placement of questions on second graders' level of comprehension. More specifically, it was the purpose of this study to attempt to answer the following questions:

1. Does posing questions before children read a passage affect their comprehension?

A. What will be the effect on literal comprehension when detail, inferential, both detail and inferential, or no questions are posed prior to reading?

B. What will be the effect on inferential comprehension when detail, inferential, both detail and inferential, or no questions are posed prior to reading?

C. What will be the effect on total comprehension when detail, inferential, both detail and inferential, or no questions are posed prior to reading?

2. If a specific type of question is posed prior to reading will the comprehension of the passage be channeled to include only the type of comprehension represented by the question?

A. If only detail questions are posed prior to reading, will comprehension be channeled toward the literal level to the detriment of the inferential level?

B. If only inferential questions are posed before reading, will comprehension be channeled toward the inferential level to the detriment of the literal?

3. Will channeling occur within question types?

A. When two detail questions are posed prior to reading will the literal comprehension of the passage be limited to the content covered by those questions?

B. When two inference questions are posed prior to reading will the inferential comprehension of the passage be limited to content covered by those questions?

C. When one detail and one inference question are posed prior to reading will the comprehension of the passage be limited to content in those questions?

Importance of the Study

This study included in its focus one of the major skill groups of higher level reading comprehension. That higher levels of comprehension, i.e., above the literal level, are important has been acclaimed by many. Chase (1961, p. 11), for example, stated that there are vast numbers of "higher illiterates." These are persons who understand on the literal level that which they read, but who cannot go farther. Eight years after the appearance of the Chase article, Bartolome (1969, p. 32) found that most primary school children were not being led to do higher level thinking than that of responding to memory-type questions. She termed this situation "deplorable." The manual accompanying the Iowa Tests of Basic Skills (Hieronymus and Lindquist 1971, p. 32) exhorted teachers to teach children to read for thought from the first grade on. It reminded educators that children do not suddenly begin to comprehend in the sixth grade when they have not been taught to do so throughout their school years. That schools need this reminder can be inferred from the findings of Austin and Morrison (1963, p. 40) that until grades five and six, skills above the literal level were given less than a "considerable" amount of time.

The importance of this study, then, was that it could:

- (1) contribute to the body of knowledge of how young children can be guided to comprehend at higher levels;
- (2) suggest to teachers the value of using inferential questions;
- (3) demonstrate the effectiveness of questions placed either before or after a selection is read;
- (4) suggest to compilers of teacher's manuals for basal readers the need for higher level comprehension questions;
- (5) provide a model for further studies on a larger scale;
- (6) serve as an impetus for studies involving a developmental program for teaching young children to draw inferences; and
- (7) suggest to those involved in teaching preservice and in-service courses in teacher training the importance of including techniques of teacher questioning in these programs.

Assumptions

In undertaking this study the following assumptions were made:

1. Second grade children can draw inferences from what they read.
2. Questioning is a commonly used device for developing children's reading comprehension.
3. Most teachers use a basal reader and follow the format of its teacher's guide.
4. Few basal reader teacher's guides suggest presenting more than one or two questions prior to reading to guide

children's comprehension. Usually a general motivating question is all that is suggested.

5. It is important to develop inferential comprehension with second grade children.

6. Direct guidance of children's inferential comprehension is frequently neglected.

Limitations

This study included the following limitations:

1. Only children in the second grade who did not repeat either first or second grade were included in the study. Second graders were selected because children this young were not included in previous studies dealing with question placement. The first grade was not selected because limited reading vocabulary at that level could have imposed variables into the study that would be difficult to control. Those who repeated a grade were not included since they may have had learning problems that also might have imposed variables.

2. The sample was stratified to include only those second graders who were reading between the 2.5 and 3.0 levels. The lower limit of this range was selected in order that the passages on the instrument might be read without too great difficulty. The upper limit was set at 3.0 in order that the reading of the passages might not be so easy as to preclude the location of problems children might face when reading in their daily school lessons.

3. Neither intelligence nor cultural background was considered in this study. It was believed that the stratification of reading level and the exclusion of any who had repeated a grade was sufficient.

4. Stories in the instrument were all on the 2.3 level. This was found to be the average level at which stories are written at the beginning of 2¹ basal readers. Stories were all on the same level because the instrument was designed to sample the areas of inferential and literal comprehension in sufficient quantities at one reading level to determine whether differences would occur when treatment varied. The purpose of the instrument was not to test power of reading.

5. The instrument was .7 to .2 of a grade level below the subjects' scores on the standardized test used to stratify the sample. Since little is known about the relationship between scores on this particular test and the actual instructional level of second graders, this amount of difference between readability of the instrument and tested ability of the subjects was deemed sufficient.

Definitions of Terms

The following terms were used in this study in the manner described below:

1. Comprehension: Attaching meaning to the printed page.

2. Literal comprehension: Recognizing and recalling "ideas and information which are explicitly stated in the selection (Barrett, in Clymer 1968, p. 19)."

3. Inferential comprehension: Using one or more explicitly stated facts to arrive at an idea implied by the author but not stated as such.*

4. Evaluative comprehension: Forming judgments about that which has been read based on the "qualities of accuracy, acceptability, desirability, worth, or probability of occurrence (Barrett, in Clymer 1968, p. 22)."

5. Questions: "Any intellectual exercise calling for a response (Sanders 1966, p. 2)."

6. Detail questions: Those questions calling for a response at the literal level of comprehension.

7. Inference questions: Those questions calling for a response at the inferential level of comprehension (see item 3).

*This definition is a composite of Valmont's (1972) definition of inferential and conclusion questions on informal reading inventories.

CHAPTER 2

REVIEW OF THE LITERATURE

Literature found to be pertinent to this study is reviewed in this chapter under the following headings: (1) The Nature of Reading, (2) Comprehension, (3) Teaching Comprehension, (4) Children's Thinking, and (5) Summary and Discussion.

The Nature of Reading

At least as early as 1917, reading was being studied as a thinking process. In his classic study, Edward Thorndike (1917) concluded that reading involves all the characteristics of reasoning. The reader must know the meanings of individual words and give an appropriate weight to each word. Ideas formed must be evaluated in terms of the purpose of the reader.

In citing an article by Gans, Arthur Gates stated that reading "is not a simple mechanical skill. . . (1949, p. 3)." Nor, he continued, can it be thought of as "thought-getting," for that is too narrow a description of the reading process. "[Reading] should be developed as a complex organization of patterns of higher mental processes. It can and should embrace all types of thinking, evaluating, judging, imagining, reasoning, and problem-solving (1949, p. 3)."

The complexity of the reading process was seen by DeBoer and Dallman as a challenge to the teacher. Because reading is a composite of many abilities, "it is . . . necessary to break down general comprehension into the specific skills that constitute it (1970, p. 7)." These authors went on to demonstrate that even when broken down into specific skills, each skill thus identified is a composite of many others.

Comprehension

The identification, categorization, and listing of the specific skills of comprehension have been the focus of many studies and articles in the recent years. There is little agreement among authors as to terminology used and the categories into which specific skills are placed.

Russell stated that both children and adults read at overlapping levels. He listed these levels in the following ascending order (Russell 1961, p. 455):

1. Word identification
2. Casual skimming
3. Creative reading for
 - a. implied and inferred meanings
 - b. appreciative reactions
 - c. critical evaluations.

He described reading for implied and inferred meanings as using the facts that have been given to derive "fresh meanings or relationships." After an accurate reading of the facts, the "child may predict what will happen next or put together speech and action in the story to deduce character or to judge behavior

(1961, p. 456)." Even kindergarten children, according to Russell, can infer what it means when the three bears come back from their walk and find a broken chair and no food.

According to Smith, comprehension "is just a big blanket term that covers a whole area of thought-getting processes in reading (1963, p. 257)." She categorized the skills of comprehension under the headings: Literal Comprehension, Interpretation, Critical Reading, and Specific Word Meanings (1963, pp. 262-264). Reading authorities, Smith stated, are in general agreement that the skill of literal comprehension involves getting the "primary, direct, 'literal' meaning of a word, idea, or sentence in context (1963, p. 262)." Interpretation includes the skills of literal comprehension, but advances beyond that level and involves many thinking skills. In interpretation, the reader is concerned with :

. . . supplying or anticipating meanings not stated directly in the text, such as drawing inferences; making generalizations; reasoning cause and effect; speculating on what happened between events; anticipating what will happen next; detecting the significance of a statement, passage, or selection; making comparisons; identifying the purpose of the writer and the motive of characters; associating personal experience with reading content; forming sensory images; experiencing emotional reactions (Smith 1963, p. 264).

In discussing the skill of critical reading, Smith used a more narrow definition than is generally used. She limited this level of reading to that done when "personal judgment and evaluation are involved (1963, p. 264)." Those who include all the

higher levels of thinking skills under critical reading are "stretching things too far."

The final category Smith included in comprehension was Specific Word Meanings. This category encompasses the skills of understanding semantic differences in words. This skill area functions within all the other levels.

A large scale study by Wolf, Huck, and King (1967, pp. 133-135) explored the possibility of teaching elementary school children to read critically. Their definition of critical reading included eighteen abilities, two of which are subdivided into eight and five subskills respectively. These abilities included such very general ideas as recognizing the importance of reading, understanding that different materials may represent different opinions, questioning as one reads and formulating hypotheses, continuing reading so as to accumulate sufficient information. The more specific abilities reported in their definition of critical reading included: noting the author's and the publisher's purpose, evaluating the reputation of the author, drawing inferences, noting the differences between facts and opinions expressed, following the sequence of a selection, locating and selecting materials needed, evaluating the honesty of what is presented, recognizing propaganda devices, understanding devices such as maps, graphs, and pictures, recognizing the literary form of the selection, and evaluating the literal quality of the material.

Barrett developed a Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension (in Clymer 1968, pp. 19-23). He listed five major categories of reading comprehension: Literal Comprehension, Reorganization, Inferential Comprehension, Evaluation, and Appreciation. Literal comprehension includes the recognition and recall of facts stated in the passage. Reorganization refers to classifying, outlining, summarizing, and synthesizing information stated in the material. Inferential comprehension "is stimulated by purposes for reading and teacher's questions which demand thinking and imagination that go beyond the printed page (Barrett in Clymer 1968, p. 21)." The inferences drawn may be conjectures or hypotheses based on the facts stated. Main ideas, sequences, comparisons, cause and effect, character traits, outcomes, and figurative language may all be inferred from a given passage. Within the evaluation category, the reader makes judgments of reality or fantasy, fact or opinion, the validity, and appropriateness of the selection, the worth, desirability, and acceptability of what he has read. The final category, appreciation, includes the previous categories and in addition requires an "emotional response to literary techniques, forms, styles, and structures (Barrett in Clymer 1968, p. 22)."

With this vast number of skills and the diversity of opinion among reading authorities as to their definition and level of thinking ability, it is no wonder that DeBoer and Dallmann stated that "reading is a challenge to the teacher (1970, p. 7)."

Teaching Comprehension

One of the most frequently used teaching techniques is asking questions. The nature of teachers' questions takes on an important role in teaching comprehension.

Bartolome stated that teacher questions "constitute an important part of [the verbal] output [in the classroom] Teacher questions . . . tend to structure the nature, content, and mode of learning in the classroom (1969, p. 27)." In her study of the nature of teachers' questions related to the stated objectives for the primary reading program, she found that although teachers set the objectives of teaching higher-level thinking, their questions are mostly on the lower levels. Memory questions constituted 47.54% of the total questions asked while interpretation (inference) questions were asked only 9.08% of the time.

In his study of teachers' questioning strategies, Guszak found that 56.9% of the questions asked were on the recall level and only .6% of the translation and 6.5% on the conjecture levels. These levels as he defined them approach the level of inference as is defined in this study. One of the concerns of Guszak's study was the "kinds of thinking that teachers' questions are stimulating (1969, p. 111)." He suggested that teachers determine the kinds of thinking they want to develop in individuals and suit their questions and the materials used to this end.

Davidson was also concerned with the level of thinking that teachers' questions stimulated. He developed an "interaction analysis system [that] identified five kinds of teacher influence [fact questions, thought questions, clarifying questions, teacher clues, and teacher informs] and three levels of children's thinking [critical thinking, literal comprehension, and non-productive thinking] (1969, p. 702)." He concluded that "Teachers have direct control over the kinds of questions that are discussed, the quantity and quality of children's participation, and the stimulation of levels of thinking employed (1969, p. 704)." He suggested that teachers make use of this information in formulating questions.

In order to help teachers formulate questions that would tap the full range of children's thinking, Sanders (1966) prepared a taxonomy of questions that followed Bloom's (1956) Taxonomy of Educational Objectives. Sanders defined the following seven categories of questions: Memory, Translation, Interpretation, Application, Analysis, Synthesis, and Evaluation. Examples of questions that will elicit responses at each of the levels were given.

The effectiveness of asking questions either before or after a passage has been read has been the concern of a number of studies.

In a study by Distad (1927), his sixth grade subjects were asked to read four passages. The reading of one passage

was undirected. On the second passage, eight specific questions were asked prior to the reading. The third passage was preceded by the posing of a general problem. Before reading the fourth passage, the subjects raised eight questions they hoped would be answered in the passage. Distad concluded that if the purpose for reading is the immediate recall of the entire content the undirected approach would be less time-consuming. However, using questions before reading is a worthwhile practice in that it develops habits of reading effectively for different purposes.

Washburne studied the effect of questions on the recall of facts and the making of generalizations when the questions were at the end, beginning, or scattered through a chapter. His subjects were seventh, eighth, and ninth graders. He found that the best placement of questions was prior to reading, and that the worst placement "is that most commonly used--namely, at the end of the chapter [or story] (1929, p. 355)."

Further findings of this study indicated that when questions precede a story, the recall of the facts included in the questions was aided, but the recall of additional facts was not impeded. If the questions preceding the story deal with generalizations, the subjects were not impeded in their ability to draw generalizations other than those asked for in the questions. No conclusions could be drawn from the effect of generalization questions on the recall of facts, but Washburne did conclude that such questions asked before reading "result in an improvement in

generalizing which spreads to facts not covered by such questions (1929, p. 359)."

More recently, Ballard (1964) studied the effect on fourth and fifth grade students of specific guiding questions interspersed in the story, general motivating questions posed before reading a story, and no questions asked prior to reading. He found that the guiding questions were superior to either the motivating questions or no questions at all.

In two studies by Rothkopf (Rothkopf 1966, Rothkopf and Bisbicos 1967), the effect of questions posed before reading a passage was compared with that of having the questions only after the reading of a selection was completed. In the first study, university students were used, and in the second, high school students were the subjects. In both cases, the questions were on the literal level, and the areas covered by them were not questioned on part of the post test. The findings of both studies indicated that there was no value in having the questions before reading the passage. In fact, those who did have them prior to reading, scored lower than those who did not. On the segment of the post test dealing directly with the areas covered by the questions, those who had had the questions before reading scored higher than those who had not seen them.

College students were the subjects for two studies by Frase (1967, 1968) in which he explored the effect on learning and retention of information when questions either preceded or

followed a written passage. The questions used were factual in nature. The findings of both of these studies concurred with those of Rothkopf, i.e., when questioning followed a reading passage, both learning and retention were better than when questions preceded the passage.

Goudey (1968) studied the effect on fourth grade subjects when the questions normally following a paragraph in a standardized reading test were placed before the paragraph. Two subtests of the test were given: Reading for Information and Reading for Appreciation. It was found that the control group, who took the test in its original form, with questions following the paragraphs, scored significantly higher on the information subtest than did the experimental group. No differences were found between groups on the appreciation subtest.

The focus of a study by Fincke (1968) was on the placement of questions to develop purposes for reading in informal reading inventories. The third grade subjects were administered two forms of the informal inventory. On one form, questions were asked before the subjects read a passage. On both forms questions covering the entire content of the passage were asked after the reading. The subjects were found to score higher on those passages in which questions were asked prior to the reading.

When studying the effect of thought-directing questions on comprehension, Grant and Hall concluded that ". . . in general a broad thought-directing question before reading is of value as

far as comprehension is concerned (1968, p. 500)." However, there were some "qualifying conditions." For those subjects who were able to read more than one year above the sixth grade level of the material used, the pre-posed questions were of little value. Subjects who read more than one year below the sixth grade material were hindered by the pre-posed question. But those who were reading from one year below to one year above the instrument's level were aided significantly by the thought-directing question that was posed prior to their reading. Stratification of the sample used in this study was made on the basis of scores on the reading segment of the Iowa Tests of Basic Skills.

Children's Thinking

Most of the studies cited above have dealt with subjects older than the primary grade child. The following two studies included children of that level.

Taba, Levine, and Elzey's study, Thinking in Elementary School Children, was focused on an examination of "the effect of training on the development of thinking (1964, p. iii)." Within the context of the social studies curriculum, children were to be taught strategies of thinking. The instrument on which this study was measured was a social studies inference test. The test consisted of short passages of social studies material followed by inferential questions.

The results of this study indicated that children in the second grade are capable of at least some formal thought, and,

therefore, there is "an earlier beginning of formal thinking than has been suggested by studies of untrained or meagerly trained children (Taba et al. 1964, p. 173)."

An unexpected finding of this study was the low relationship between the level of thinking and intelligence, achievement in social studies, reading comprehension, and social status. When the degree of growth in thinking was compared with intelligence no relationship was found. Subjects with a low I.Q. showed as much growth in thinking as did those with high I.Q.'s.

Taba et al. stated that the most important influence on the cognitive performance of the subjects seemed to be teaching strategies. The nature of the questions teachers asked had "a singular impact on the progression of thought in the class. The questions teachers ask set the limits within which students can operate and the expectations regarding the level of cognitive operations. Questions are the carriers of whatever new cognitive system is emerging (1964, p. 177)."

One of the main purposes of the study by Wolf et al., cited earlier, was to "determine if children in grades one to six could learn to read critically (1967, p. 102)." The term critical reading in this study encompassed all the skills listed earlier in this review. It was found that all experimental groups, including those at the first grade level, were able to read critically after being instructed at this level. When tested on general reading, the experimental groups, who had received

critical reading instruction, scored equally as well as those in the control groups. Thus, it was concluded, instruction in critical reading is not a detriment to advancement in general reading skills.

That study also found that children of all intelligence levels could learn to read critically. Therefore, the indication was that at all intelligence levels usually found within a normal school classroom, children will profit from instruction in the higher levels of reading and thinking.

Summary and Discussion

The literature cited above gives evidence that reading is a complex thinking process. To understand what one reads is a matter of employing a number of interrelated skills. The level of comprehension is directly related to the level of thinking skill that is employed.

Although much disparity was found in the terminology used to designate the skills of reading comprehension, authorities were in agreement that literal comprehension is the lowest level, but basic to the higher levels. Regardless of the terminology used in describing the skill of drawing inferences, or the category under which it was subsumed, inferential thinking was generally considered a higher level comprehension skill.

The questions teachers used were considered extremely important in developing higher level comprehension skills.

Through their questions teachers set the limits of their pupils' thinking.

The research on the effect of the placement of questions has yielded varying results. The majority of the studies which have been done on this problem have used questions on the literal level and no studies have used children as young as second graders.

That children as young as first graders are able to read at higher levels than the literal was stated in two studies. Specifically which levels first and second graders can handle is not known. The Wolf et al. (1967) study did not separate the various skills included under critical reading, but used a simple measure for the combination of these skills. Taba et al. (1964) did not report a score on the test of inferences for second graders.

CHAPTER 3

DESIGN AND PROCEDURES

The purpose of this chapter is to describe the (1) sample, (2) instrument used for collecting data, (3) procedures for treatment, (4) procedures for analyzing the data, and (5) statistical hypotheses.

Sample

Subjects selected to be used in this study were chosen in May 1972, from twelve second grade classes in the Sunnyside School District of the Tucson, Arizona, metropolitan area. This area contains a population of Anglo, Black, and Chicano cultural groups.

The sample was drawn from three schools in the district. Two of those schools were being housed in one building--one group attending classes in the morning, the other in the afternoon. All classrooms from which subjects were drawn were self-contained and the students were heterogeneously assigned to teachers.

The eighty subjects selected for the sample were drawn from a group whose score of reading achievement, as measured by the Paragraph Meaning subtest of the Stanford Reading Achievement Tests, fell within the range of 2.3 to 3.0 inclusive. The test

had been administered during April 1972. No child who had repeated either first or second grade was included.

All subjects selected were using a 2² or higher basal reader for classroom instruction. None of the subjects had been exposed by the researcher to a teaching technique in which they were expected to read for specific details or inferences in response to pre-reading questions. Nor had they been taught to formulate hypotheses before they read.

Instrument

The instrument used in collecting data for this study consisted of four stories written by the researcher. The level of readability of each story was 2.3 as measured by the Spache Readability Formula designed for use with material from first through third grade reading levels. The stories ranged in length from 110 to 126 words with an average of 117 words. The characters in the stories were children and animals in home, school, and work situations. The entire instrument is reproduced in Appendix A.

Following each story were eight open-end questions requiring specific information from the passage. The questions were arranged to follow the sequence of the story. Four questions were detail and four inferential. A pool of questions was submitted to four judges, doctoral students in reading, who labeled them either detail or inference. Only those questions on which 100% agreement was attained were used. Questions

selected were administered to a person unfamiliar with the passages to eliminate any that could be answered without reading. The instrument containing the pool of selected questions was administered to ten children chosen at random from the same population as the sample for the study. Each of the ten children read each of the four stories silently and responded orally to the questions. From this pool of questions, those receiving from 30% to 90% correct responses were selected to be used in the study.

After the instrument was administered to the eighty subjects in the study, reliability coefficients were computed using the split-half technique with the Spearman Brown Prophecy Formula. Passages II and IV were compared with passages I and III. Because of the homogeneity of the group of subjects and the small number of items, the range of the instrument was limited (Stanley 1971, Ebel 1965). Therefore, a corrected reliability coefficient was computed following the procedure set forth by Wick (1973). This procedure for computing the corrected reliability coefficient is as follows:

1. Compute the obtained, or actual, Pearson product-moment coefficient in the usual manner for the split-half technique.

2. Compute the maximum coefficient possible for the instrument by ranking scores from each half of the instrument from high to low, and then compute the coefficient in the usual manner.

3. Compute the corrected coefficient by dividing the maximum into the obtained coefficient.

4. Compute the Spearman Brown Prophecy Formula in the usual manner.

The results of this procedure are summarized in the following table.

Table 1. Split-Half Reliability Coefficients

	r	Spearman Brown
Obtained	.48	.65
Maximum	.67	
Corrected	.72	.84

Thus, the corrected reliability of this instrument was .84 well beyond the .60 cited by Thorndike and Hagen (1961, p. 190) that would result in reversals of the 25 and 75 percentiles only 1.2% of the time.

In analyzing responses to each of the thirty-two items, the range of frequency of correct responses by the eighty subjects was 19-74, or 24% to 93%. The median frequency was 55, thus 69% of the responses to that item were correct. See Appendix B for a table of percentages of correct responses to all questions.

In this study, it was assumed that second grade children would be able to draw inferences from what they read. An

analysis of variance for dependent groups was used to determine whether this was a tenable assumption. Mean scores attained on the sixteen detail questions and the sixteen inference questions were computed. In Table 2 are summarized the results of the analysis.

Table 2. Differences Between Mean Scores on Detail and Inference Questions

Detail	Means Inference	df	F
10.76	9.41	79	26.285*

*P<.0001

It can be seen that there is a highly significant difference between second graders' ability to respond to detail questions and to inference questions. That difference may be due, at least in part, to item writing. On a practical plane, the difference was not so great that it must be concluded that second graders cannot draw inferences from what they read.

The mean score achieved on the total test of thirty-two items was 20.175. This represents correct responses to 63% of the items.

In discussing the ideal level of difficulty for a test, Thorndike and Hagen (1969) stated that as a "rule of thumb" short answer type questions should produce mean scores of 50%.

However, there is fairly general agreement among reading authorities that scores below 75% on informal reading inventories indicate that the material is more difficult than that with which the student can be instructed effectively. Considering comprehension scores falling between 75% and 90% to indicate the reader's instructional level has been a tradition in the field of reading since 1942 when Killgallon (in Beldin 1970) concluded that that level of comprehension coincided with his criterion of 95% word recognition at the instructional level. These criteria (95% word recognition and 75% comprehension) have been considered "fairly well validated through use (Beldin 1970, pp. 76-77)."

The 75% comprehension level, although widely used, is not universally accepted. Powell (1970) stated that agreement with the Killgallon criteria is dangerous because they are based on a study using only thirty-nine fourth grade children.

Some authorities in tests and measurement also disagree with the position of holding that scores on an informal reading inventory below 75% indicate that the reading material is too difficult. They maintain that any one set of questions is a sample of a number of such sets that could be generated from any particular passage. Thus a subject's responses may be better on one set than on any others (Sabers 1972).

The use of standardized tests to locate an ideal reading level for instructional purposes is also a disputed practice.

Betts stated that "standardized tests of reading achievement tend to place children at their frustration level (1946, p. 450)."

The previously cited study by Killgallon (1942) also considered the relationship between results of standardized tests and those of informal reading inventories. He concluded that students score about one year higher on standardized tests than their instructional level on an informal reading inventory. McCracken (1962) suggested that scores on standardized tests be lowered two years to find the student's instructional level. Neither the Killgallon nor the McCracken study used subjects below the fourth grade. The relationship between second graders' scores on standardized tests and their instructional level apparently has not been studied to the extent that it has been with older children.

A study by Grant and Hall (1968) indicated that when sixth graders read material more than one year beyond their instructional level, they were not aided by thought-directing questions posed prior to the reading of a selection. In fact, such questions seemed to hinder their comprehension. Those subjects who were reading at their instructional level scored significantly better when given such questions prior to reading. In that study, instructional level was defined as sixth grade material read by those scoring from 5.0 to 7.0 on a standardized test.

The subjects in the present study were asked to read material at the 2.3 level. Their standardized test scores ranged

from 2.5 to 3.0. The mean score attained on the instrument was 63%. Thus, if the instrument is likened to an informal reading inventory, the subjects were asked to read material below their instructional level. If the instrument is looked upon from a measurement point of view, the mean score was somewhat higher than that suggested for the type of questions used.

Treatment

Four types of treatment were used: (1) two detail questions posed before reading, (2) two inference questions posed before reading, (3) one each detail and inference question posed before reading, and (4) no questions posed before reading.

Questions posed before reading were selected from the eight questions following each passage. All eight questions were asked of all subjects after each passage had been read.

Sixteen treatment sequences were established in order to rotate the position of the four passages in the instrument. The position of the type of treatment as well as of the specific questions posed prior to reading were rotated. (See Figure 1 for an illustration of this rotation.)

The rotation of passage position was done for the purpose of controlling any effect caused by carry-over of differences of interest in any particular passage. Since all subjects read all passages, the effect of overall differences of interest was controlled. The rotation of treatment-type also controlled the effect of differences cause by any one treatment-type on any other.

		Treatment Sequence							
		I	II	III	IV	V	VI	VIII	VIII
Passage and Question Sequence	P I	P I	P I	P I	P II	P II	P II	P II	
	d 1,2	n	b 1,1	i 1,2	d 1,2	n	b 1,1	i 1,2	
	P II	P II	P II	P II	P III	P III	P III	P III	
	i 2,3	d 2,3	n	b 2,2	i 2,3	d 2,3	n	b 2,2	
	P III	P III	P III	P III	P IV	P IV	P IV	P IV	
	b 3,3	i 3,4	d 3,4	n	b 3,3	i 3,4	d 3,4	n	
	P IV	P IV	P IV	P IV	P I	P I	P I	P I	
	n	b 4,4	i 1,4	d 1,4	n	b 4,4	i 1,4	d 1,4	
	IX	X	XI	XII	XIII	XIV	XV	XVI	
	P III	P III	P III	P III	P IV	P IV	P IV	P IV	
	d 1,2	n	b 1,1	i 1,2	d 1,2	n	b 1,1	i 1,2	
	P IV	P IV	P IV	P IV	P I	P I	P I	P I	
	i 2,3	d 2,3	n	b 2,2	i 2,3	d 2,3	n	b 2,2	
	P I	P I	P I	P I	P II	P II	P II	P II	
	b 3,3	i 3,4	d 3,4	n	b 3,3	i 3,4	d 3,4	n	
	P II	P II	P II	P II	P III	P III	P III	P III	
n	b 4,4	i 1,4	d 1,4	n	b 4,4	i 1,4	d 1,4		

P = Passage number
 d = detail questions posed before reading
 i = inference questions posed before reading
 b = one each detail and inference question posed before reading
 n = no questions asked before reading

Figure 1. Treatment, Passage, and Question Rotation

The rotation of specific questions used within a treatment-type ensured that each question would be posed prior to reading at some time. Thus any effect caused by the nature of any particular question was controlled. This rotation of questions also controlled any effect caused by the placement of content covered by the questions, for in post reading questioning, the questions followed the sequence of the story.

Eight examiners were used to collect data for the study. Six were student teachers enrolled in a methods of teaching reading course at The University of Arizona. Two, including the researcher, were doctoral students in reading at The University of Arizona.

Subjects were taken from their classrooms to a multipurpose room or to an empty classroom for the testing. Examiners sat with one subject at a time at small tables or child-sized desks at various places in the same room. It was possible for the researcher to spot-check the procedures being used by each of the examiners. As one child finished the test, he was told to bring the next child on the master list to his examiner. While waiting for his next subject to arrive, the examiner scored the test just finished and selected a packet of materials for the next child.

Testing was done throughout the morning at the school that was on a full day session. At the schools on double session, the morning group was tested throughout the morning, the

afternoon group throughout the afternoon. The collection of data extended over a two-week period--the last week in May and the first week in June 1972.

Five of the eighty subjects were assigned randomly to each of the sixteen treatment types. Subjects were then assigned randomly to examiners in the manner described above. No examiner administered one treatment-type to all five subjects. Specific directions given to the examiners are listed in Appendix C.

Analysis of the Data

For each of the eighty subjects, three comprehension scores were obtained in order to determine if type of treatment would affect differences in comprehension. The scores recorded were (1) number of correct responses to detail questions, (2) number of correct responses to inference questions, and (3) number of correct responses to both detail and inference questions--total comprehension scores.

In addition to the three comprehension scores, the number of correct responses to detail questions and to inference questions were recorded for each of the following situations:

1. Correct responses to all four detail questions following a passage when two of those questions were posed before reading.

2. Correct responses to all four inference questions when two of those questions were posed before reading.

3. Correct responses to all four detail questions when one of those questions was posed before reading in combination with one inference question.

4. Correct responses to all four inference questions when one of those inference questions was posed before reading in combination with one detail question.

5. The number of correct responses to the two detail questions posed prior to reading and the number of correct responses to the two detail questions not posed prior to reading.

6. The number of correct responses to the two inference questions posed prior to reading and the number of correct responses to the two inference questions not posed prior to reading.

7. The number of correct responses to the one detail question posed before reading and the number of correct responses to the three detail questions not posed before reading.

8. The number of correct responses to the one inference question posed before reading and the number of correct responses to the three inference questions not posed before reading.

Statistical Hypotheses

The following null hypotheses were tested:

1. There will be no differences among treatment types in the comprehension of a passage.

A. There will be no differences among treatment types on scores of literal comprehension.

B. There will be no differences among treatment types on scores of inferential comprehension.

C. There will be no differences among treatment types on scores of total comprehension.

2. There will be no differences between the proportion of correct responses* to the type of question asked prior to reading and correct responses to the type asked only after reading.

A. There will be no difference between the proportion of correct responses to detail and inference questions when only detail questions are posed prior to reading.

B. There will be no difference between the proportion of correct responses to detail and inference questions when only inference questions are posed prior to reading.

3. There will be no differences in the proportion of correct responses to questions posed prior to reading and those asked only after reading within either question type.

A. There will be no difference in proportion of correct responses to the two detail questions posed prior to reading and the two detail questions asked only after the reading.

*Proportion of correct responses is often referred to as the difficulty index of an item. In effect this is testing whether the placement of a question affects its difficulty.

B. There will be no difference in the proportion of correct responses to the two inference questions posed prior to reading and the two inference questions asked only after the reading.

C. There will be no difference in the proportion of correct responses to the one detail and the one inference question posed before reading and the number of correct responses to the three of each type of question asked only after the reading.

A repeated measures type of one way analysis of variance was used to test hypothesis 1. For hypothesis 1A the dependent variable was scores on the detail questions; for 1B it was scores on the inference questions; and for 1C total scores were used.

In testing hypothesis 2, mean scores were inspected and differences noted. Since the differences were so slight no further statistical analysis was deemed necessary.

For testing hypothesis 3, a repeated measures type of two-way analysis of variance was used. The effect of treatment type on each question pair was analyzed.

CHAPTER 4

FINDINGS OF THE STUDY

The findings of this study are presented under the following four headings: (1) Findings Regarding Hypothesis 1; (2) Findings Regarding Hypothesis 2; (3) Findings Regarding Hypothesis 3, Main Effects and Interaction; and (4) Summary of the Findings.

Findings Regarding Hypothesis 1

Hypothesis 1 stated: There will be no differences among treatment types in the comprehension of the four passages. This hypothesis predicted that there would be no differences on responses to detail questions, inference questions, or on a total score of detail and inference questions when certain questions were posed prior to reading. Tables 3, 4, and 5 summarize the results of the statistical analysis performed.

Table 3. Analysis of Variance of Treatment Types, Literal Comprehension

Source	df	MS	F
Question Placement	3	1.0448	1.115
Error	237	.9372	
Total	319	1.1046	

Table 4. Analysis of Variance of Treatment Types, Inferential Comprehension

Source	df	MS	F
Question Placement	3	.2865	.323
Error	237	.8877	
Total	319	1.0442	

Table 5. Analysis of Variance of Treatment Types, Total Comprehension

Source	df	MS	F
Question Placement	3	.8375	.326
Error	237	2.5675	
Total	319	3.1329	

Findings reported in Tables 3, 4, and 5 indicate that the null hypothesis could not be rejected. No significant differences were found among treatment types, the position of questions. Whether questions were posed before the subjects read a passage made no difference on scores of literal, inferential, or total comprehension.

In Table 6 are reported mean scores tested in the analysis for literal, inferential, and total comprehension when detail, inference, or both types of questions preceded reading and when no questions were posed before reading.

Table 6. Mean Comprehension Scores on Post-Reading Questions for Various Treatment Types

Type of Comprehension	Treatment (Type of Pre-Reading Question)			
	Detail	Inference	Both	None
Literal (4 questions)	2.7500	2.8000	2.5375	2.6750
Inferential (4 questions)	2.3250	2.3750	2.4250	2.2875
Total (8 questions)	5.0750	5.1750	4.9625	2.9625

Findings Regarding Hypothesis 2

Hypothesis 2 stated: There will be no differences between the proportion of correct responses to the type of question asked prior to reading and correct responses to the type asked only after reading. This hypothesis predicted that the type of question posed prior to reading would not direct the responses solely toward the type of question posed prior to reading. Table 7 summarizes the mean scores obtained on literal and inferential comprehension when detail or inference questions were posed before reading. Differences between mean scores when question type varied are also given.

Since the differences between literal and inferential comprehension scores when each of the types of pre-reading questions were posed were minimal, the null hypothesis could not be rejected. Asking detail questions prior to reading did not

channel post-reading comprehension scores toward the literal to the exclusion of inferential. Pre-posing inference questions did not channel comprehension toward the inferential to the exclusion of the literal.

Table 7. Differences Between Mean Literal and Mean Inferential Scores When Pre-Reading Question Types Differ

Type of Comprehension	Type of Pre-Reading Question Detail	Inference	Difference
Literal	2.7500	2.8000	-0.05
Inferential	2.3250	2.3750	-0.05

Findings Regarding Hypothesis 3

Hypothesis 3 stated: There will be no difference between the proportion of correct responses to the two questions posed prior to reading and to those asked only after reading, whether these pre-reading questions be detail, inference, or one of each. This hypothesis predicted that second graders would respond equally well to questions posed prior to reading as they would to those they met only after reading. That is, there would be no channeling of responses toward the detail, the inference, nor the one of each type of question posed prior to reading. The findings regarding this hypothesis will be presented under two headings: Main Effects and Interaction.

Main Effects

The main factors of the two-way analysis of variance used to test data under this hypothesis were: (1) differences occurring in responses to question pairs in each passage, and (2) differences in responses to questions posed prior to reading and to those asked only after.

Main Effects--Detail Questions. Tables 8 through 11 summarize findings of this analysis for each of the four passages when only detail questions were considered.

Table 8. Analysis of Variance of Question Pairs and Placement--
Passage I, Detail Questions

Source	df	MS	F
Between	19	.3895	
Question Pairs	3	.2667	.646
Error	16	.4125	
Within	20	.3500	
Question Placement	1	.1000	.276
Questions X Placement	3	.3667	1.011
Error	16	.3625	
Total	39	.3692	

Table 9. Analysis of Variance of Question Pairs and Placement--
Passage II, Detail Questions

Source	df	MS	F
Between	19	.3829	
Question Pairs	3	.2250	.545
Error	16	.4125	
Within	20	.3750	
Question Placement	1	.6250	2.381
Questions X Placement	3	.8917	3.397*
Error	16	.2625	
Total	39	.3788	

* $P < .05$

Table 10. Analysis of Variance of Question Pairs and Placement--
Passage III, Detail Questions

Source	df	MS	F
Between	19	.3303	
Question Pairs	3	.4250	1.360
Error	16	.3125	
Within	20	.3750	
Question Placement	1	.6250	1.613
Questions X Placement	3	.2250	.581
Error	16	.3875	
Total	39	.3532	

Table 11. Analysis of Variance of Question Pairs and Placement--
Passage IV, Detail Questions

Source	df	MS	F
Between	19	.7158	
Question Pairs	3	1.2000	1.920
Error	16	.6250	
Within	20	.2000	
Question Placement	1	.1000	.444
Questions X Placement	3	.1000	.444
Error	16	.2250	
Total	39	.4513	

In Table 12 are reported mean scores attained on the detail questions for each of the passages. Also tabulated are mean scores attained when the detail questions were posed before and after reading.

Table 12. Mean Scores on Each Pair of Questions and on Each Placement--Passages I, II, III, and IV, Detail Questions

Passage	Mean Scores					
	Question Pairs*				Placement	
	A	B	C	D	Before	After
I	1.5	1.3	1.3	1.1	1.35	1.25
II	1.3	1.0	1.0	1.0	.95	1.20
III	1.6	1.6	1.3	1.8	1.70	1.45
IV	1.1	1.9	1.7	1.7	1.55	1.65

*A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Findings reported in Tables 8 through 11 indicate that no significant differences on detail scores were found between the main effects tested: (1) subjects' responses to the pairs of detail questions on any of the four passages, and (2) their responses to those questions asked either before or only after the reading. On Passage II there was significant interaction between specific question pairs and their placement in the treatment. This interaction will be discussed, together with other interactions found, beginning on page 52.

Main Effects--Inference Questions. Tables 13 through 16 summarize the findings of the analysis of scores when only inference questions were considered.

Table 13. Analysis of Variance of Question Pairs and Placement--
Passage I, Inference Questions

Source	df	MS	F
Between	19	.4355	
Question Pairs	3	.4917	1.157
Error	16	.4250	
Within	20	.8250	
Question Placement	1	.0250	.034
Question X Placement	3	1.6250	2.241
Error	16	.7250	
Total	39	.6353	

Table 14. Analysis of Variance of Question Pairs and Placement--
Passage II, Inference Questions

Source	df	MS	F
Between	19	.4461	
Question Pairs	3	.0917	.179
Error	16	.5125	
Within	20	.8250	
Question Placement	1	.0250	.051
Questions X Placement	3	2.8917	5.932*
Error	16	.4875	
Total	39	.6404	

* $P < .01$

Table 15. Analysis of Variance of Question Pairs and Placement--
Passage III, Inference Questions

Source	df	MS	F
Between	19	.3947	
Question Pairs	3	.3000	.727
Error	16	.4125	
Within	20	.8000	
Question Placement	1	1.6000	3.122
Questions X Placement	3	2.0667	4.033*
Error	16	.5125	
Total	39	.6026	

* $P < .05$

Table 16. Analysis of Variance of Question Pairs and Placement--
Passage IV, Inference Questions

Source	df	MS	F
Between	19	.4355	
Question Pairs	3	.8917	2.548
Error	16	.3500	
Within	20	.2750	
Question Placement	1	.2250	.818
Questions X Placement	3	.2917	1.061
Error	16	.2750	
Total	39	.3532	

In Table 17 are recorded mean scores on the inference questions for each of the passages. Also tabulated are mean scores attained when the inference questions were posed before and after reading.

Table 17. Mean Scores on Each Pair of Questions and on Each Placement--Passages I, II, III, and IV, Inference Questions

Passage	Mean Scores					
	Question Pairs**				Placement	
	A	B	C	D	Before	After
I	1.2	.8	1.0	1.3	1.10	1.05
II	1.1	1.0	.9	1.1	1.00	1.05
III	1.1	1.2	1.2	1.5	1.45	1.05
IV	1.0	1.7	1.5	1.5	1.35	1.50

*A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Findings reported in Tables 13 through 16 indicate that no significant differences on inference scores were found between the main effects tested: (1) subjects' responses to the pairs of inference questions on any of the four passages, and (2) their responses to these questions when asked either before or only after reading. On Passages II and III significant interaction was found between specific question pairs and their placement in the treatment. These interactions will be discussed, along with other interactions found, beginning on page 52.

Main Effects--Both Types of Questions. The results of the analysis of scores when both detail and inference questions were considered are summarized in Tables 18 through 21.

Table 18. Analysis of Variance of Question Pairs and Placement--
Passage I, Both Types of Questions

Source	df	MS	F
Between	19	.1349	
Question Pairs	3	.2290	1.953
Error	16	.1173	
Within	20	.1229	
Question Placement	1	.0112	.095
Questions X Placement	3	.1870	1.586
Error	16	.1179	
Total	39	.1288	

Table 19. Analysis of Variance of Question Pairs and Placement--
Passage II, Both Types of Questions

Source	df	MS	F
Between	19	.0789	
Question Pairs	3	.0796	1.010
Error	16	.0788	
Within	20	.1086	
Question Placement	1	.0119	.170
Questions X Placement	3	.3469	4.960*
Error	16	.0699	
Total	39	.0941	

*p<.05

Table 20. Analysis of Variance of Question Pairs and Placement--
Passage III, Both Types of Questions

Source	df	MS	F
Between	19	.1392	
Question Pairs	3	.2647	2.288
Error	16	.1157	
Within	20	.0829	
Question Placement	1	.0176	.239
Questions X Placement	3	.1530	2.074
Error	16	.0738	
Total	39	.1103	

Table 21. Analysis of Variance of Question Pairs and Placement--
Passage IV, Both Types of Questions

Source	df	MS	F
Between	19	.1802	
Question Pairs	3	.0526	.258
Error	16	.2041	
Within	20	.0843	
Question Placement	1	.0006	.006
Questions X Placement	3	.0975	1.120
Error	16	.0871	
Total	39	.1310	

In Table 22 are recorded mean scores on both types of questions for each of the passages. Also tabulated are mean scores attained on the questions posed before and those after. In this situation, the pair of questions posed before was composed of one each detail and inference. The questions asked after were three each detail and inference.

Table 22. Mean Scores on Each Pair of Questions and on Each Placement--Passages I, II, III, and IV, Both Types of Questions

Passage	Mean Scores					
	Question Pairs*				Placement	
	A	B	C	D	Before	After
I	.417	.6510	.616	.7830	.600	.634
II	.567	.568	.384	.550	.500	.534
III	.483	.867	.651	.583	.625	.667
IV	.666	.833	.700	.716	.725	.733

*A = Detail 1 and Inference 1
 B = Detail 2 and Inference 2
 C = Detail 3 and Inference 3
 D = Detail 4 and Inference 4

Tables 18 through 21 illustrate that no significant differences were found between the main factors: (1) subjects' responses to the pairs of questions composed of one detail and one inference question, and (2) their responses to those questions asked before or only after reading. On Passage II, interaction between specific questions and their placement was significant. This interaction will be discussed, together with the other interactions found, in the following section.

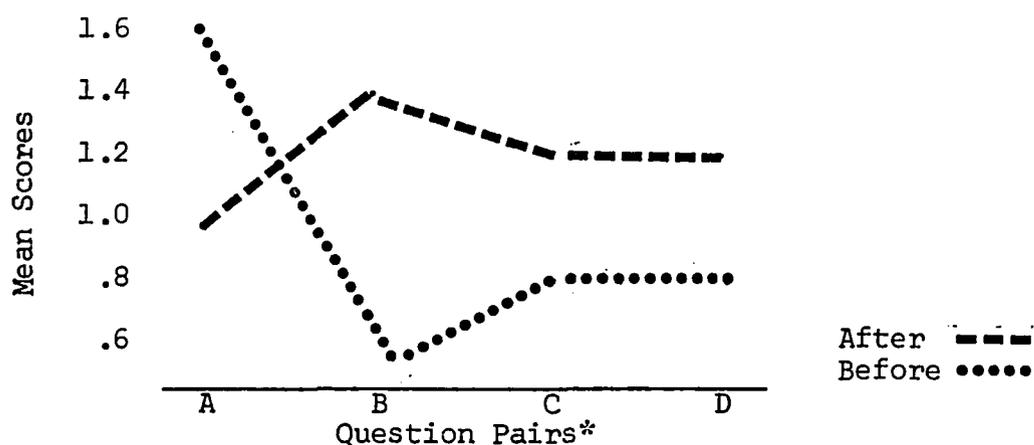
Based on the results of the analysis of the main effects tested under Hypothesis 3, the decision not to reject the hypothesis must be made. However, interpretation of the main effects must take into consideration the significant interactions that were found. These interactions are discussed in the following section.

Interaction

Significant interaction occurred between the main factors tested under Hypothesis 3 in four instances: (1) Passage II on detail questions, (2) Passage II on inference questions, (3) Passage III on inference questions, and (4) Passage II on both kinds of questions. For each of those four situations, the interactions were viewed from two standpoints: (1) as a result of differences in question difficulty with group ability assumed equal, and (2) as a result of differences in the ability of groups of subjects who, through the process of randomization, were assigned

to respond to a particular order of questions. When group ability is considered, question difficulty is assumed to be equal.

Interaction--Passage II, Detail. Figure 2 is a graph of the interaction effect, viewed from the standpoint of differences in question difficulty, with equal ability of groups assumed, found on Passage II when only detail questions were considered.



- *A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Figure 2. Interaction Effect, Varying Question Difficulty, Equal Group Ability: Question Pairs X Placement-- Passage II, Detail Questions

The graph in Figure 2 indicates that on Passage II detail question pair A was answered correctly to a greater extent when posed before reading than it was when asked only after. Pairs B, C, and D were responded to correctly to a greater extent when asked only after the passage was read.

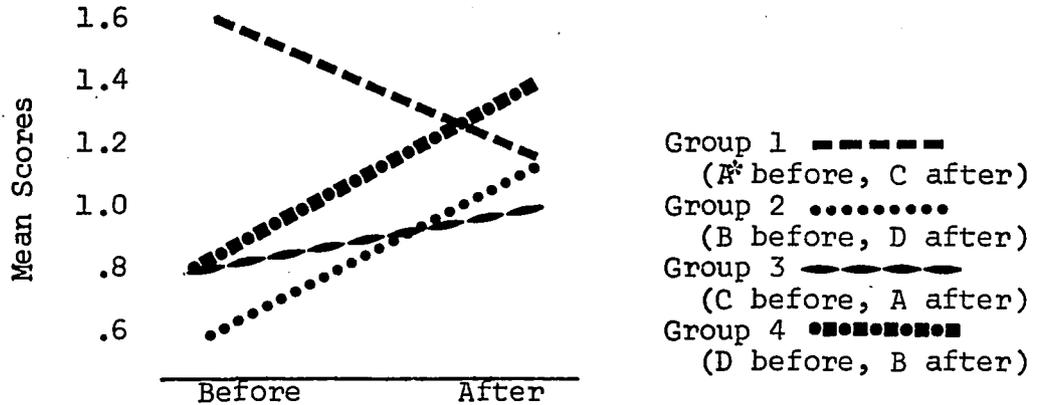
In Table 23 appear the percentages of correct responses to the detail questions on Passage II.

Table 23. Percentages of Correct Responses to Questions--
Passage II, Detail Questions

Question	%	Question Pair	Mean %
1	64	A (1 and 2)	69
2	75	B (2 and 3)	57
3	40	C (3 and 4)	40
4	40	D (1 and 4)	52

Question pair A which received the highest overall percentage of correct responses on this passage was answered correctly to a greater extent when posed prior to reading. Pairs B, C, and D were answered correctly to a greater extent when asked only after reading and received a lesser overall percentage of correct responses than did pair A.

Figure 3 is a graph of the interaction found on Passage II, detail, viewed from the standpoint of differences in ability of the groups of subjects assigned to the particular order of question presentation when item difficulty is assumed to be equal. Mean scores attained by groups of subjects on each question pair have been plotted according to question placement.

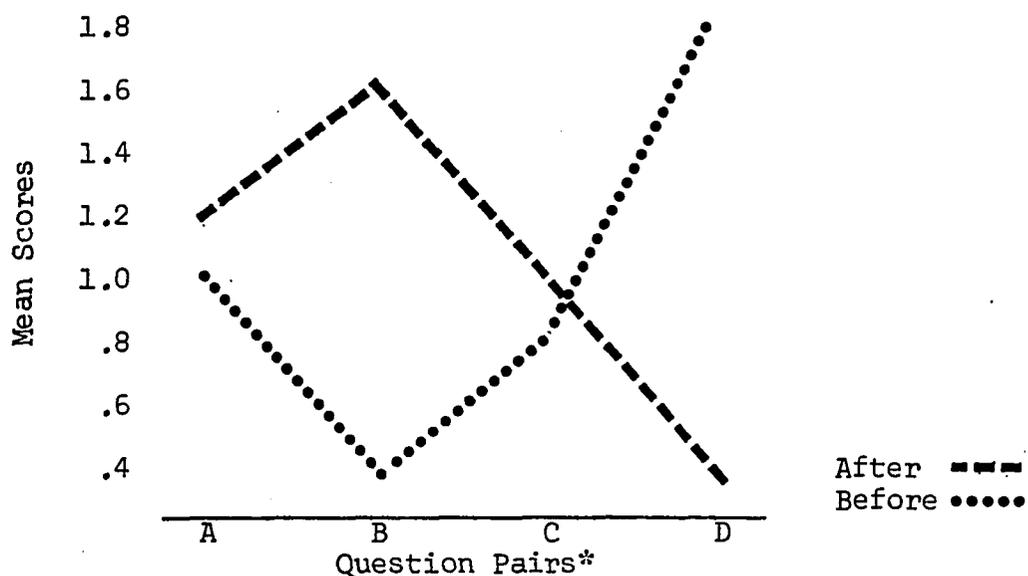


*A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Figure 3. Interaction Effect, Varying Group Ability, Equal Item Difficulty: Question Pairs X Placement--Passage II, Detail Questions

Figure 3 illustrates that Group 1 responded to their pre-reading questions better than to those presented after reading. Groups 2, 3, and 4 responded somewhat better to post-reading questions. However, the clustering of the scores on questions after reading indicates little difference in group ability on this set of questions.

Interaction--Passage II, Inference. The interaction effects occurring on Passage II when inference questions were considered are plotted in Figures 4 and 5. In Figure 4, the interaction of variability of question difficulty when posed before or only after is considered.



*A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Figure 4. Interaction Effect, Varying Item Difficulty, Equal Group Ability: Question Pairs X Placement--Passage II, Inference Questions

The graph in Figure 4 illustrates that question pair B was answered correctly to a greater extent when asked after the reading. Pairs A and C were somewhat better when they occurred after reading. Pair D was answered correctly to a much greater extent when posed before reading than when asked only after.

In Table 24 are presented the percentages of correct responses to each of the inference questions on Passage II and a mean percentage when the questions were paired.

Table 24. Percentages of Correct Responses to Questions--
Passage II, Inference Questions

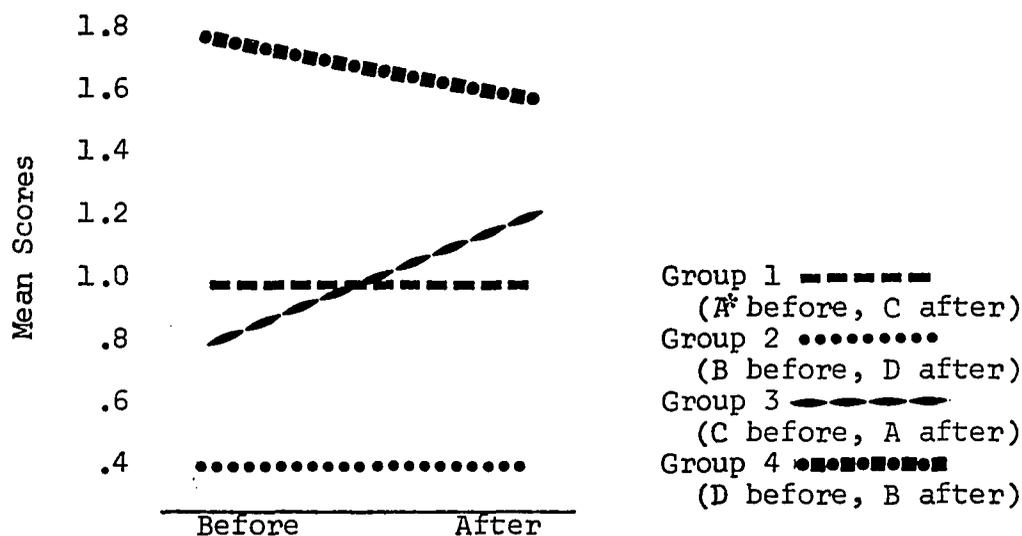
Question	%	Question Pair	Mean %
1	78	A (1 and 2)	51
2	24	B (2 and 3)	25
3	26	C (3 and 4)	48
4	70	D (1 and 4)	74

As indicated in Table 24, question pairs A, B, and C received the lowest percentage of correct responses. These pairs were answered better after reading. Pair D, on the other hand, received the highest mean percentage and was answered correctly most frequently when posed prior to reading.

When the difficulty of the inference questions on Passage II was assumed to be equal, but differences in the ability of the groups of subjects assumed to exist, the interaction effect appeared as in Figure 5. Mean scores obtained by the groups of subjects on questions answered before and those answered after reading have been plotted.

Figure 5 illustrates that differences in responses to questions before or after within each group are minimal. However, there is substantial difference between all responses by Group 4 and those by Group 2. Although Groups 1 and 3 are similar to each other, they differ from Groups 2 and 4 in overall

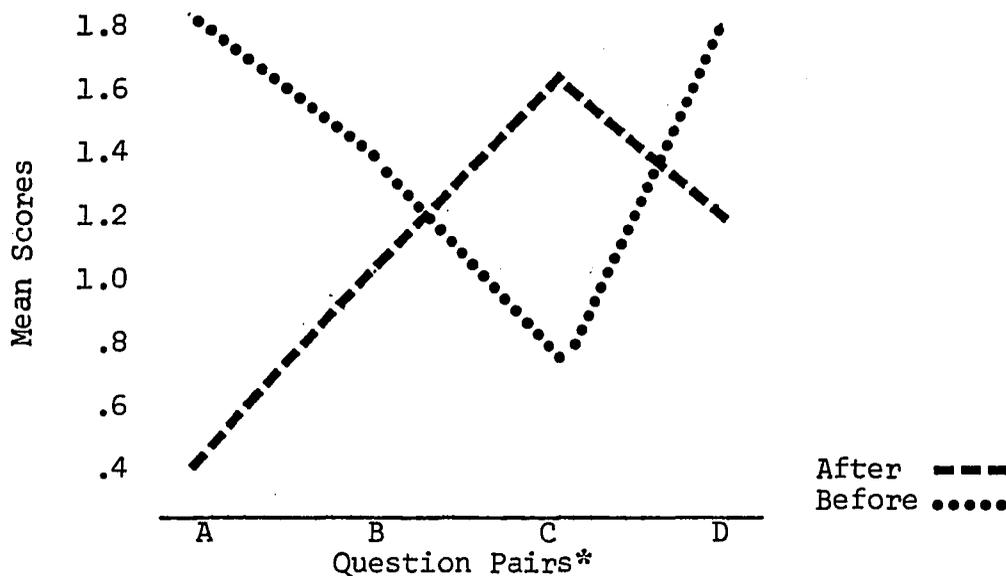
responses. The differences influencing interaction in this instance appear to be the result of varying ability from group to group rather than the result of question difficulty or placement.



*A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Figure 5. Interaction Effect, Varying Group Ability, Equal Item Difficulty: Question Pairs X Placement--Passage II, Inference Questions

Interaction--Passage III, Inference. On Passage III when inference questions were considered, the interaction effects were also viewed from the standpoints of question difficulty and differences in group ability. In Figure 6 are plotted mean scores attained on question pairs when those pairs were asked before and after reading, considering the effect of item difficulty.



- *A = Questions 1 and 2
 B = Questions 2 and 3
 C = Questions 3 and 4
 D = Questions 1 and 4

Figure 6. Interaction Effect, Varying Item Difficulty, Equal Group Ability: Question Pairs X Placement--Passage III, Inference Questions

The graph in Figure 6 indicates that question pair A was answered correctly to a greater extent when posed before reading. Pairs B and D were somewhat better when they occurred before reading. Pair C was better when asked only after reading.

In Table 25 are listed the percentages of correct responses to each of the questions and the mean percentage when the questions were paired. It can be seen in Table 25 that Pair A received the highest percentage of correct responses. When that pair preceded reading, it was answered better than when asked only after reading. Pairs B and D also received

higher percentages of correct responses than did Pair C, and were answered better when they were posed before reading. Pair C which received the lowest percentage of correct responses on this passage was answered better when presented after reading.

Table 25. Percentages of Correct Responses to Questions--
Passage III, Inference Questions

Question	%	Question Pair	Mean %
1	78	A (1 and 2)	78
2	80	B (2 and 3)	66
3	51	C (3 and 4)	50
4	50	D (1 and 4)	63

When Passage III, Inference, is viewed from the standpoint that item difficulty was equal but group ability varied, the interaction appears as plotted in Figure 7. It can be seen in this figure that Group 3 scored much lower on both those questions posed prior to their reading and those asked only after reading than did the other three groups. This indicates that differences in group ability influenced the interaction to some extent. Thus, the interaction on Passage III, Inference, occurred both as a result of differences in question difficulty and differences in the ability of the groups.

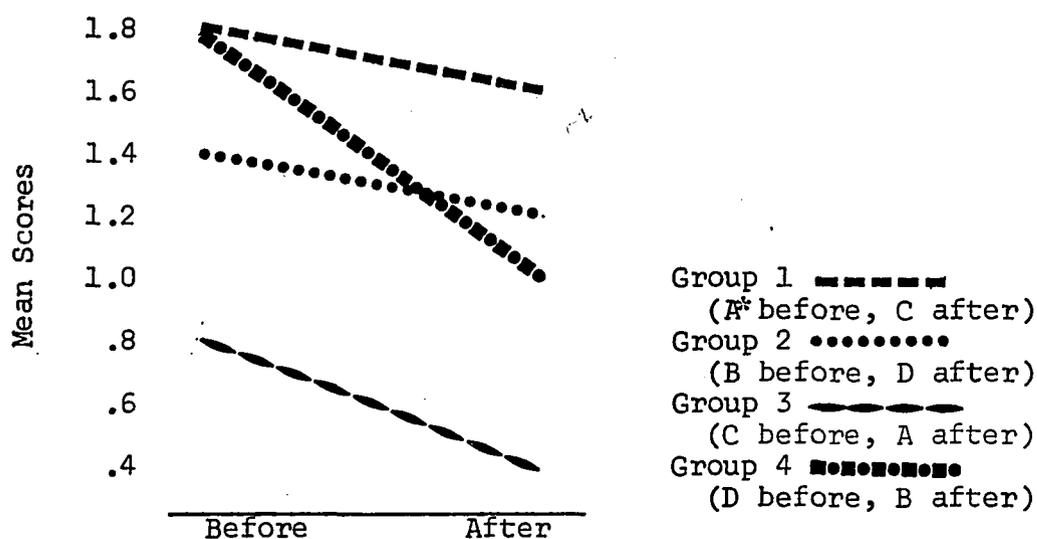
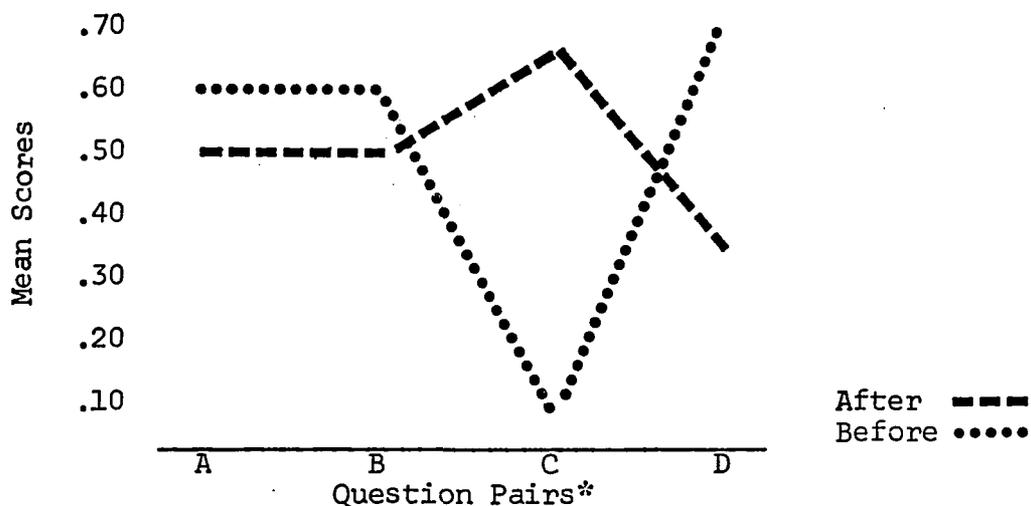


Figure 7. Interaction Effect, Varying Group Ability, Equal Item Difficulty: Question Pairs X Placement--Passage III, Inference Questions

Interaction--Passage II, Both Types of Questions. The interaction on Passage II when both types of questions were asked must also be viewed from both the standpoint of differences in question difficulty and differences in ability of the groups assigned to a specific treatment sequence. Figure 8 is a graph of the interaction effect on Passage II when variation is assumed to exist in the difficulty of the questions, but group ability is assumed to be equal. Mean scores have been rounded to the nearest hundredth.



- *A = Detail 1 and Inference 1
 B = Detail 2 and Inference 2
 C = Detail 3 and Inference 3
 D = Detail 4 and Inference 4

Figure 8. Interaction Effect, Varying Item Difficulty, Equal Group Ability: Question Pairs X Placement--Passage II, Both Types of Questions

The graph in Figure 8 illustrates that when question pair D was posed before reading it was answered better than when asked only after. Pairs A and B also were better before reading, but only slightly so. Pair C was much better when asked only after reading than when posed before.

The percentages of correct responses to each of the questions on Passage II and the mean percentage when the questions were paired are presented in Table 26. This table illustrates that question pairs A, B, and D received the highest percentages of correct responses. These pairs were also found to be answered better when they were posed before reading. Pair C which

received the lowest percentage of correct responses on this passage was answered better when asked only after reading.

Table 26. Percentages of Correct Responses to Questions--
Passage II, Both Types of Questions

Question	%	Question Pair*	Mean %
Detail 1	64	A	71
Inference 1	78		
Detail 2	75	B	50
Inference 2	24		
Detail 3	40	C	33
Inference 3	26		
Detail 4	40	D	55
Inference 4	70		

*A = Detail 1 and Inference 1
 B = Detail 2 and Inference 2
 C = Detail 3 and Inference 3
 D = Detail 4 and Inference 4

Differences in group ability on Passage II when both types of questions were considered is illustrated in Figure 9. Mean scores attained on the pre-reading question pairs and the three of each type asked after reading were rounded to the nearest hundredth.

When subjects' ability is plotted (Figure 9) it is apparent that Group 3 had greater difficulty responding to Pair C when it was posed before reading than they did the questions asked after. Differences occurring on all questions asked only

after reading, and differences between Groups 1, 2, and 4 were minimal. Thus, the interaction occurring on Passage II, when both types of questions are considered does not seem to be influenced to a great degree by differences in group ability. Rather, it seems more directly related to item difficulty as illustrated in Figure 8.

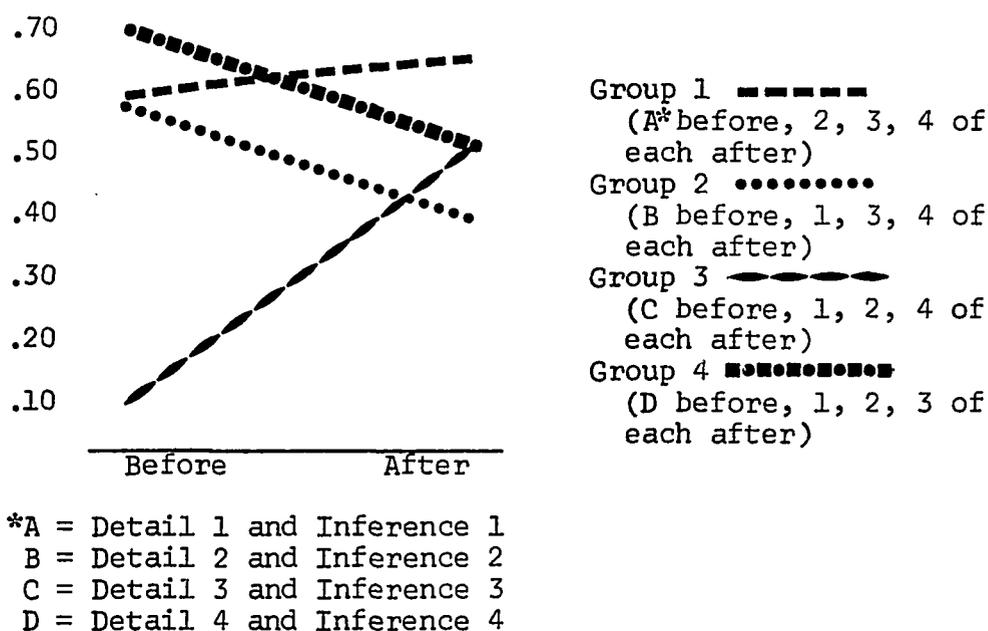


Figure 9. Interaction Effect, Varying Group Ability, Equal Item Difficulty: Question Pairs X Placement--Passage II, Both Types of Questions

Summary of Interaction Findings. Since significant question pair by placement interaction was found in testing Hypothesis 3, an investigation of the interaction was warranted. Two factors were identified as contributing to the interaction: group differences and differential item difficulty. Because the

relative contribution of each cause could not be determined, the interaction was considered unexplained. The advisability of posing questions prior to reading depends on the level of ability of the group as well as question difficulty. Easier questions are answered better when they precede reading; difficult questions when they follow. Since the interaction effects could not be fully explained, a final decision on Hypothesis 3 is tenuous.

Summary of Findings

In this chapter the results of analyzing the data collected in investigating the effect of posing detail, inference, both detail and inference, or no questions before students read a selection of passages were reported. The analyses yielded the following findings:

1. No significant differences were found on literal, inferential, or total comprehension scores when questions were posed prior to reading, or when no questions were pre-posed. Hypothesis 1 could not be rejected.

2. No significant differences were found on literal, inferential, or total comprehension when detail, inference, or both types of questions were posed prior to reading. Hypothesis 2 could not be rejected.

3. No significant differences were found between the responses to the two detail, inference, or both types of questions posed prior to reading and those that were asked only after reading. Considering only the findings regarding main effects, Hypothesis 3 could not be rejected.

4. Interaction was found between responses to certain question pairs and their placement before or after reading. This interaction occurred on Passage II when detail, inference, or both types of questions were considered, and on Passage III when inference questions were tested. The interactions occurred as a result of differences in item difficulty and differences in ability of the groups assigned to a particular treatment sequence. The interaction effects were not able to be explained fully, and therefore, any final decision on Hypothesis 3 was considered to be tenuous.

It might be noted that had posing questions before reading made a large difference--a difference of 25% to 30% improvement in reading comprehension--the present study would have found statistical significance for main effects in Hypothesis 3. These findings might then have overshadowed the significance of the interactions. Thus, there is a strong implication in the present study that if pre-posing questions does have an effect, the effect is rather small and will not be found without a large sample size and a powerful statistical analysis. The present writer chose not to take such an approach in the belief that any difference of practical significance would be found by a less powerful study.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

In this chapter will be presented a brief overview of the problem, related research, procedures used, and the conclusions, implications, and recommendations for research that appear to follow from the findings of this study.

Restatement of the Problem

The purpose of this study was to investigate the effect on comprehension of pre-posing detail, inference, both detail and inference, or no questions prior to reading a selection of passages. Studies that had been done in this area reported conflicting results. None of the studies included both detail and inference questions as low as the second grade level.

The three hypotheses tested in this study predicted: (1) there would be no differences on responses to detail questions, inference questions, and on a total score of detail and inference questions when certain questions were posed before the reading of the passages or when no questions were posed prior to reading; (2) the type of question posed prior to reading would not channel the responses on either detail or inference questions, nor on total responses toward the type of question posed prior to the reading of the passages; and (3) subjects would

respond equally well to questions to which they were exposed prior to reading as to those they met only after they had read a passage.

Related Research

Studies by Bartolome (1969) and Guszak (1969) pointed out that most questions asked by teachers in classrooms were of the type that required only the recall of stated facts. They, along with Davidson (1969) and Sanders (1966) called for the inclusion of other levels of questions that would stimulate children's thinking beyond the recall level. Investigations into the advisability of posing questions before children read were conducted by Distad (1927), Washburne (1929), Ballard (1964), Rothkopf (1966), Rothkopf and Bisbicos (1967), Frase (1967, 1968), Goudey (1968), Fincke (1968), and Grant and Hall (1968). In the Rothkopf, Rothkopf and Bisbicos, Frase, and Goudey studies, questions posed before reading were found to be of little value to the comprehension of the passage. Distad concluded that if the purpose for reading a passage was the immediate recall of the facts contained therein, the pre-posing of questions neither helped nor hindered, and therefore, it would be less time-consuming not to use them. He stated, however, if a variety of questions is used prior to reading the habit of reading for different purposes will be developed. Fincke found that questions posed prior to reading significantly aided comprehension of the passage read. Grant and Hall found that when students were

reading at their instructional level, the pre-posing of questions aided comprehension. When reading above that level, pre-reading questions were of little value, and when the material was below instructional level, pre-reading questions were of no value.

The research cited indicated a need for pursuing the question of whether the pre-posing of questions would aid comprehension. Since none of the studies included second-graders, and few included questions directly aimed at drawing inferences, a further need was seen for this study.

Design and Procedures

In this experimental study the sample was drawn from twelve second grade classes in the Sunnyside School District in the Tucson, Arizona, metropolitan area. Only those students were included who scored between 2.5 and 3.0 on the Paragraph Meaning subtest of the Stanford Reading Achievement Tests, and who had not repeated a grade in school. Subjects were not trained by the researcher to read for specific information or to draw inferences.

The data-collecting instrument consisted of four stories followed by eight questions, four detail and four inference. The stories were all on the 2.3 readability level. The passages, type of questions pre-posed, and the specific questions pre-posed were rotated to control for any effect of interest of treatment type of one upon the other. Each subject read each story, and each subject received each treatment type: two detail questions

posed prior to reading, two inference questions posed prior to reading, one of each kind posed prior to reading, and no questions posed prior to reading. The mean score attained on the total instrument was 20.175. Sixty-three percent of the items were answered correctly.

Scores for each passage were recorded for literal comprehension, inferential comprehension, and total comprehension. A repeated measures type of analysis of variance was used to test differences on each of the three types of comprehension under each of the four treatment types. Whether the questions posed prior to reading channeled the comprehension of the passages to the type represented by the pre-posed questions was also tested. And finally, whether comprehension of the passage was channeled so as to cover only the content included in the pre-posed questions was analyzed.

Conclusions

The findings of this study led to the following conclusions:

1. Posing questions prior to reading a passage neither aids nor impedes literal, inferential, or total comprehension.
2. The type of question posed prior to reading does not channel comprehension of a passage to the type of comprehension required by the question type.

3. Second graders will respond equally well to questions posed prior to reading and to those asked only after reading.

4. The difficulty of specific questions influences the advantage of their placement before or after reading. Easier questions are answered better when they precede reading; difficult questions when they follow.

5. Differences in students' ability influence the advantage of placing questions either before or after reading.

Implications

The conclusions arrived at in this study suggested the following implications:

1. Given the type of students and the level of material used, questions may or may not be posed prior to reading without concern that either technique will impede comprehension.

2. Detail or inference questions, or both, can be pre-posed without concern that comprehension of a passage will be channeled to the type of comprehension related to the questions.

3. Questions can be pre-posed without the fear that comprehension will be limited to content covered in those questions to the exclusion of the content of the rest of the passage.

4. When pre-reading questions are used, they should be relatively easy. The more difficult questions should be withheld until after reading.

Recommendations for Further Study

As an outgrowth of this study, the following suggestions are made for further study:

1. This study should be replicated using subjects trained to read for specific information.
2. Replication is suggested in which subjects are trained to read to draw inferences.
3. Replication is also suggested using reading material that is easier and material that is more difficult than that used in the present instrument.
4. A study of the channeling effect should be made with subjects accustomed to reading for specific information.
5. A further study of the channeling effect is needed using material both easier and more difficult.
6. The nature of questions that determines whether they will be difficult or easy to answer should be studied.
7. An exploration of the nature of questions as it affects the advisability of posing them before or after reading needs to be made.
8. Replication is needed in which item difficulty is held constant and differences in group ability is controlled.
9. Replication in which only one question and in which more than two questions are pre-posed is also suggested.
10. The effect on comprehension scores of different sets of questions over a single passage on an informal reading inventory should be studied.

11. A scientific basis needs to be established for determining the degree of comprehension required on an informal inventory as an indication of the level of difficulty that can be tolerated without impeding effective instruction.

12. A study of the relationship between the results of specific standardized tests in use in schools and the instructional level of children in the lower grades needs to be made.

13. A study is suggested to determine the relationship between the use of informal reading inventory standards for assigning pupils to an effective instructional level for classroom purposes and the use of those standards for determining a suitable level of difficulty of material to be used in research projects.

APPENDIX A

THE INSTRUMENT

Jeff was a cowpony. He was such a good worker that all the men wanted to ride him.

One day Jeff did not want to go to work. He wanted to play in the field behind the corral.

Soon the sun would be up and the men would come to get their horses.

"Where can I hide?" Jeff asked himself.

He wishes for a tree or a stack of hay in the corral. There was no place for him to hide.

Just then, one of the men came into the corral. He gave the horses some water and some food. Then he opened the gate to the field. "No work today," he said.

- 1 d 1. Who was Jeff? (a cowpony, a horse)
- 1 i 2. What kind of men might ride Jeff? (cowboys, ranch hands)
- 2 d 3. Where did Jeff want to play? (in the field)
- 2 i 4. What part of the day was it? (morning)
- 3 d 5. What would the men do when the sun was up? (get the horses)
- 3 i 6. Why did Jeff wish for a tree or a stack of hay? (to hide behind)
- 4 d 7. What did the man do first when he came into the corral? (gave the horses water and food)
- 4 i 8. Why might Jeff be happy today? (he didn't have to go to work)

Suzy barked and barked. No one came to let her in. She had been outside all day with no one to play with. Where was everyone?

Willie and Mary used to play with her all day long. Even Betty would play with her sometimes. But today they went away early in the morning.

Suzy thought that Mother and Father were at work. But she did not know where the children were.

Just then, Suzy heard something. She looked through the fence and saw a big yellow bus in front of the house. Out of that bus came Willie and Mary. A bus full of big children stopped, too. Out of that bus came Betty.

The three children ran through the gate. They put down their books and hugged Suzy.

- 1 d 1. Where was Suzy? (outside)
- 1 i 2. Why was Suzy barking? (she wanted to go in, she wanted someone to play with her)
- 2 i 3. Who used to play with Suzy the most? (Willie and Mary)
- 2 d 4. Where did Suzy think Mother and Father were? (at work)
- 3 d 5. What did Suzy do when she heard something? (looked through the fence)
- 3 i 6. Why wasn't Betty on the same bus that Willie and Mary were on? (she went to a different school, she was bigger than Willie and Mary)
- 4 d 7. What did the children do first when they got off the bus? (ran through the gate)
- 4 i 8. Where were the children all day? (at school)

The field at the end of the street was a great place to play. All the children in the neighborhood went there after school.

One afternoon there was a fence around that field. A sign said, "Keep Out."

"There goes our baseball field," said Pete.

"Someone must be building a house," said Janet.

"I think it will be a store," said Jack. "That field is pretty big for a house."

The children stood outside the fence every day. They could hear something going on in there. But they could not see a thing.

Then one day the fence was down. What do you think was there?

A playground!

- 1 d 1. Where did the children go after school? (to the field)
- 1 i 2. Why was there a fence around the field? (to keep the children out, because someone was working in there)
- 2 i 3. What game did Pete like to play? (baseball)
- 2 d 4. What did Janet think someone was building? (a house)
- 3 i 5. What did Jack think about Janet's idea? (it was wrong, the field was too big for a house)
- 3 d 6. Where did the children stand every day? (outside the fence)
- 4 i 7. Why couldn't the children see what was going on? (they couldn't see through the fence)
- 4 d 8. What was there when the fence was down? (a playground)

Bill's new bike was waiting for him at home. All day long he thought about where he would ride it.

"Bill," said Mrs. Andrews. "Did you finish your arithmetic?"

All the other children were giving Mrs. Andrews their papers. But Bill's paper had nothing on it. How could he think about arithmetic today?

Bill knew what would happen if he did not finish his arithmetic. He would have to stay and do it. That would be bad!

You never saw anyone work so fast. Bill had those numbers on his paper in no time. He finished just when he heard the bell.

Now he could run home and ride his bike!

- 1 d 1. What was Bill thinking about? (where he would ride his bike)
- 1 i 2. Who was Mrs. Andrews? (teacher)
- 2 d 3. What did Mrs. Andrews ask Bill? (if he finished his arithmetic)
- 2 i 4. Why didn't Bill write anything on his paper" (he wasn't thinking about arithmetic, he was thinking about his bike)
- 3 d 5. What would happen if Bill didn't finish his arithmetic? (he'd have to stay and finish)
- 3 i 6. Where was Bill? (at school)
- 4 d 7. When did Bill finish? (when he heard the bell)
- 4 i 8. How did Bill get back and forth to school? (walked, ran)

APPENDIX B

PERCENTAGES OF CORRECT RESPONSES TO QUESTIONS

Question	%* Correct Total	%* Correct Asked Before	%* Correct Asked After Others Asked First	%* Correct Asked After None Asked First	%* Correct. Total Asked After
Passage I					
Detail					
1	63	60	64	60	62
2	60	60	56	70	63
3	71	87	69	60	65
4	83	67	73	65	69
Passage II					
Detail					
1	64	67	69	55	62
2	75	80	80	70	75
3	40	20	42	50	46
4	40	27	44	40	42
Passage III					
Detail					
1	76	80	71	85	78
2	76	86	73	75	74
3	81	73	78	95	87
4	61	67	64	50	57
Passage IV					
Detail					
1	84	73	87	85	86
2	64	73	71	55	63
3	90	73	80	75	78
4	80	80	82	75	79

Question	%* Correct Total	%* Correct Asked Before	%* Correct Asked After Others Asked First	%* Correct Asked After None Asked First	%* Correct Total Asked After
Passage I					
Inference					
1	69	73	60	65	63
2	26	13	29	30	30
3	54	53	58	50	54
4	69	80	71	60	66
Passage II					
Inference					
1	78	80	76	90	83
2	24	20	31	10	21
3	26	7	31	25	28
4	70	93	62	75	69
Passage III					
Inference					
1	76	80	76	65	71
2	80	93	76	80	78
3	51	53	53	40	47
4	50	53	53	40	47
Passage IV					
Inference					
1	91	86	93	90	92
2	63	67	60	65	63
3	93	86	93	95	94
4	33	40	29	35	32

*Percentages have been rounded to the nearest whole number within each category presented.

APPENDIX C

DIRECTIONS TO EXAMINERS

General

1. You will be given folders containing reading copies of the stories (mimeo) and recording forms (ditto). Be sure they are administered in the order in which the ditto sheets are stapled together.
2. Record verbatim the child's answers. If he says, "I don't know," record D.K. Ask him to make a guess, record Q (question) and his next response. If that response also is D.K., record and go on.

If a child does not respond, repeat the question. If no response this time, record N.R., ask him to guess, record Q and his response.

If a partial response is given, record that, then a Q, and ask, "Can you tell me more?" Record that response and go on.

3. Score all four tests after the child has left. Do not write while a child is reading a story. Check incorrect responses through the ditto number. If you are not sure a response is correct, place a question mark to the left of the number. The answers are suggested responses. If the child gives the essence of the response in different words, he is correct.
4. Greet the child pleasantly and when he leaves, thank him for his help. But, do not chat with him during the testing time.

Test Administration

1. After greeting the child, tell him you have four stories you would like him to read. After each story you will ask him some questions. This is not a test, you just want to find out something about the stories and the questions. Also tell him that if he does not know any words, he should ask and you will tell him what they are.

2. The Roman numeral at the top of each ditto packet represents a specific sequence of stories. Be sure you give the child his reading copies of the stories in the sequence of the ditto sheet. Give him one story at a time.
3. Stapled to three of the stories (reading copies) will be a slip of paper containing two questions. Tear this off before you give the child the story. Place the questions before him and say, "When you read this story, try to find the answers to these questions. When you are finished reading, I will ask you these questions and some more." Point to the questions, read them aloud, and ask, "What are you going to try to find out?" If he cannot repeat the questions, read them again and say, "Now tell me what you are going to try to find out." If he still does not get the idea, read the questions a third time and have him begin to read. Place the slip with the questions on it in the manilla folder before he begins to read. For the story without questions say, "Now read this story. I will ask you some questions when you are finished."

Remind the child to ask for help with words he does not know.

4. Begin questioning in the order given on the ditto sheet immediately after the child has finished reading. This order is the same for all.
5. Do not comment on the answers other than, "O.K. or "um-hum," if you feel you have to say something.
6. Do not remove the staple from the ditto packet. Replace all materials in the manila folder as soon as you finish with a child.

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