THE EFFECTS OF ILLUSTRATIONS ON A CONTEXT METHOD OF LEARNING READING VOCABULARY FOR FOURTH-GRADE STUDENTS

DISSERTATION

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By

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The purpose of this study was to compare the effectiveness of a context approach to learning reading vocabulary with the effectiveness of the context approach accompanied by illustrations. Subjects were 152 fourth graders from 19 reading classes in 8 elementary schools. Materials included illustrated and nonillustrated vocabulary cards, a researcher-made multiple-choice instrument, and a widely used achievement test, which was used to identify the subjects as good or poor readers.

The researcher-made instrument was administered as a pretest during the first week of the study. Forty-eight vocabulary words were taught during the second through fifth weeks. The instrument was given again as a posttest during week six and as a delayed posttest during week twelve. Results were analyzed with the analysis of covariance procedure.

The hypotheses of the study predicted that both good and poor readers would learn more words with the
Illustrated condition than with the Nonillustrated condition. Further, it was predicted that good readers would learn more words than would poor readers with both conditions.

Results indicated that, contrary to the hypotheses, there was no significant main effect for illustrations. This finding was interpreted in light of the focal attention hypothesis, according to which pictures distract a reader and therefore interfere with learning. In the present study there was no evidence of such distraction. Nor was there support for a dual processing theory in which verbal and nonverbal information would produce additive effects and thereby foster greater gains than would either kind of information alone.

The second major finding, that good readers learned more words than poor readers under both the Illustrated and the Nonillustrated conditions, was interpreted in light of schema theory. It was concluded that the good readers probably possessed more elaborately developed schemata than did the poor readers. Therefore, the former were able to relate their prior knowledge to more of the information presented in the learning activities.
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CHAPTER I

INTRODUCTION

Background

Strang, McCullough, and Traxler (6) called wide reading the most important factor in vocabulary development. In addition, they emphasized that the direct teaching of word meanings is essential, especially for words which have technical meanings in the various disciplines.

Bear and Odbert (1) also supported direct instruction in vocabulary. In their study, college freshmen checked unknown words both on a list and in a reading selection. On a subsequent multiple-choice test, the subjects missed 44 per cent of the words they had left unchecked. The authors concluded that readers may frequently ignore unknown words and fail to infer meaning as they read.

Based upon her extensive observations of current classroom practices, Durkin (2) noted that in light of the importance generally attributed to vocabulary, it is surprising that the most prevalent activity for learning new meanings is looking up words in dictionaries and writing definitions.
As early as 1924, Hilliard (3) cited a need for studies on vocabulary development. Yet nearly sixty years later, a review of the literature, which follows in Chapter II, yielded relatively little research. Contrary to what would be expected, the bibliography of one recent text, Teaching Reading Vocabulary by Johnson and Pearson (4), contains few entries related to research on learning word meanings. It seems clear that there is a need for more knowledge in this area.

Statement of the Problem

The problem of this study was to determine the effects of adding illustrations to a context method of learning reading vocabulary.

Purpose of the Study

The purpose of the study was to compare the effectiveness of a context approach to learning reading vocabulary with the effectiveness of the context approach accompanied by illustrations.

Significance of the Study

As is reported in Chapter II, several researchers have found significant effects for various context methods of teaching vocabulary. The use of written responses has
also been supported. The present study was significant in that it examined the use of illustrations along with these methods.

In addition, the study provided the opportunity to address the focal attention hypothesis of Samuels (5), who has claimed that pictures distract a reader and thereby interfere with learning. Also addressed was the possibility that verbal and nonverbal information are represented in separate memory systems and that the joint involvement of the two systems may produce additive learning effects when illustrations and text are presented together.

Hypotheses

The following hypotheses were tested with both a posttest and a delayed posttest.

1. The adjusted means of good readers who use the Illustrated condition will be significantly greater than the adjusted means of good readers who use the Nonillustrated condition.

2. The adjusted means of poor readers who use the Illustrated condition will be significantly greater than the adjusted means of poor readers who use the Nonillustrated condition.
3. The adjusted means of good readers who use the Illustrated condition will be significantly greater than the adjusted means of poor readers who use the Illustrated condition.

4. The adjusted means of good readers who use the Nonillustrated condition will be significantly greater than the adjusted means of poor readers who use the Nonillustrated condition.

Definition of Terms

The following terms had restricted meanings and thus were defined for this study.

1. **Reading vocabulary**—words whose meanings are sufficiently familiar to a person that he or she understands them when read in a sentence.

2. **Good readers**—those who scored between the sixth and ninth deciles on the Reading Comprehension subtest of the *Iowa Tests of Basic Skills*.

3. **Poor readers**—those who scored between the first and fourth deciles on the Reading Comprehension subtest of the *Iowa Tests of Basic Skills*.

Basic Assumptions

It was assumed that the subjects would participate to the best of their abilities in the activities of the
study. It was also assumed that the cooperating teachers would make a sincere effort to correctly carry out the procedures.

Limitations

The following limitations applied to this study.

1. All of the illustrations used in the teaching activities were line drawings created by two twelve-year-old students. Therefore, the conclusions of the study must be limited to materials which contain pictures of this type.

2. Because of the validation process used in the development of the multiple-choice test, the results of the study could be a function of the instrument as well as of the vocabulary gains made by the subjects.
CHAPTER BIBLIOGRAPHY


3. Hilliard, George Horatio, Probable Types of Difficulties Underlying Low Scores in Comprehension Tests, University of Iowa Studies in Education, Iowa City, Iowa, The University of Iowa, 1924.


CHAPTER II

SYNTHESIS OF RELATED LITERATURE

Research on several topics in education and psychology has influenced the development of this study. For the purpose of discussion, this research will be divided into four main areas: (a) vocabulary learning, (b) concept development, (c) pictures and learning, and (d) imagery and learning.

Vocabulary Learning

Several investigators have found significant effects for context approaches to teaching new word meanings. The use of written responses by students has also been supported.

Gipe (12, 13) found support for a context-response method in a study of four approaches to teaching vocabulary. The Context method presented each target word in a three-sentence passage which defined the word and used it in sentences composed of common words. Subjects were required to respond by writing a word or a phrase to answer a question containing the target word. An Association method had students memorize the words along
with brief definitions or synonyms. In a Category approach students first expanded a list with the target word and three related words. Then they recategorized a random list of previously presented words. The Dictionary method directed students to write definitions and sentences.

For 113 third graders and 108 fifth graders, the Context method was superior ($p < .01$). No main effect for sex was found for either grade, but at both levels good readers made significantly greater gains than did poor readers ($p < .001$).

The researcher discussed these results in terms of the Rumelhart, Lindsay, and Norman (27) model of long-term memory. According to this model, a learner's semantic memory is reorganized as old information aids the storage of new. New information is not merely added to that previously learned. Rather, the entire semantic memory system is changed in an interactive process. On the other hand, prior learning provides the experience, or context, to which new data can be related. These new data, in turn, modify the concepts with which the learner begins a learning task.

The implication for educators is that new material should be presented in a context to which a student can
relate his/her previously learned concepts. Further, a lesson should require active participation in order to foster the interactive process of long-term memory.

Baxter (4) also used context and writing to teach vocabulary. In a study with eighty-eight sixth graders, subjects made significant gains ($p < .025$) when they used target words in paragraphs and other structured writing activities.

The presentation of reading vocabulary in a meaningful story context was compared with three other techniques by Clifford (7). In the Story Context condition, 20 underlined words were introduced in each of 10 stories for a total of 200 vocabulary words. A List condition consisted of 20 words on each of 10 sheets. Definitions were given beside each word in the Simple Association condition. Finally, in the Error condition four of the twenty definitions were interchanged and students were told to identify and correct them before studying.

No studying was allowed during class time, but subjects were permitted to seek any type of non-teacher assistance outside of class. For 1,626 fifth and sixth graders, the List and Story Context conditions were superior to the Simple Association and Error conditions,
regardless of age or sex (p < .05). The author concluded that both the List and the Story Context approaches required students to make active, meaningful responses in order to learn the words.

The results obtained by both Baxter (4) and Clifford (7) appear to support the model of long-term memory reported by Gipe (12, 13). In Clifford's study, new words presented in a meaningful context apparently led to the interaction of old information with new. In both the Clifford and Baxter investigations, effective learning resulted from active participation, which stimulated this interactive process.

Concept Development

Carroll states that concepts are "abstracted and cognitively structured classes of 'mental' experience learned by organisms in the course of their life histories" (6, p. 187). Since a word meaning is a "societally standardized concept" (6, p. 187), vocabulary learning and concept development are inextricably related. According to O'Rourke, "Meaningful vocabulary is concept building" (19, p. 36).
Studies with Adults

Many of the investigations on concept attainment have been conducted with adult subjects. Typically, these subjects have been college students, and frequently the treatment and testing activities have been completed in one session.

In one example of such a study, Woodson (37) examined the effectiveness of seven methods for teaching the meaning of Chinese characters. These seven strategies were (a) giving a definition, (b) identifying relevant attributes, (c) identifying irrelevant attributes, (d) giving exemplars, (e) giving nonexemplars, (f) describing the concept's domain, and (g) using analogies to describe the concept. Twelve undergraduates, in a one-session treatment, learned best with instructions involving either the definition or relevant attributes of the concept (p < .01).

Anderson and Kulhavy (1) exposed forty-eight college students to sixteen unknown concepts and definitions at six-second intervals. Those who composed and said a sentence aloud during each exposure scored significantly better on an immediate multiple-choice test (p < .004) than did those who read each definition aloud three times.
The investigators concluded that forming sentences induced semantic encoding, or the integration of old and new information.

Johnson and Stratton (15) taught 4 easy and 4 difficult concepts to 125 college students to compare 5 approaches: classification, definitions, synonyms, sentence writing, and a mixed method that incorporated the other four. Treatment lasted twelve minutes and was followed nine days later by a test. Those who had learned through the mixed method achieved significantly higher scores ($p < .01$).

Of these three investigations, only the Johnson and Stratton study included tasks which resemble classroom learning activities. For this reason, and because all three studies were conducted with college students, the results provide only tentative guidelines for devising materials for use with children. Taken together, these studies suggest that active participation in activities such as sentence composing fosters concept development. Further, it appears that a combination of activities is more effective than one activity alone.
Studies with Children

Peters (23) investigated the use of definitions in two approaches to teaching concepts to 360 ninth graders. The first approach, called the traditional textbook method, consisted of providing students with a definition and one example of a concept. A second method, described by Frayer, Frederick, and Klausmeier (11), first presented a definition based upon relevant and irrelevant attributes. Next, examples and nonexamples of the concept were given. Finally, the concept was placed into relationship with other concepts. This second method proved significantly more effective than the textbook approach (p < .0001).

Feifel and Lorge (9) sought to clarify the stages of concept formation by analyzing the definitions given by 100 students in each of the first nine grades. They found that younger children responded with significantly more concrete references than did older students. A period of transition toward more abstract thinking occurred between the ages of nine and ten. Results were viewed as consistent with the work of Piaget (24) on the development of reasoning.

While Feifel and Lorge (9) studied children's responses in the production situation, Russell and Saadeh (28) focused upon recognition. Their 257 subjects
selected as "best" one of several definitions for each of 40 words. Results paralleled those of Feifel and Lorge (9), as third graders favored concrete choices significantly more often than did sixth graders (p < .01).

Feldman and Klausmeier (10) investigated the ability of fourth and eighth graders to learn from informal and technical definitions of an equilateral triangle. The first was a common usage definition taken from a children's dictionary, and the latter specified each of the defining attributes of the concept. Fourth graders performed significantly better with the informal definition (p < .01), while the difference for eighth graders was not significant.

From the results of these studies, it can be concluded that educators must be aware of those attributes of a concept a learner will be able to comprehend whenever definitions are created. Definitions devised for young children should be informal in nature and should include references which are concrete rather than abstract.

Pictures and Learning

Illustrations are commonly used in dictionaries and textbooks on the assumption that pictures promote
vocabulary and concept learning. There is little evidence at present, however, to support this practice. The research which exists can be divided into two categories: (a) pictures and sight word learning and (b) pictures and comprehension.

**Pictures and Sight Word Learning**

The use of pictures to accompany sight word learning has been studied extensively and is considered here in relation to the controversial focal attention hypothesis. According to Samuels (32), pictures function to direct a reader's attention away from printed words and thereby interfere with learning. If attention is focused upon distracting stimuli, the graphic features of the words will not be remembered.

Studies which appear to support the focal attention hypothesis have generally been of the paired-associate type. Sight words are presented alone to one group and with accompanying illustrations to another. Treatment is completed in one session, and acquisition trials are alternated with test trials. Either a fixed number of trials is administered, or a trials-to-criterion procedure is utilized. Sometimes a delayed test is also given.
In a frequently cited study using a design of this type, Samuels (30) taught four nouns to thirty pre-first graders. During the ten trials those in the no-picture condition gave significantly more correct responses ($p < .01$) than did those who viewed pictures along with the words.

Singer, Samuels, and Spiroff (34) compared four means of presenting four nouns to first and second graders. The Word-No Picture treatment required significantly fewer trials to criterion than did a Sentence-Picture condition ($p < .01$), a Sentence-No picture condition ($p < .01$), and a Word-Picture condition ($p < .05$). The authors concluded that both pictures and context clues had deterred sight word acquisition because they had enabled subjects to make correct responses in practice without focusing upon graphic features.

The effects of pictures on reading speed were investigated by Willows (35, 36). Second and third graders read words accompanied by congruent pictures more slowly ($p < .01$) than they read the same words in a presentation without pictures. There were no main effects for sex, but the performance of poor readers was more adversely affected by pictures than that of good readers. The author inferred that many children with reading
difficulties are distracted by adjunct pictures. He added, however, that the effects for decoding and word recognition might not hold for other types of reading performance.

Unlike the above researchers, Denburg (8) found that pictures facilitated the learning of sight words presented in a one-sentence context of known words. Forty-eight students in the final months of the first grade studied forty-eight target nouns which they could not read prior to the study. With both picture and partial-picture conditions, students identified and retained significantly more words than with the no-picture condition (p < .05). Denburg hypothesized that the more data that are available, the more likely a reader will be to integrate enough information from the various sources for a correct response.

Denburg (8) also pointed out that Samuels' (30) paired-associate paradigm was not a test of the effects of pictures. The latter's no-picture condition was confounded by verbal feedback since the researcher provided prompting whenever an error was made or no answer was given.

In a replication of Samuels' 1967 (30) study, Montare, Elman, and Cohen (18) discovered that the
no-picture subjects received 142 times as much verbal information as those in the simple-picture condition. The authors concluded that the earlier study was not a test of the focal attention hypothesis. They also found that even with the great difference in verbal prompting, there was no significant difference in retention when a test was given approximately twenty minutes after the trials.

Montare, Elman, and Cohen (18) replicated a second experiment reported by Samuels (30). In this investigation first graders studied a story with the text opposite either an illustration or a blank page. While Samuels had stated that the illustration had inhibited the learning of poor readers, the Montare team's replication found no significant difference regardless of reading level.

Samuels (31) replied to the Montare team by maintaining that their study had been poorly done and that they should have replicated their own investigation before publishing it. He neglected, however, to respond to their discovery that the no-picture subjects had received almost all of the verbal feedback during the experiment.

Arlin, Scott, and Webster (3) sought to resolve the focal attention controversy with an improved design. Three presentations--words alone, words with pictures, and
words with voice—were compared. During acquisition
trials voice feedback was given whether a subject's
response was incorrect or not. For the seventy-two
kindergarten children both picture and voice presentations
were more effective than the word-alone condition
(p < .05). Further, the pictures promoted significantly
more learning than did the voice procedure (p < .05).

Singer (33) responded to this study by reanalyzing
the data and finding no statistical significance. Arlin
(2) replied that Singer had used inappropriate statistics
and that he had excluded cells and contrasts which did not
support his position.

Arlin (2) went on to conduct two more experiments.
He eliminated the interspersed test trials in order to
isolate the picture-condition subjects from the word-alone
exposure. In these experiments focal distraction was
found to occur. Arlin cautioned that even if the focal
attention hypothesis had been upheld in the one-to-one,
paired-associate, trials-to-criterion paradigm, generali-
ization to classroom conditions would be premature.

**Pictures and Comprehension**

Peeck (22) investigated the effects of illustrations
upon the recall of factual information from text by fourth
graders. Results indicated that recall was facilitated
when illustrations were congruent with the text (p < .005). However, when the illustrations and the text were incongruent, comprehension was hindered.

Rusted and Coltheart (29) studied the effects of line drawings upon the recall of factual material in short passages. Thirty-two fourth graders read twelve paragraphs about unusual animals. For both good and poor readers, the drawings improved the amount of information recalled on an immediate test (p < .01).

These two studies suggest that illustrations which accurately depict what is presented in an accompanying text will promote comprehension. On the other hand, incongruent illustrations appear to interfere with the recall of factual information.

Imagery and Learning

Paivio (20) hypothesized that the brain stores information in at least two modes, verbal and imaginal. The implication for vocabulary learning is that dual storage might enhance a reader's association with words, concepts, and definitions.

In imagery studies researchers attempt to promote imaginal storage by having subjects visualize what is happening in a sentence or story, create pictures to illustrate what is happening, or respond to pictures
provided by the researcher. Several studies have demonstrated the effectiveness of imagery with elementary students.

Pressley (26) taught forty-three third graders to construct mental images of prose passages. They then read segments of a short story and constructed mental images for each segment. These subjects scored higher on a short-answer test than did a group that was instructed to do "whatever you can or have to" in order to remember the story (p < .05). Although the difference was statistically significant, the number of correct responses given by the control group was only slightly smaller than that of the experimental group. Pressley inferred that many students may spontaneously use mental imagery as they read.

Goldberg (14) found that good fifth-grade readers learned more incidental material than poor readers with illustrated spelling and grammar lessons (p < .0005), though the pictures were facilitative for both groups (p < .005). He remarked that brighter students appear to learn faster than poor students, whether the learning is incidental or intentional.

Self-discovered images, supplied images, and supplied definitions were compared by Bull and Wittrock (5) in a
definition retention study. Eighty-seven fifth graders learned sixteen definitions either by discovering an image and drawing a picture of it, tracing an illustration of a definition, or copying a written definition. On a multiple-choice test given one week later, those in the imagery-discovered condition achieved significantly higher scores than did those in the definition condition (p < .05). The authors concluded that self-discovery may have helped the students relate the definitions to their particular experiences. Further, an image may have facilitated memory by serving as a retrieval cue.

Levin, Davidson, Wolff, and Citron (16) conducted a paired-associate study which, they argued, refuted Paivio's dual processing theory. Second and fifth graders learned under one of four conditions: traditional paired-associate instructions, self-generated imagery, sentence construction, and a combination of imagery and sentences. Materials were presented in either a word or a picture mode. No significant differences were found for instructional strategies for either grade. The researchers inferred that the verbal and imaginal storage systems may be mutually duplicative. Therefore, no additive effects would be obtained with an imaginal-verbal strategy.
Evidence for such additive effects has been reported, however, by Pressley (25) and others who have used the keyword method of teaching foreign-language vocabulary. This technique uses a word in the familiar language to establish an acoustic and imaginal link between the target foreign word and its equivalent in the native language. For example, in a pictorial version of the keyword method, the Spanish word *carta* (letter) could be presented with a picture showing a letter in a cart.

Pressley (25) compared the pictorial keyword technique with two other keyword methods of teaching concrete Spanish nouns to second and fifth graders. The nonpictorial, standard keyword approach required subjects to generate their own images. A keyword control method presented keywords without accompanying pictures or imagery instructions. In each condition a translation recall test immediately followed the presentation of a set of words. For students in both grades, the pictorial keyword method provided superior (p < .016).

In a similar study Miller, Levin, and Pressley (17) compared various keyword techniques for teaching Spanish verbs. In addition to the printed keyword and pictorial keyword conditions used by Pressley (25), a pictured action condition was employed in which the keyword
referent received or performed an action. To take one example, for the word hilar (to spin), an eel was shown spinning around. In the control condition, students were given no imagery instructions. For fifth- and sixth-grade students, as well as for first and second graders, all three of the imagery conditions proved superior to the control group ($p < .001$). In addition, for the younger students the pictured action condition proved superior to the other keyword approaches. The authors concluded that younger children need greater structure and/or more explicit memory aids than do older children.

In review of mnemonic techniques in second-language learning, Paivio and Desrochers (21) interpreted the results of keyword studies according to the "conceptual peg" view of paired-associate learning. According to this explanation, a concrete keyword may help a learner to concretize an abstract word. As a result of this process, recall is enhanced.

Summary

Taken together, the research on vocabulary development and concept development reveals several principles for devising learning strategies. Gipe (12), Clifford (7), and Peters (23) found that new words should
be presented in a context of defining and illustrative sentences and that new concepts should be placed in relationship with known concepts so that old information will aid the acquisition of new. The work of Feifel and Lorge (9), Russell and Saadeh (28), and Feldman and Klausmeier (10) indicates that examples and definitions for younger students should be more concrete than those for older students. Finally, Gipe (12), Baxter (4), and Johnson and Stratton (15) found that semantic encoding can be promoted by requiring original, meaningful responses from the learner.

In contrast to the findings on vocabulary and concept development, the results concerning illustrations in educational materials are inconclusive. As reported by Goldberg (14), Peeck (22), and Rusted and Coltheart (29), pictures which are congruent with the text appear to promote the recall of factual information. Pressley (25) and Miller, Levin, and Pressley (17) found that illustrations are effective in the keyword technique of teaching foreign-language vocabulary.

In the area of sight word acquisition, some researchers have claimed that pictures hinder learning. Samuels (30) and Singer, Samuels, and Spiroff (34) concluded that pictures direct a learner's attention away from the text. On the other hand, Denburg (8) and Arlin,
Scott, and Webster (3) reported that illustrations promote the learning of sight words.

It remains to be seen whether or not illustrations will promote the acquisition of reading vocabulary. If pictures do foster the integration of information, as some of the studies cited above suggest, then they should enhance vocabulary learning. However, if illustrations serve primarily to distract a learner and thereby interfere with verbal encoding, then students should learn word meanings better under a no-picture condition.
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CHAPTER III

METHODS AND PROCEDURES

The procedures of the study were carried out in several phases. First, teaching materials and an instrument were created. Second, subjects were obtained and grouped for the Illustrated and Nonillustrated conditions. Next, teachers were trained to conduct the activities. A pretest was administered, and the treatment sessions were held. A posttest, a comprehension measure, and a delayed posttest followed. Finally, the data were analyzed to test the hypotheses of the study.

Vocabulary Selection and Test Development

Forty-eight target words were to be taught during the study. A selection process was designed to produce a list of words which few fourth graders would know. Four criteria were set to guide this process. First, all words were to be chosen from the glossaries of three widely used seventh-grade reading textbooks. Three texts were used in order that a broad spectrum of words would be available. One of these texts (4) was currently in use in the researcher's school district. Another (2) was being
utilized as a supplementary reader, while the final text (8) had been adopted for use the following year.

The second criterion for word selection excluded concrete and proper nouns. According to the third criterion, the words had to lend themselves to illustration. Finally, each word had to have two synonyms familiar to fourth graders. One of these synonyms was later used in constructing teaching materials for the target word, while the second served as the correct option in a multiple-choice question.

To begin the selection process, the investigator chose 100 glossary words and used a table of random numbers to order them in a list. (See Appendix A.)

Next, four fourth-grade reading teachers were asked to circle any words which students at this level would be unlikely to know. Those words circled by fewer than three of the teachers were eliminated from further consideration in the study. A new list of seventy-seven words resulted. (See Appendix B.)

The remaining words were used to develop the investigator-made instrument (Appendix C). For each word, a four-option multiple-choice question was written. Three criteria guided the formulation of these questions.
First, no context clues could be provided. Second, all options had to be syntactically correct. Third, the questions had to be written in language which fourth graders could understand. A panel of three reading education professors validated the questions according to these criteria. Questions were rewritten whenever necessary until the unanimous agreement of the panel was obtained.

A table of random numbers was used to order the seventy-seven questions, which were then given to two socioeconomically mixed classes of fourth graders. In order to reduce the interaction of reading ability and the test, teachers read the questions and options aloud as students followed on their copies. To avoid ambiguity, students were instructed to circle the word or words in the answers of their choice rather than the letters which preceded the options.

The forty-eight most frequently missed words were used to create the pretest-posttest. A three-way tie for the last two places was resolved with a table of random numbers. Then a table of random numbers was used to order the forty-eight questions on the instrument. (See Appendix D.)
Construction of Treatment Items

For each of the forty-eight words which were to be taught during the study, a context of two illustrative sentences and one defining sentence was designed. Following these was a sentence which instructed the student to write an original sentence. Each item was printed on a 5 x 8 inch index card. All cards were white with black ink. An example with the word *reprove* in the Nonillustrated condition follows.

reprove

A parent would reprove a child who misbehaved. A dog would be reproved if it chewed up a shoe. *Reprove* means to bawl someone out for doing something bad.

On your own paper, write a sentence to tell why a teacher might have to reprove a student.

A drawing for each vocabulary word was created by one of two boys who had just completed the sixth grade. The drawing was placed beside the written context on a 5 x 8 inch index card. A sentence referring to this drawing was substituted for the second illustrative sentence in the Nonillustrated condition. Below is an example, again using the word *reprove*.
reprove

The parent would reprove a child who misbehaved. The dog in the picture is being reproved for chewing up the shoe. Reprove means to bawl someone out for doing something bad.

On your own paper, write a sentence to tell why a teacher might have to reprove a student.

The treatment items were validated by a panel of three reading education professors, who judged content validity and determined whether or not fourth-grade students would be able to comprehend the sentences, definitions, and illustrations. Each item was rewritten or redrawn if necessary until the unanimous agreement of the panel members was obtained. Appendix E contains copies of all vocabulary cards, which have been reduced to 75 percent of the original size. The cards are arranged in the order in which they were used in the study.

During a pilot study, some students had difficulty responding in the desired manner on the sentence-writing task. This difficulty, however, was overcome when these students received assistance with the first few words. Therefore, it was decided that a practice session would be held for all students who would participate in the study.

Since four target words were to be taught during each treatment session, a four-word training session was
devised. Four additional words were selected, and Nonillustrated cards were created and validated in the same manner as were the treatment items. These practice cards were designed both for students who would use the Nonillustrated treatment cards and for those who would use the Illustrated treatment cards so that all participants would begin the study with the same training experience. Appendix F contains copies of the four practice items, which have been reduced to 75 per cent of the original size.

Comprehension Measure

A second instrument was needed so that the subjects could be grouped according to reading ability. The "Comprehension" subtest of the Iowa Tests of Basic Skills (5) was utilized for this purpose. This widely used achievement battery has a composite reliability of .97 to .98 for all grades. For the five main areas, internal consistency reliability coefficients range from .89 to .96. The item selection process included evaluation by professional educators and by members of diverse cultural groups. The standardization sample consisted of approximately 16,000 pupils per grade for fall norms, while spring norms were established on a representative
subsample. Criteria for selection and weighting were region, school district size, family income, and education (6, p. 2).

Selection of the Sample

Approval to conduct the study was obtained from the central administrators of a large metropolitan school district. These administrators presented the proposal to a meeting of principals, eight of whom expressed interest. The investigator then gave a detailed explanation of the procedures to each principal in an individual interview. As a result, all eight volunteered their schools for the study.

Classrooms

At the request of the principals, the investigator met with the fourth-grade reading teachers in each building to outline the purposes of the study. All of the teachers in seven of the schools and four of seven teachers in the eighth agreed to participate. A total of twenty classrooms was thus obtained.

Students

Since six of the eight schools were involved in a desegregation program, fourteen attendance zones were
represented. Six of these would be classified as middle-class, two as mixed, and six as low-income neighborhoods.

Anglo, Black, and Mexican-American students were well represented in the study. Precise totals for these groups are not available because the investigator assured the cooperating school district that data on students' sex and ethnicity would be neither reported nor gathered.

Procedures for Grouping Students

In the twenty participating reading classes, students were placed according to achievement. As a result, the classrooms were relatively homogeneous regarding reading ability.

Randomly grouping these classes for the Illustrated and Nonillustrated conditions could, therefore, have assigned most of the good or poor readers to the same condition. To avoid such an outcome, a procedure was devised to help assure that sufficient numbers of good and poor readers would be placed in each of the conditions.

First, each teacher was asked to classify his/her class as either low-to-average or average-to-high. Each category was chosen by ten of the teachers. A table of random numbers was then used to divide the low-to-average classrooms for the Illustrated and Nonillustrated
conditions. Similarly, a table of random numbers was utilized to divide the ten average-to-high classrooms.

A total of 435 students completed the pretest. Of this number, 152 qualified as subjects for the study.

To be included as a subject, a student had to be present for the pretest, the practice exercises, at least ten of the twelve treatment sessions, the posttest, the delayed posttest, and the comprehension test. In addition, the student's comprehension score on the Iowa Tests of Basic Skills (5) had to fall within the limits which were set to define good and poor readers. Participants whose scores fell between the first and fourth deciles were defined as poor readers, while those whose scores fell between the sixth and ninth deciles were defined as good readers. In order to lessen regression effects, those whose scores were at or below the first decile, or at or above the ninth, were dropped from the study. To ensure a better discrimination between good and poor readers, those whose scores fell at or between the fourth and sixth deciles were also excluded.

The 152 subjects were well distributed among the four treatment groups. In the Illustrated condition, there were forty-six good readers and thirty-six poor readers. In the Nonillustrated condition, there were thirty-two
good readers and thirty-eight poor readers. Thus, each group contained at least thirty subjects, the minimum number recommended by Roscoe (7, p. 184) for investigations of this type.

During the analysis of the data, it was discovered that one teacher had improperly administered the pretest. Therefore, an additional 13 students, who would have brought the number of subjects to 165, had to be excluded from the study.

Procedures for the Collection of Data

The researcher-made instrument was administered as a pretest, a posttest, and a delayed posttest. The comprehension measure was given as part of the district-wide testing program between the posttest and the delayed posttest. A four-week treatment period was preceded by a one-day practice session. Before the study began, training sessions were held for the participating teachers. Appendix G contains the schedule of activities during the study.

Teacher Training

Teacher training was conducted in individual schools during the three weeks prior to the study. Different scripts were developed for the teachers who would use the
Illustrated and Nonillustrated conditions. The purpose of these scripts, which were approved by a panel of three education professors, was to standardize the training procedures. Before each training session, the investigator studied the appropriate script. Reading from the printed page was avoided, however, on the assumption that such a mechanical procedure would have inhibited communication.

The actual sessions varied somewhat because of the questions asked by the teachers. Nevertheless, the scripts served to assure that no important information was omitted from any of the sessions. See Appendix H for the script created for those teachers who used the Nonillustrated condition. Appendix I contains the variation for those who used the Illustrated condition. The only differences in the two were in the second and third sentences of the fifth paragraphs.

**Multiple-Choice Tests**

The researcher-made instrument was administered as a pretest on Tuesday during the first week of the study. The same instrument was given as a posttest on Tuesday of the sixth week and as a delayed posttest on Tuesday of the twelfth week. Teachers read each question and its choices
aloud as students followed on their copies. Students were instructed to circle the word or words in the option of their choice.

Since the test served a different purpose each time it was given, a different script was developed for each administration. The script served both to present the activity to the students and to remind the teachers of the procedures discussed during the training sessions.

A main goal of the scripts was to elicit the students' cooperation yet put them at ease concerning the effects of the test results upon their grades. Consistent with this goal, the instrument was titled "Multiple-Choice Questions," and the script for the pretest was titled "Instructions for Multiple-Choice Questions." The use of the word test was thereby avoided. For copies of the three scripts, see Appendixes J, K, and L.

Before each testing date, a manila envelope containing the correct number of tests and the accompanying script was delivered to each participating teacher. In the top, left-hand corner of each envelope, the appropriate date was written in large letters and numerals. After each test had been administered, both completed and unused copies were placed back into the envelopes, which were then collected by the investigator.
Comprehension Measure

The *Iowa Tests of Basic Skills* (5) was administered to all students during the period between the posttest and the delayed posttest. Scores on the "Comprehension" subtest were then used to identify good and poor readers according to the definitions stated in Chapter I.

Procedures for Conducting Treatments

On Thursday during the first week of the study, a practice session was held to familiarize students with the vocabulary learning activities. For this practice, every classroom used cards without illustrations so that all students would have the same type of training experience prior to the treatment sessions. An introductory script (Appendix M) was read aloud by the teachers. Teachers then read each practice card aloud as students followed on their individual copies. After each card was read, each student wrote an original response on paper. To help assure that participants understood the procedures, students were permitted to share ideas, and teachers were encouraged to offer suggestions for responses.

During the second through fifth weeks, treatment sessions were held on Tuesdays, Wednesdays, and Thursdays. On each of these twelve days, four words were studied. Before the first treatment session, teachers read aloud a
preparatory script, which is found in Appendix N. In contrast to the practice exercises, no sharing of ideas was permitted, and teachers were not allowed to make suggestions for responses.

A separate manila envelope with each day's cards was delivered to all teachers before the treatment sessions began every week. In the top, left-hand corner of each envelope, the appropriate date and the four words, placed in the order in which they were to be studied, were written. At the conclusion of each day's activities, the teachers placed all cards, together with the students' response papers, back into that day's envelope. These papers served as a convenient means of monitoring the students' attendance during the study.

At the end of each week, the investigator collected the three envelopes from each teacher and delivered those for the succeeding week. During these weekly visits, feedback from the teachers was obtained to help assure that the procedures of the study were being followed.

Research Design

In this study, a 2 x 2 factorial design was utilized. Factors were reading ability (good and poor) and treatment condition (Illustrated and Nonillustrated).
This design was employed as a type of nonequivalent control group design, described by Campbell and Stanley (1). According to the authors, this quasi-experimental design is appropriate when groups to be compared do not have pre-experimental sampling equivalence. The design is particularly suited to studies which use small to moderate numbers of naturally assembled classrooms.

The nonequivalent control group design was preferable to a true experimental design in which random samples of students would have been taken out of a small number of classrooms for treatments. Under these conditions, the latter design would almost certainly have created great awareness of the experiment, and external validity would have been threatened (1, p. 50). A true experimental design using classrooms as units would have been impractical for this study since 120 or more classes, or at least 30 for each condition, would have been required (7, p. 184).

Procedures for the Analysis of Data

The hypotheses of the study were restated in the null form and tested with the analysis of covariance technique using the program BMDP2V (3). Scores from the pretest, which served as the covariate, the posttest, and the delayed posttest were entered on IBM cards, and
computation was done by the Data Processing Center at North Texas State University. The level of significance below which the hypotheses would have been rejected was set at .05.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to compare the effectiveness of a context approach to learning reading vocabulary with the effectiveness of the context approach accompanied by illustrations. To carry out this purpose, the following hypotheses were tested with both a posttest and a delayed posttest.

1. The adjusted means of good readers who use the Illustrated condition will be significantly greater than the adjusted means of good readers who use the Nonillustrated condition.

2. The adjusted means of poor readers who use the Illustrated condition will be significantly greater than the adjusted means of poor readers who use the Nonillustrated condition.

3. The adjusted means of good readers who use the Illustrated condition will be significantly greater than the adjusted means of poor readers who use the Illustrated condition.

4. The adjusted means of good readers who use the Nonillustrated condition will be significantly greater
than the adjusted means of poor readers who use the Nonillustrated condition.

Independent variables were reading ability (good and poor) and treatment condition (Illustrated or Nonillustrated). The dependent variables were the numbers of correct responses on the researcher-made multiple-choice instrument, which was used as both a posttest and a delayed posttest. Used as a pretest, this instrument also served as the covariate in the study.

**Posttest Results**

The analysis of covariance procedure was utilized to test the posttest results. Table I presents a summary of this analysis.

**TABLE I**

**ANALYSIS OF COVARIANCE FOR THE POSTTEST**

<table>
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<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>Tail Probability</th>
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<tr>
<td>Picture</td>
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<td>57.73</td>
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<td>.106</td>
</tr>
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<td>37.91</td>
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<td>1</td>
<td>.26</td>
<td>.01</td>
<td>.914</td>
</tr>
<tr>
<td>Error</td>
<td>3201.82</td>
<td>147</td>
<td>21.78</td>
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<td></td>
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</table>
This analysis yielded no significant main effect for treatment (Picture) condition, $F(1,147) = 2.65$, $p < .106$. Nor was there a significant interaction between treatment condition and reading ability, $F(1,147) = 0.01$, $p < .914$. However, the main effect for reading ability was significant, $F(1,147) = 37.91$, $p < .001$.

This main effect for reading ability reveals only that some of the subjects made greater gains than others. In order to determine which readers learned more, it is necessary to examine the adjusted cell means for the posttest. These adjusted cell means are presented in Table II.

**TABLE II**

<table>
<thead>
<tr>
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<th>No</th>
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</thead>
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<td>Reading Level</td>
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<tr>
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<td>19.79</td>
<td>14.96</td>
<td>18.63</td>
<td>13.63</td>
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</table>

On the posttest, the adjusted cell mean for good readers who used the Illustrated condition was 19.79,
while the adjusted cell mean for poor readers who used the Illustrated condition was 14.96. The difference between these means, then, was 4.83 correct answers. The corresponding adjusted cell means for good and poor readers who used the Nonillustrated condition were 18.63 and 13.63, respectively, a difference of 5.0 correct answers.

Since these differences are almost identical, the meaning of the significant main effect for reading ability was clear. Good readers learned significantly more words than did poor readers, regardless of treatment condition.

Delayed Posttest Results

The delayed posttest was given six weeks after the posttest, and the results were tested with the analysis of covariance. The results are found in Table III.

**TABLE III**

ANALYSIS OF COVARIANCE FOR THE DELAYED POSTTEST

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
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<th>Tail Probability</th>
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</table>
There was no significant main effect for treatment (Picture) condition, $F(1,147) = 2.92, p < .090$. Nor was there a significant interaction between treatment condition and reading ability, $F(1,147) = 0.04, p < .847$. Again, however, there was a significant main effect for reading ability, $F(1,147) = 24.14, p < .001$.

To determine which readers learned more, it is necessary to examine the adjusted cell means for the delayed posttest. These adjusted cell means are presented in Table IV.

**TABLE IV**

**ADJUSTED CELL MEANS FOR THE DELAYED POSTTEST**

<table>
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<tr>
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<td>Delayed Posttest</td>
<td>18.84</td>
<td>14.77</td>
<td>17.38</td>
<td>13.61</td>
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</table>

On the delayed posttest, the adjusted cell mean for good readers who used the Illustrated condition was 18.84, and the adjusted cell mean for poor readers who used the Illustrated condition was 14.77 correct answers. The difference between these means was 4.07 correct answers. The corresponding adjusted cell means for good and poor
readers who used the Nonillustrated condition were 17.38 and 13.61, respectively. The difference here was 3.77 correct answers.

As with the posttest results, these differences are nearly identical. Again, good readers learned more than did poor readers, regardless of the treatment condition.
CHAPTER V

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The results of the study are discussed in terms of the two variables examined: (a) the effects of illustrations on a context approach to learning reading vocabulary and (b) the effects of reading ability on the acquisition of reading vocabulary with this approach. Suggestions for further research conclude the chapter.

Effects of Illustrations

Findings

This study examined the effects of adding illustrations to a context approach to teaching reading vocabulary to fourth-grade students. The results indicate that illustrations neither facilitate nor inhibit the learning of new words. A detailed report of these results is presented in Chapter IV.

Interpretation

Although the present study was not designed as a test of the focal attention hypothesis advanced by Samuels (10, 11) and others, the results can be interpreted in light of this hypothesis. According to Samuels, pictures interfere
with learning by directing a reader's attention away from printed material.

The results of this study, however, are not consistent with the focal attention hypothesis. That is, the illustrations did not distract students from the printed words and the response task. It would appear that Arlin (2) is correct in cautioning that even if the focal attention hypothesis is eventually upheld for the paired-associate laboratory paradigm, the results will not necessarily apply to the kinds of activities used in a classroom situation.

On the other hand, the findings of the present investigation do not support the position that illustrations add enough information to affect the learning of new vocabulary with a context-response method. These findings were consistent with those of Montare, Elman, and Cohen (5), who found that pictures neither promoted nor undermined story comprehension. Evidently, providing illustrative sentences and a definition and then directing a student to make an original response are sufficient in themselves to promote the integration of new information with old.

The findings of the study can also be interpreted in light of the dual processing theory proposed by Paivio
(6). In this theory, verbal and nonverbal information are represented in separate but interconnected memory systems. As explained by Levin and his associates (4), the joint involvement of the two systems should produce additive effects in learning.

For this investigation, a dual processing theory would have predicted that adding illustrations to the context method would have produced such additive effects and therefore would have enhanced learning. However, no significant difference was found between the Illustrated and the Nonillustrated conditions. There was, then, no evidence of any additive effects. It can be concluded that if effects of this type were present in a dual processing system, they were not great enough with this approach to produce a detectable gain in learning.

**Implications**

While illustrations do not appear to promote the acquisition of new words in a context method, neither do they seem to act as distractors which interfere with learning. The principal implication of this finding is that effects other than those focused upon in this study can be given priority when the use of pictures in vocabulary exercises is being considered. Samuels,
Biesbrock, and Terry (12) found that children prefer illustrated stories over nonillustrated ones. The use of pictures, then, can be supported on motivational grounds without fearing that learning will be undermined.

Effects of Reading Ability

Findings

As hypothesized at the beginning of this study, good readers learned significantly more vocabulary words than did poor readers both with the Illustrated condition and with the Nonillustrated condition (p < .001). A detailed report of these findings is presented in Chapter IV.

Interpretation

The superior performance of the good readers can be viewed in terms of schemata, a construct used in cognitive learning theories. As explained by Richgels, a schema can be thought of as "a knowledge structure, or framework, which interrelates all of one's knowledge about a given topic" (8, p. 54). All of a person's schemata are interconnected and cross-referenced. Schemata change continuously as learning occurs, and they become more elaborate and specific with experience.

According to Anderson, Spiro, and Anderson (1), a particular situation is interpreted as the elements in
that situation are matched with generic characterizations in a person's schematic knowledge structure. Information that matches existing "slots" in a schema is significant to the learner. In contrast, when there is no "slot" to match a situation, the information is meaningless. In the latter case, schematic changes will not occur, and learning will not result.

A person's schemata, then, will determine what he/she will be able to learn. The failure to learn in a given situation can be attributed either to a lack of critical schemata or to schemata that are poorly developed.

From the results of the present study, it is reasonable to conclude that the good readers learned more because they possessed more elaborately developed schemata than did the poor readers. As a result, the good readers were able to make a greater number of matches between their prior knowledge and the information presented in the learning activities. As described by Rumelhart, Lindsay, and Norman (9), old information aided the acquisition of new, and the learners' long-term semantic memory systems were reorganized to include the significant new material.
Implications

It follows from this interpretation that educators must be aware of the knowledge which students bring to a learning task. If there is little or nothing in a learner's experience which relates closely to the information presented in a lesson, then little or no learning will occur.

Preassessment is, therefore, a crucial step in the teaching process. A teacher must know the extent to which a student's various schemata are developed in order that a proper match can be made between these schemata and new data. The goal of teaching should be to provide a sequence of experiences that will develop a student's schemata in a systematic way so that old information will consistently promote the acquisition of new material. This meaningful new knowledge will then be stored in long-term memory and thereby become available to promote subsequent learning.

Suggestions for Further Research

In light of the results of this study, the following possibilities for further research are suggested.

1. This study examined the effects of pictures with fourth-grade students only. Therefore, further studies
should be conducted with both younger and older students to determine whether or not the effects vary with different stages of cognitive development.

2. In this study, vocabulary development was measured by a multiple-choice recognition test. Future studies could examine whether or not pictures enhance students' ability to generate their own definitions or sentences for target words.

3. It would also be desirable to explore the effects of pictures on the reproduction aspect of vocabulary development. Growth could be measured by the spontaneous use of target words by students in their compositions.

4. Since the improvement of comprehension is a principal goal of vocabulary development, the effects of the illustrated context approach as a means of introducing new words found in reading assignments should be investigated. It is possible that pictures congruent with the text and presented before a selection is read might promote comprehension in the same manner that congruent pictures within a story enhanced comprehension in the study by Peeck (7), which was described in Chapter II.

5. Because a learning activity is generally used in a sequence of related lessons, illustrated vocabulary lessons should be studied along with accompanying
introductory and/or follow-up activities. In addition, the possibility that different sequences might produce different results should be investigated.

6. The effects of different types of illustrations should also be studied. Students might pay greater attention to colored drawings, for example, than to the line drawings used in the current study. The use of photographs should be examined as well.

7. All of the activities in this study were teacher-directed. Future research should investigate the use of illustrated and nonillustrated materials in independent activities. It is possible that a student working at his/her own pace might spend more time with illustrated lessons and thus learn more vocabulary words.

8. According to Dunn and Dunn (3), students with different learning styles need different types of lessons. Future research might discover that auditory learners will acquire new words best with the type of teacher-led activity used in the present study, whether illustrations are present or not. On the other hand, visual learners might progress faster with illustrated materials, both in independent study and with teacher-directed activities.
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APPENDIXES
APPENDIX A

ONE HUNDRED SEVENTH- GRADE WORDS
<table>
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<td>meander</td>
<td>predicament</td>
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MULTIPLE-CHOICE QUESTIONS

1. **Cull** the bad ones.
   a. help   b. use up   c. pick out   d. punish

2. What is your **vocation**?
   a. job   b. address   c. idea   d. order

3. It was **inaccessible**.
   a. out of order   b. too dry   c. out of reach   d. underground

4. That's **ingenious**.
   a. smart   b. dead   c. troublesome   d. expensive

5. It **meanders** to the city.
   a. flies   b. does not belong   c. lives close   d. goes back and forth

6. I did it **instinctively**.
   a. all alone   b. in time   c. very slowly   d. without thinking

7. My neighbor is **insolent**.
   a. helpful   b. joyful   c. lonesome   d. rude

8. They **converge** here.
   a. talk   b. play   c. meet   d. eat

9. The said it is **inevitable**.
   a. certain   b. easy   c. heavy   d. slow

10. All we found was **havoc**.
    a. wreckage   b. old food   c. dirt   d. silliness

11. That was **harebrained**.
    a. stupid   b. fun   c. thoughtful   d. empty

12. There was **bedlam** there.
    a. trash   b. noise   c. sickness   d. work

13. It will be **teeming**.
    a. unfinished   b. crowded   c. round   d. huge

14. I did it **inadvertently**.
    a. quickly   b. accidentally   c. correctly   d. seriously
15. They were **inhospitable**.
   a. very sad    b. sick in bed    c. unfriendly    d. wild

16. We did it **simultaneously**.
   a. quickly    b. carelessly    c. together    d. quietly

17. The boat is **laden**.
   a. under water    b. by itself    c. out of sight    d. weighted down

18. She **reproved** us.
   a. asked    b. scolded    c. needed    d. helped

19. What is that **stench**?
   a. noise    b. plant    c. present    d. smell

20. The **vigil** lasted three days.
   a. watching    b. trip    c. fishing    d. celebration

21. Don't **lurk** there.
   a. play    b. hide    c. walk    d. sleep

22. She seems **unperturbed**.
   a. sleepy    b. angry    c. unworried    d. unhappy

23. We have to **elude** these people.
   a. entertain    b. escape    c. work for    d. follow

24. Please **convey** this for me.
   a. clean    b. take    c. decorate    d. open

25. This will be **excruciating**.
   a. painful    b. educational    c. delicious    d. beautiful

26. We want to **vanguish** them.
   a. beat    b. help    c. meet    d. visit

27. We took a **drubbing**.
   a. break    b. loss    c. trip    d. bath

28. We will **fabricate** it.
   a. build    b. show    c. look for    d. talk about

29. We had **eminent** visitors yesterday.
   a. unexpected    b. unwanted    c. friendly    d. famous
30. I was petrified.
   a. afraid   b. neat   c. lost   d. itchy
31. Is she going to be your adversary?
   a. leader   b. teacher   c. partner   d. enemy
32. It was too obscure.
   a. early   b. hot   c. cracked   d. unclear
33. We liked it for its proximity.
   a. brightness   b. taste   c. large size   d. nearness
34. John became ensnared.
   a. quiet   b. tired   c. trapped   d. thirsty
35. Be sure that it is lucid.
   a. early   b. fast   c. colorful   d. clear
36. Don’t activate it.
   a. bring   b. start   c. open   d. make
37. Please scrutinize it for me.
   a. bring   b. look at   c. try   d. capture
38. We have a myriad of them.
   a. couple   b. small load   c. dozen   d. great many
39. Do you think it will ensue?
   a. live   b. be all right   c. matter   d. happen next
40. I’m ravenous today.
   a. forgetful   b. late   c. hungry   d. sick
41. This is reprehensible.
   a. little   b. useful   c. correct   d. terrible
42. She always does this with great intensity.
   a. joy   b. honesty   c. carelessness   d. energy
43. Let’s have a rendezvous.
   a. snack   b. game   c. meeting   d. vacation
44. He was wan.
   a. intelligent   b. happy   c. tall   d. pale
45. We will muster them now.
   a. feed   b. gather   c. clean   d. inspect

46. This is monotonous.
   a. interesting   b. hard   c. heavy   d. boring

47. They were inhumane.
   a. honest   b. mean   c. broken   d. tame

48. He will brandish it.
   a. need   b. swing   c. find   d. throw

49. She was incensed when she came in.
   a. angry   b. dirty   c. cold   d. sweaty

50. We want one that is intricate.
   a. cheap   b. complicated   c. uncooked   d. new

51. Why are you so slothful?
   a. lazy   b. unfriendly   c. quiet   d. rude

52. We need a massive one.
   a. very good   b. very sweet   c. very large   d. very old

53. Splice these for me.
   a. throw   b. squeeze   c. connect   d. wash

54. I saw him falter.
   a. fight   b. signal   c. arrive   d. stumble

55. It was a strenuous day.
   a. active   b. wasted   c. pleasant   d. sunny

56. This is my favorite panorama.
   a. hobby   b. sight   c. dessert   d. subject

57. Is that the potent one?
   a. strong   b. only   c. right   d. first

58. Those are exquisite.
   a. interesting   b. lovely   c. destroyed   d. unneeded

59. My brother was diffident.
   a. shy   b. naughty   c. happy   d. hungry
60. I saw it plummet.
   a. start  b. drop  c. walk away  d. explode

61. Make it concise.
   a. right  b. difficult  c. pretty  d. short

62. He is daft.
   a. quiet  b. helpless  c. ready  d. foolish

63. Do you know if it is secluded?
   a. in the middle  b. easy to do  c. hopeless  d. off by itself

64. This will be indispensable.
   a. needed  b. fast  c. quiet  d. awful

65. We noticed that they were gnarled.
   a. crooked  b. dirty  c. large  d. strong

66. We found out that they were sparse.
   a. small in number  b. in the back  c. on fire  d. not working

67. She is feigning.
   a. singing  b. laughing  c. pretending  d. trying

68. Can you fathom this thing?
   a. figure out  b. get rid of  c. try  d. destroy

69. We'll try to salvage them.
   a. finish  b. rescue  c. arrange  d. trick

70. A gaunt woman came into the room.
   a. scary  b. tall  c. skinny  d. young

71. The onslaught began.
   a. game  b. attack  c. meal  d. program

72. This is quite a predicament.
   a. machine  b. building  c. product  d. problem

73. Will this preclude it?
   a. teach  b. stop  c. answer  d. pay for

74. Tell me the velocity.
   a. speed  b. plan  c. answer  d. truth
75. It is frigid there.
   a. noisy   b. frightening   c. freezing   d. exciting

76. Is that plausible?
   a. terrible   b. reasonable   c. usable   d. drinkable

77. His thoughts were serene.
   a. boring   b. kind   c. stupid   d. calm
APPENDIX D

MULTIPLE-CHOICE QUESTIONS
MULTIPLE-CHOICE QUESTIONS

1. My neighbor is insolent.
   a. helpful  b. joyful  c. lonesome  d. rude

2. Tell me the velocity.
   a. speed  c. answer  d. truth

3. She was incensed when she came in.
   a. angry  b. dirty  c. cold  d. sweaty

4. Is she going to be your adversary?
   a. leader  b. teacher  c. partner  d. enemy

5. It meanders to the city.
   a. flies  b. does not belong  c. lives close by  d. goes back and forth

6. Don't lurk there.
   a. play  b. hide  c. walk  d. sleep

7. He will brandish it.
   a. need  b. swing  c. find  d. throw

8. We will muster them now.
   a. feed  b. gather  c. clean  d. inspect

9. It was a strenuous day.
   a. active  b. wasted  c. pleasant  d. sunny

10. She always does this with great intensity.
    a. joy  b. honesty  c. carelessness  d. energy

11. What is your vocation?
    a. job  b. address  c. idea  d. order

12. We had eminent visitors yesterday.
    a. unexpected  c. friendly  d. famous

13. So you think it will ensue?
    a. live  b. be all right  c. matter  d. happen next

14. We have a myriad of them.
    a. couple  b. small load  c. dozen  d. great many

15. Be sure that it is lucid.
    a. early  b. fast  c. colorful  d. clear

16. Please scrutinize it for me.
    a. bring  b. look at  c. try  d. capture
17. We took a **drubbing**.
   a. break      b. loss       c. trip       d. bath
18. They were **inhospitable**.
   a. very sad    b. sick in bed  c. unfriendly  d. wild
19. She seems **unperturbed**.
   a. sleepy      b. angry      c. unworried  d. unhappy
20. My brother was **diffident**.
   a. shy         b. naughty    c. happy      d. hungry
21. We found out that they were **sparse**.
   a. small in number b. in the back c. on fire    d. not working
22. I saw it **plummet**.
   a. start       b. drop       c. walk away d. explode
23. I'm **ravenous** today.
   a. forgetful   b. late       c. hungry    d. sick
24. Is that **plausible**?
   a. terrible    b. reasonable c. usable     d. drinkable
25. We want one that is **intricate**.
   a. cheap       b. complicated c. uncooked  d. new
26. His thoughts were **serene**.
   a. boring      b. kind       c. stupid    d. calm
27. We noticed that they were **gnarled**.
   a. crooked     b. dirty      c. large     d. strong
28. John became **ensnared**.
   a. quiet       b. tired      c. trapped   d. thirsty
29. The **vigil** lasted three days.
   a. watching    b. trip       c. fishing   d. celebration
30. Cull the bad ones.
   a. help        b. use up    c. pick out  d. punish
31. Let's have a **rendezvous**.
   a. snack       b. game      c. meeting   d. vacation
32. There was **bedlam** there.
   a. trash       b. noise     c. sickness  d. work
33. He is **daft**.
   a. quiet       b. helpless   c. ready    d. foolish
34. This will be **indispensable**.
   a. needed      b. fast      c. quiet    d. awful
35. Make it concise.
   a. right  b. difficult  c. pretty  d. short

36. Splice these for me.
   a. throw  b. squeeze  c. connect  d. wash

37. A gaunt woman came into the room.
   a. scary  b. tall  c. skinny  d. young

38. The boat is laden.
   a. under water  b. by itself  c. out of sight  d. weighted down

39. We want to vanquish them.
   a. beat  b. help  c. meet  d. visit

40. It was too obscure.
   a. early  b. hot  c. cracked  d. unclear

41. We liked it for its proximity.
   a. brightness  b. taste  c. large size  d. nearness

42. Please convey this for me.
   a. clean  b. take  c. decorate  d. open

43. He was wan.
   a. intelligent  b. happy  c. tall  d. pale

44. This is my favorite panorama.
   a. hobby  b. sight  c. dessert  d. subject

45. She reproved us.
   a. asked  b. scolded  c. needed  d. helped

46. We have to elude these people.
   a. entertain  b. escape  c. work for  d. follow

47. It was inaccessible.
   a. out of order  b. too dry  c. out of reach  d. underground

48. Do you know if it is secluded?
   a. in the middle  b. easy to do  c. hopeless  d. off by itself
APPENDIX E

VOCABULARY CARDS
plausible

It is plausible to think that you will learn a lot this year. When you see the sun come out in the middle of a storm, it is plausible to think that the storm is almost over. **Plausible** means logical or believable.

On your own paper, write a sentence to tell what would be plausible if you heard a siren out in the street.
velocity

If you drove a car at a high velocity, you might get a ticket. Rockets usually travel with very great velocity. Velocity means how fast something is moving.

On your own paper, write a sentence to explain what might happen if you rode a bike at too high a velocity.
wan

If you are wan, your skin is a lighter color than usual. A patient in bed with the flu would look wan, maybe like a ghost. Wan means not having your normal, healthy color.

On your own paper, write a sentence to tell about another sickness that would make a person look wan.

wan

If you are wan, your skin is a lighter color than usual. The patient in the bed looks wan because he has the flu. Wan means not having your normal, healthy color.

On your own paper, write a sentence to tell about another sickness that would make a person look wan.
Resting quietly might help you feel serene. Many people feel serene when they look at great mountains. Serene means peaceful.

On your own paper, write a sentence to tell about a kind of music that could make you feel serene.
vanquish

When two teams play ball, they try to vanquish each other. In a battle one warrior will try to vanquish another warrior. **Vanquish** means to defeat or conquer.

On your own paper, write a sentence to tell how you would vanquish an invasion of ants at a picnic.

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**vanquish**

When two teams play ball, they try to vanquish each other. In the picture the warrior on his knees has been vanquished in battle. **Vanquish** means to defeat or conquer.

On your own paper, write a sentence to tell how you would vanquish an invasion of ants at a picnic.
**elude**

If you saw a tornado coming, you would want to elude it. A robber might try to elude a policeman. **Elude** means to get away from someone or something.

On your own paper, write a sentence to tell why you would want to elude a mean dog.
splice

You could splice two short wires together if you needed a longer one. Two ropes can be spliced by weaving them together. Splice means to join two things together.

On your own paper, write a sentence to tell why a badly spliced rope would be dangerous to climb.
Barking dogs can cause bedlam in a neighborhood. It would be hard to work if someone created bedlam with a loud musical instrument. Bedlam means loud confusion.

On your own paper, write a sentence to tell what would happen if students caused bedlam in a classroom.
An argument might ensue if two people disagreed about something. When a large airplane crashes, many deaths usually ensue. **Ensue** means to result or follow.

On your own paper, write a sentence to tell what might ensue if you touched a hot stove.
inhospitable

An inhospitable person might slam a door in a visitor’s face. It would be inhospitable to squirt water on someone who came into your yard. Inhospitable means unneighborly.

On your own paper, write a sentence to tell about something else an inhospitable person might do.
meander

If you meander, you are not moving in a straight line. A river that winds from side to side is a meandering river. Meander means to wander around on the way to a place.

On your own paper, write a sentence to explain why you shouldn’t meander down the hall when the tardy bell is about to ring.
A speech that lasted only one minute would be a concise speech. If you wrote a friend a letter and had only one or two sentences, you would have a concise letter. **Concise** means using few words.

On your own paper, write a sentence to tell whether concise directions would be easier to remember than long directions.
ravenous

You feel ravenous when you haven't had food for a long time. A person who ordered a five-dip ice cream cone would probably be ravenous. Ravenous means starved for food.

On your own paper, write a sentence to tell what you would order if you felt ravenous.
inaccessible

If something is inaccessible, you can’t get to it. A football on a roof would probably be inaccessible to someone without a ladder. **Inaccessible** means impossible to get to.

On your own paper, write a sentence to tell why birds want their nests to be inaccessible to cats.
Sometimes grocery store workers have to cull the rotten bananas and throw them away. A coin dealer would cull his best coins to show his customers. Cull means to select or choose.

On your own paper, write a sentence to tell what kinds of books you would cull from the library shelves to read at home.
insolent

People who talk back to others all the time are insolent. A person who made an ugly face at someone would be insolent. Insolent means very impolite.

On your own paper, write a sentence to tell about an insolent way to finish a telephone conversation.
Your team would suffer a drubbing if you were beaten by a big score. A score of sixty to nothing would be a drubbing. **Drubbing** means a bad defeat.

On your own paper, write a sentence to tell how you would feel if your team took a drubbing.
**scrutinize**

When you pay for something, you usually scrutinize the change you get back. A policeman would scrutinize a suspect's fingerprints to try to solve a crime. **Scrutinize** means to inspect something carefully.

On your own paper, write a sentence to explain why teachers should scrutinize students' lessons before they put grades on them.
vocation

Most people make money in their vocations. You can tell a fireman's vocation by his or her uniform. Vocation means a person's work.

On your own paper, write a sentence to tell about a vocation that you might like to have someday.
lucid

A teacher should always give lucid directions. When you prepare food, you want to have a lucid recipe. **Lucid** means easy to understand.

On your own paper, write a sentence to explain why it is important to have a lucid road map when you want to travel to a new place.

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**Chocolate Milk**

1. Pour milk into a tall glass.
2. Add two tablespoons of chocolate syrup.
3. Stir well.
adversary

In World War II Japan was an adversary of the United States. Two people having an arm wrestling contest would be adversaries. Adversary means an opponent.

On your own paper, write a sentence to tell what kind of adversary King Kong would be in a fight.
If your handwriting is obscure, people will have trouble reading it. A road sign would not be helpful if mud covered up parts of the words and made them obscure. **Obscure** means hard to see or understand.

On your own paper, write a sentence to tell what you would do if your television picture became obscure.
plummet

If you threw a suitcase out of an airplane, it would plummet to the ground. A rock will plummet to earth if you push it off the top of a cliff. **Plummet** means to fall straight down.

On your own paper, write a sentence to explain why you would not want an egg to plummet to the floor.
lurk

A robber might lurk behind a building if he saw a policeman. A snake could lurk behind a rock to catch a mouse that might come near. Lurk means to stay out of sight.

On your own paper, write a sentence to tell when a student might want to lurk behind the door of a classroom.
rendezvous

You might rendezvous with your friends at the park to play baseball.
Spaceships might need to rendezvous with a space station. **Rendezvous** means to get together.

On your own paper, write a sentence to tell where you and your friends might rendezvous to eat a hamburger.

---

**rendezvous**

You might rendezvous with your friends at the park to play baseball.
The spaceships in the picture are about to rendezvous with the space station. **Rendezvous** means to get together.

On your own paper, write a sentence to tell where you and your friends might rendezvous to eat a hamburger.
laden

Trains laden with new automobiles often make deliveries to car dealers. A donkey might be laden with large sacks of corn from a farm. Laden means carrying a heavy load of something.

On your own paper, write a sentence to tell what you might be laden with if you came out of a library.
ensnared

Many criminals are ensnared by the F. B. I. Sometimes people become ensnared in ropes. Ensnared means captured.

On your own paper, write a sentence to tell what you would do if you became ensnared in a big net.
diffident

When you feel diffident, you don't want to try something new. A diffident person probably would not want to join a group of other people. Diffident means bashful.

On your own paper, write a sentence to tell how a diffident person would feel about making a speech in front of a class.
incensed

Your parents would be incensed if you threw paint on the floor. You would be incensed if someone stole your money. Incensed means very mad.

On your own paper, write a sentence to tell about something else that would make a person feel incensed.

incensed

Your parents would be incensed if you threw paint on the floor. The person in the picture might be incensed because someone stole his money. Incensed means very mad.

On your own paper, write a sentence to tell about something else that would make a person feel incensed.


secluded

You would go to a secluded place if you didn't want to be around people. An island in the middle of a lake would be secluded. **Secluded** means apart or alone. 

On your own paper, write a sentence to tell what part of a mountain would probably be secluded.
strenuous

For most people, running ten miles would be very strenuous. Lifting a heavy weight would be a strenuous task. **Strenuous** means requiring a lot of energy.

On your own paper, write a sentence to tell how you would feel after doing something strenuous.
vigil

A mother cat will keep vigil over her kittens if they are in danger. Soldiers would keep vigil over their camp. **Vigil** means staying awake to guard something.

On your own paper, write a sentence to tell who would need to keep vigil over a car thief.
If food were sparse, you would get hungry. If there were only three cities spread over a large map, the cities would be very sparse. Sparse means few and scattered.

On your own paper, write a sentence to tell what problem you would have if pencils were sparse in a school.
daft

You would be daft if you walked into a cage with a tiger. A daft person might play in the middle of a busy street. Daft mean stupid or crazy.

On your own paper, write a sentence to tell what a daft person might do with a box of matches.
You have to muster your strength before you play an important game. A teacher might use a whistle to muster her students at the end of their play period. Muster means to collect or bring together.

On your own paper, write a sentence to tell what the school uses to muster students for a fire drill.
eminent

Athletes often become eminent people. A television star would be an eminent person. Eminent means well-known.

On your own paper, write a sentence to tell about an eminent person you would like to meet.
intricate

If a puzzle is intricate, it is hard to work. It would not be easy to find your way through an intricate maze. **Intricate** means long and difficult to figure out.

On your own paper, write a sentence to tell where you could get help with an intricate math assignment.
proximity

The proximity of food makes most people hungry. Many families buy houses because of their proximity to a school. Proximity means closeness.

On your own paper, write a sentence to explain why the proximity of a rock band would make it hard for you to sleep.

proximity

The proximity of food makes most people hungry. The family that bought the house in the picture liked its proximity to the school. Proximity means closeness.

On your own paper, write a sentence to explain why the proximity of a rock band would make it hard for you to sleep.
convey

Many of the things you buy are conveyed to the stores by trucks. Hoses and sprinklers are often used to convey water to plants. **Convey** means to take something somewhere.

On your own paper, write a sentence to explain how you could convey a message to a person in California.
unperturbed

When you are safe inside, you are usually unperturbed by a storm. You would be unperturbed by a big dog if you knew him well. Unperturbed means not bothered or concerned.

On your own paper, write a sentence to tell why you should be unperturbed by a spelling test if you have studied your words.
myriad

A myriad of mosquitoes would make it hard to stay outside. On a clear night you can see a myriad of stars in the sky. **Myriad** means a very large number.

On your own paper, write a sentence to tell where you would find a myriad of fish.
reprove

A parent would reprove a child who misbehaved. A dog would be reproved if it chewed up a shoe. Reprove means to bawl someone out for doing something bad.

On your own paper, write a sentence to tell why a teacher might have to reprove a student.
Many artists like to paint mountain panoramas. If you went to a desert, you might see a panorama with many cactus plants. Panorama means a wide view of something.

On your own paper, write a sentence to tell where you could find a panorama with many ships.
intensity

In a storm, winds often blow with great intensity. A light that is shining with great intensity can make you want to cover your eyes. **Intensity** means strength or power.

On your own paper, write a sentence to explain why you should work with great intensity on your lessons.

intensity

In a storm, winds often blow with great intensity. The boy in the picture is covering his eyes because the light is shining with great intensity. **Intensity** means strength or power.

On your own paper, write a sentence to explain why you should work with great intensity on your lessons.
When people get older, their hands often become gnarled with arthritis. Trees with branches going in all directions are gnarled. **Gnarled** means twisted and bent out of normal shape.

On your own paper, write a sentence to tell why a gnarled tree would make a bad telephone pole.
gaunt

If you go several weeks without food, you will become gaunt. A gaunt person might be sick and unable to eat. Gaunt means thin and weak.

On your own paper, write a sentence to tell how well a gaunt person would be able to play football.
indispensable

If you needed to go to the moon, a spaceship would be indispensable. A basket is indispensable if you want to play basketball. Indispensable means necessary or required.

On your own paper, write a sentence to tell what would be indispensable if you wanted to watch “I Love Lucy.”

indispensable

If you needed to go to the moon, a spaceship would be indispensable. A basket is indispensable if you want to play basketball. Indispensable means necessary or required.

On your own paper, write a sentence to tell what would be indispensable if you wanted to watch “I Love Lucy.”
brandish

It would be very dangerous to brandish a sword in a crowd. You might brandish a stick to scare another person away. **Brandish** means to wave or shake something at someone.

On your own paper, write a sentence to tell how you would feel if somebody brandished a club in front of your face.
PRACTICE EXERCISES

elated

When something you really like happens, you feel elated. You would be elated if you won a trophy in a contest. *Elated* means very happy.

On your own paper, write a sentence to tell about something else that would make you feel elated.

perilous

Parents worry when their children do something perilous. It would be perilous to jump off the roof of a house. *Perilous* means very dangerous.

On your own paper, write a sentence to tell about something else that would be perilous to do.
**devoid**

In the winter, swimming pools are usually devoid of people. A notebook devoid of paper would not be useful in class. **Devoid** means empty.

On your own paper, write a sentence to tell what you would do if your car were devoid of gasoline.

**dash**

Sometimes people have to dash across a busy street. You would dash up a hill if you wanted to get to the top fast. **Dash** means to hurry or rush.

On your own paper, write a sentence to tell when you would have to dash to school.
APPENDIX G

SCHEDULE
SCHEDULE

Week One

Tuesday: Pretest
Thursday: Practice Exercises

Week Two

Tuesday: plausible, velocity, wan, serene
Wednesday: vanquish, elude, splice, bedlam
Thursday: ensue, inhospitable, meander, concise

Week Three

Tuesday: ravenous, inaccessible, cull, insolent
Wednesday: drubbing, scrutinize, vocation, lucid
Thursday: adversary, obscure, plummet, lurk

Week Four

Tuesday: rendezvous, laden, ensnared, diffident
Wednesday: incensed, secluded, strenuous, vigil
Thursday: sparse, daft, muster, eminent

Week Five

Tuesday: intricate, proximity, convey, unperturbed
Wednesday: myriad, reprove, panorama, intensity
Thursday: gnarled, gaunt, indispensable, brandish

Week Six

Tuesday: Posttest

Weeks Nine through Eleven

Comprehension Measure

Week Twelve

Tuesday: Delayed Posttest
APPENDIX H

TRAINING SESSION SCRIPT FOR THE
NONILLUSTRATED CONDITION
TRAINING SESSION SCRIPT FOR THE NONILLUSTRATED CONDITION

I would like to ask your help in a dissertation project I am conducting on vocabulary development. You have been recommended for participation by your principal and by the area administrator. We believe that we are going to produce some materials which will help all of our students.

The goal of this study is to determine whether or not pictures will help fourth graders increase their reading vocabulary. I have done a thorough examination of the education and psychology journals, and to my knowledge no one has demonstrated that pictures are either effective or ineffective as teaching aids.

There is some controversy, though, in the related area of sight word learning by beginning readers. According to some experimenters, pictures interfere with learning because they direct a reader's attention away from the printed words. Others claim that pictures are helpful because they provide additional information to which the reader can relate his/her experience.

This project has been designed to provide a more definitive answer for vocabulary development. We'll be
using eight schools with twenty classes in all. The classes will be assigned by a random process to either an Illustrated condition or a Nonillustrated condition. Success depends upon carrying out the study exactly as planned. Procedures will be the same in all classrooms. Only the materials will be different. To obtain valid data, it will be vital that the students see only the material that is assigned to them.

I want to show you an example of the material. This is the Nonillustrated condition you'll be using. For the word, in this case velocity, the card contains a set of sentences to define the word and relate it to the students' experience. During the experiment, you will read the text aloud while the students follow on their copies. You can use your judgment to decide how long a time is needed for the written responses. In trials we have done, it usually has taken about three minutes per word.

Students will make their sentences on notebook paper. Responses will not be scored as correct or incorrect. The only thing that will be recorded is participation.

We'll be doing four words per day, three days a week, for four weeks. Since students seem to be absent most on Mondays and Fridays, we'll use Tuesdays, Wednesdays, and
Thursdays. There will also be three multiple-choice tests. Here is a schedule for the project. [Handout.]

You will read the test questions and answers to the students as they follow along. [Handout—Multiple-Choice Test.] To avoid ambiguity, we will have them circle the word or words in the answers of their choice. We have found that there is no problem with this even though the procedure is new for most students. The test should take from thirty to forty-five minutes. You won't have to score the tests or do any type of record keeping. I'll be doing all of that.

I'll provide an envelope with each day's materials. Each week I'll bring the materials for the following week and pick up those that have been used. The envelopes will allow you to keep everything organized and out of sight, since the only time the students should see the cards or tests is during the prescribed sessions. If some students review the words or look at the cards more than once, the validity of the study will be threatened.

We want them to study the words, however, after the study is over. I'll be giving each participating teacher several sets of both the Illustrated and the Nonillustrated cards for each of the forty-eight words. In addition, I'll provide other reinforcement activities
so that you'll have a complete teaching unit for these words.
APPENDIX I

TRAINING SESSION SCRIPT VARIATION FOR THE
ILLUSTRATED CONDITION
TRAINING SESSION SCRIPT VARIATION FOR THE

ILLUSTRATED CONDITION

I want to show you an example of the material. This is the Illustrated condition you'll be using. Along with a picture to accompany the word, in this case velocity, the card contains a set of sentences to define the word and relate it to the students' experience.
APPENDIX J

INSTRUCTIONS FOR MULTIPLE-CHOICE QUESTIONS
We are going to answer these multiple-choice questions to find out if the underlined words are words we need to study. As I pass out the papers, put your full name and today's date on the lines at the top.

I will read each question to you as you follow along on your copies. Do not mark anything until after I have finished reading all four of the possible answers. Then draw a circle around the answer that has the same meaning as the underlined word. Be sure to mark only one answer for each question.

Do not worry if you find that you don't know most of the words. If most of you miss a word, we will know that we need to study it. Just do your best work.

(Teachers should monitor the students' work to see that they are following these instructions. The time needed between questions may vary from class to class.)
APPENDIX K

INSTRUCTIONS FOR POSTTEST
INSTRUCTIONS FOR THE POSTTEST

We are going to answer these multiple-choice questions again to find out how many of these vocabulary words you have learned. As I pass out the papers, put your full name and today's date on the lines at the top.

I will read each question to you as you follow along on your copies. Do not mark anything until after I have finished reading all four of the possible answers. Then draw a circle around the answer that has the same meaning as the underlined word. Be sure to mark only one answer for each question.

You are not expected to know every word. However, you should discover that you know more of them than you did before we studied them.

(Teachers should monitor the students' work to see that they are following these instructions. The time needed between questions may vary from class to class.)
APPENDIX I

INSTRUCTIONS FOR THE DELAYED POSTTEST
INSTRUCTIONS FOR THE DELAYED POSTTEST

We are going to answer these multiple-choice questions one more time to find out how many of the words you have remembered. As I pass out the papers, put your full name and today's date on the lines at the top.

I will read each question to you as you follow along on your copies. Do not mark anything until after I have finished reading all four of the possible answers. Then draw a circle around the answer that has the same meaning as the underlined word. Be sure to mark only one answer for each question.

Again, you are not expected to know all of the words since we studied each one only once. Before the year is over, you will have a chance to use the cards again and to do some other activities that will help you remember the words. Today, just do the best job you can on these questions.

(Teachers should monitor the students' work to see that they are following these instructions. The time needed between questions may vary from class to class.)
APPENDIX M

INSTRUCTIONS FOR THE PRACTICE EXERCISES
INSTRUCTIONS FOR THE PRACTICE EXERCISES

We are going to try a new way of learning vocabulary words. As I pass out these cards, get a piece of notebook paper and a pencil. Then put your full name and today's date in the top right-hand corner of the paper.

Now look at the card with the word *elated*. Follow along as I read out loud.

(It is expected that in the beginning many students will have trouble with the sentence writing. With these practice exercises, they may share their ideas with each other. Teachers may also make suggestions. The most desirable sentences will contain the target words themselves. For those who cannot answer in a complete sentence, a meaningful phrase will be far better than no response at all.)

Next, look at the card with the word *perilous*.

(Continue with *devoid*, and finish with *dash*.)
APPENDIX N

INSTRUCTIONS FOR THE VOCABULARY LESSONS
INSTRUCTIONS FOR THE VOCABULARY LESSONS

Last week we tried a new way of studying vocabulary words. Remember that we read about the words on the cards, and then we wrote sentences with the words. Today we will study four more words the same way, but this time each person will work alone. We want to see what you can do without help from others.

As I pass out these cards, get a piece of notebook paper and a pencil. Be sure to put your full name and today's date in the top right-hand corner of the paper.

Now look at the card with the word plausible. Follow along as I read out loud.

(Allow a reasonable amount of time for the written responses. Teachers may offer encouragement, but no suggestions for sentences should be given. Whether students are using the illustrated or the nonillustrated materials, they must see only the cards meant for them until after the delayed post test on March 30. In addition, they must study each word only once so that conditions will be the same in all twenty of the participating classrooms.)

Next, look at the card with the word velocity.

(Continue with wan, and finish with serene. On the remaining days follow the same procedure. The four words for each day will be listed in order on the manila envelopes.)
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