AN ANALYSIS OF THE EFFECTS OF AN EXPERIMENTAL REMEDIAL READING PROGRAM ON THE COMPREHENSION SKILLS OF POTENTIAL SCHOOL DROPOUTS

by

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ABSTRACT

Chairman: Professor Glenn M. Chronister

Ahrendt, K. M. An analysis of the effects of an experimental remedial reading program on the comprehension skills of potential school dropouts.

The present study investigated the effects of a specially designed remedial reading program consisting of intensive training sessions which emphasized the direct instruction of vocabulary skills by the use of context clue or by structural analysis and dictionary usage using individual teaching techniques rather than group teaching techniques on the comprehension skills of potential school dropouts.

The subjects in this experimental study were grade eight students from a junior secondary school. They were divided into three categories: (1) comprehension and vocabulary scores the same as or less than grade 6.0; (2) comprehension score the same as or less than grade 6.0, but vocabulary score the same as or greater than grade 6.0, and (3) vocabulary score the same as or less than grade 6.0, but comprehension score the same as or greater than grade 6.0. Thirty-six subjects were identified on the basis of these criteria. Each subject in each of the three categories was assigned to one of three treatment conditions at random. They received four treatment lessons; forty minutes each over a period of four weeks.
The instructional materials were worksheets prepared by the experimenter. Each subject was given the Gates-MacGinitie Reading Test, Survey E, Form 1, The School Interest Inventory, a pre- and post-paper-pencil Comprehension Test "X", and a common transfer task which consisted of a reading selection and comprehension questions constructed by the experimenter.

The findings of this experimental study indicate that the treatment effects observed in terms of the number of correct responses on the transfer task with acquired vocabularies were not significant. The treatment effects in terms of the time in minutes to the completion of the transfer task with acquired vocabularies were significant indicating that the treatment with the use of contextual clues was particularly effective to those subjects in Category 3. Both the treatments with the use of contextual clues and structural analysis with dictionary usage were effective to Category 3 subjects who were lacking in vocabulary skills when the kind of transfer comprehension test with acquired vocabularies via four sessions of treatment were given.

The analysis of performance on the transfer test with new vocabularies indicates that the remedial treatments as compared to the non-remedial control treatment are significant. The treatment with the use of contextual clues is no more effective than the treatment with the use of structural analysis with dictionary usage.

The treatment effects on comprehension were interpreted on the results of the significant practice effects observed
over four exposure treatments. These suggest that extended treatments of the kinds used in the present study would have shown significant remedial training effects via the use of contextual clues in the training of vocabulary skills.
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CHAPTER I

I. Statement of the Problem

Findley suggests that potential school dropouts tend to have reading disabilities which may result in discouragement and dissatisfaction with school.¹

Young and others² point out that low reading ability and poor academic achievement which may result in early school leaving seem to be characteristics generally associated with the individual classified as a potential dropout.

Many secondary school students may have failed to master the basic reading skills in vocabulary and/or comprehension. It can be said that comprehension is a primary goal of reading instruction and word recognition is a prerequisite.

A conservative estimate is that 85 per cent of the secondary school student's classwork is devoted to reading. Therefore, in order to succeed in school the secondary student must be able to read.


I. READING ACHIEVEMENT

Every poor reader may be a potential dropout. He starts to fail early in the elementary school and the habit of failure and frustration deepens as he progresses through school. The mechanism of reading disability, according to Findley, operates to produce loss of self-confidence, if not indeed self-respect. It may result as a secondary effect of emotional disturbance, but it also is a primary factor itself in generating and spreading personal distress.\(^3\)

The Maryland State Department of Education investigated pupils who dropped out of school during the year ending June, 1961. They found that 10 per cent of the dropouts were reading below grade three, and 36 per cent of the dropouts were reading between grades three to six.\(^4\)

Snepp found in his study of 128 dropouts from the Evansville Indiana high schools during 1955-56 school year that 21.4 per cent were retarded in reading three or more years; 26.6 were retarded two years; and slightly over 22 per cent were retarded one year. Snepp concluded in dealing with the dropout problem that reading is a major factor contributing to the poor showing of the dropout in school work and in their finally leaving school. He further stated that


they lack the basic skill to learning—the ability to read well—and are unable to meet academic requirements.  

Ruth Penty collected data in a four year study, September, 1947 to June, 1953, of the high school in Battle Creek, Michigan, to discover the relationship of reading achievement to the rate of high school dropouts before graduation. A total of 593 tenth graders were found to be in the lower 25 per cent as measured by the Iowa Silent Reading Test. In this lower quarter the dropouts and the graduates were compared on the basis of reading and I. Q. test scores.

She found that the percentage of poor readers who dropped out of school before graduation exceeded the good readers who dropped out of school before graduation at the .01 level of confidence. More than three-fourths of the poor readers who were interviewed by Penty and her staff stated that they had received in high school no help in finding material they could understand or otherwise improve their reading.  

Burke and Simons in a study of 300 inmates at the Youth Center of the Department of Corrections at Larton, Virginia, concluded that school experiences contribute to some pupil's desire to leave school as soon as legally possible. These experiences result in negative attitudes, truancy, low achievement, and frustration. The pattern that characterizes the

5Daniel W. Snepp, "Can We Salvage the Dropout?" The Clearing House; 31:49-59, (September, 1956).

dropout is symbolic of a long history of school experiences that for him have been unrewarding and frustrating. They found that 76 per cent of the inmates were reading below the grade five level when they entered the institution. They concluded that these inmates had failed in reading early in their school careers. 7

After studying dropouts over a period of three years, Bledsoe found that such students from the ninth grade had a mean reading comprehension score of grade 7.9, while the mean comprehension score for the remaining ninth graders was grade 8.9. 8

Stevens found a significant difference between the mean scores in reading of twelfth grade graduates and dropouts when t tests were applied. The mean score for graduates was 58.8, and the mean score for dropouts was 31.8. Half of the dropouts fell below the 20th percentile, one-fourth fell between the 20th and 50th percentile, and one-fourth fell above the 50th percentile on standardized reading tests. He concluded that there was a significant relationship between poor reading ability and the tendency to drop out of school. 9


Remedial Reading Programs

Matthews and Roan designed a curriculum demonstration project for public school students in grades seven to twelve in a large urban population center of 50,000. The students for the curriculum demonstration program were selected on the five factors of intelligence, reading achievement, general achievement, socio-economic status, and adjustment to school. The curriculum demonstration students along with the control group, made up approximately the lower 14 per cent of the total school population.

They found that low reading achievement was most common of the five factors considered for this group. They also found that by the seventh grade, a combination of poor reading ability, poor self-concept, and alienation to school caused by repeated failures increased greatly the probability of early school leaving.

As part of the project an individualized reading program was developed to overcome reading deficiencies. Over a three year period the students in the curriculum demonstration program continued to develop in reading and to change their attitude toward school. ¹⁰

Bowman, Director of the Quincy Youth Development Project, Quincy, Illinois; questioned potential dropouts about what they felt was their greatest need in school. They said that

they wanted to know how to read, and standardized test scores indicated that they were weak in this area. An experimental program in reading conducted over a two year period was successful in changing the pupil's attitudes toward school.\(^{11}\)

II. THE SCHOOL INTEREST INVENTORY

Reviewing the literature on dropouts, Cottle found that there were approximately fifteen major reasons why students left school. Ten items dealing with each of the fifteen reasons for leaving school were constructed and combined in random fashion in a 150 item inventory called The School Interest Inventory.\(^{12}\)

Items common to dropouts were grouped in four sections: (1) those concerned with the home, (2) the school, (3) economic stress, and (4) the student's feelings toward things in general. Herrman and Cottle found ninety items out of the 150 items in The School Interest Inventory differentiated responses of dropouts from those who stay in school.\(^{13}\)

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Childers attempted to evaluate the effectiveness of The School Interest Inventory in identifying potential dropouts. He found that the percentage of correct classification was 80.9 for the total male sample (125) and 75.0 for the total female sample (125). He concluded that for the purpose of screening potential dropouts upon entry to grade nine, The School Interest Inventory was found to be an effective instrument.¹⁴

III. EXPERIMENTAL STUDIES

Peterson conducted an experimental study at the junior high school level. She taught context usage to the experimental group. The control group was exposed to incidental methods and wide reading in order to improve context clue usage. She found a significant gain was made by the experimental group through the direct approach of teaching context clue usage. The control group showed no significant improvement.¹⁵

Hafner conducted an experimental study with fifth graders. His experimental program included the use of context clues through contrast, explanatory words and phrases, and inferences.


Worksheets were prepared by the experimenter. The experimental lessons were taught in thirty-five minute periods three times a week for a period of four weeks. He found no significant differences between the control and experimental groups, but his data suggested that teaching context clues would be more productive in helping students improve comprehension than by incidental exposure and wide reading methods.16

Zahner and Gray both suggest that verbal context is a more valuable aid in attaining precise meaning than the dictionary because in the final analysis the meaning for a word can shift in a selection depending upon the context.17

Davis further supports the suggestion of Zahner and Gray in a factorial study of comprehension. He found that a knowledge of word meaning and the ability to select the correct meaning from the context were essential factors in comprehension.18

Wendell Weaver suggests that the words that follow a new or strange word in a sentence are more likely to aid the


18Frederick B. Davis, "Fundamental Factors of Comprehension in Reading," Psychometrika, 9:1850197, (September, 1944).
reader in contextual analysis than those words that precede it. He further suggests that students should be taught to read the entire sentence before attempting to determine the meaning of an unknown word. He states that "this pattern of delayed attack in contextual analysis is also conducive to better overall comprehension, for it prevents interruption in the continuity of the thinking process."  

Jackson and Dizney conducted an extensive study in vocabulary development and its possible effects on reading comprehension and rate. Forty-five senior high school students were randomly assigned to two English classes. The experimental class received twenty-seven weeks of intensive vocabulary instruction using the Harbrace Vocabulary Workshop. The control group received no formal vocabulary instruction. The experimental group showed significant gains in vocabulary understanding. On the other hand, there was no difference between groups in the level of reading comprehension. However, the experimenters did not teach context clue usage to the experimental group in this study.  

Lieberman conducted an experimental study on the teaching of vocabulary on reading and concept achievement. She used forty-two grade five students divided into twenty-one matched pairs as control and experimental groups. The experimental


group received a series of direct experience vocabulary lessons. The control group received conventional instruction in vocabulary development (i.e. prefixes, roots, suffixes, antonyms, synonyms, and context clue usage). Both the control and experimental group received forty lessons, twice a week for a period of twenty weeks. Both groups used identical vocabulary words. She found no statistical difference in reading achievement between the control and experimental groups.\textsuperscript{21} 

Jenkins reported the results of a study in which she used five grade seven English classes equated in age, I. Q., and scores on a silent reading test. One group received no special instruction in vocabulary development. A second group received instruction in vocabulary development using a reading skills workbook with vocabulary exercises. The third group received vocabulary instruction by using individual word study and the dictionary. A fourth group received instruction in synonyms, antonyms and words lists. The fifth group received instruction in the use of prefixes, roots and suffixes to improve vocabulary skills. The third and fourth groups made the most improvement in vocabulary growth as measured by a silent reading test. No instruction was given to any of the groups in context clue usage. The fifth group

using prefixes, roots and suffixes, made the least improvement in vocabulary growth.\textsuperscript{22}

In a study conducted by Otterman, the structure of 250 words was taught to ten seventh grade classes. The experimental group was significantly higher than the control group on a test of spelling but not on tests of general vocabulary and reading comprehension.\textsuperscript{23}

Hunt conducted an experimental study with a group of university students between the ability to use structural analysis and cores on vocabulary and reading tests. He found that a positive relationship (i.e. tests of word elements, and word-meaning construction and word derivation) ranged in correlations from .30 to .44 with vocabulary scores. Correlations of vocabulary and level of comprehension ability with the ability to use context appeared somewhat higher than with the ability to use structural analysis.\textsuperscript{24}

The gains from teaching structural analysis and the best way of doing so does not seem to be clearly indicated by


research. Many children are unable to transfer their knowledge of word parts to new situations involving new words.\(^{25}\)

Too often a student may be able to recognize words and pronounce them correctly, but nevertheless be incapable of gaining the intended meaning of the writer when words are combined into sentences, paragraphs, and larger selections.\(^{26}\)

The use of context clues appears to be a useful approach to the derivation of the meaning of unfamiliar words, and allows the reader to use the context to gain complete comprehension from the selection read. Structural analysis seems to be a useful vehicle to determine the meaning of unfamiliar words. However, this skill depends upon the reader's knowledge of the meaning of the various prefixes, roots and suffixes used in English.

**Statement of the Problem**

The purpose of this study is to determine whether a specially designed remedial reading program consisting of intensive training sessions which emphasize the direct instruction of vocabulary skills by the use of context clues or by structural analysis and dictionary usage using individual teaching techniques rather than group teaching techniques


will improve the comprehension skills of the potential school dropout.

The context clue usage approach to vocabulary development allows the reader to determine word meaning from the surrounding context. It also allows the reader to use inference to determine meaning. The reader can read the entire sentence before attempting to determine the meaning of an unknown word. This allows him to follow the train of thought before he stops to determine the meaning of an unfamiliar word. Reading the complete sentence many times allows the reader to find the contextual clue to the meaning of the unfamiliar word.

The structural analysis approach (i.e. prefix, root, and suffix) to vocabulary skill development presumes that the reader has first hand knowledge of the common prefixes, roots, and suffixes used in English in order to determine the meaning of the unfamiliar word. This skill requires the reader to memorize a list of the most commonly used prefixes, roots, and suffixes or use the dictionary to look up the meaning of the unfamiliar word.

Hypotheses

1. A specially designed remedial reading treatment which emphasizes the direct individual instruction of vocabulary skills by the use of context clues, and structural analysis along with dictionary usage will significantly improve the comprehension skills of the potential school dropout as compared to the non-direct individual instruction of these
vocabulary skills.

2. A specially designed remedial reading treatment which emphasizes the direct individual instruction of vocabulary skills by the use of context clues as compared to the direct individual instruction of vocabulary skills by the use of structural analysis along with dictionary usage will significantly improve the comprehension skills of the potential school dropout.

Definition of Terms

For the purpose of clarifying the terms used in the study, the following definitions were used:

The School Interest Inventory: A standardized test devised to measure the probability of a student's dropping out of school. The items used are designed to ascertain the student's attitude toward school and his likelihood of remaining or leaving early.

Gates-MacGinitie Reading Test, Survey E: A standardized reading test used for Grades 7 to 9. The test consists of three parts: Speed and Accuracy, Vocabulary, and Comprehension.

Dropout: The term dropout is used most often to designate elementary or secondary students who have been in attendance during the regular school term and who withdraw before graduation from Grade 12 or before completing an equivalent program of studies. Such a student is considered a dropout whether his dropping out occurs during or between regular school terms or whether his dropping out occurs before or
after he has passed the compulsory school attendance age.

**Remedial Reading Program:** A program designed to help the student correct any reading ability deficiencies in vocabulary and/or comprehension skills that would cause him to read two or more grades below grade level.

**Remedial Reader:** Remedial readers are those readers who are reading two grades or more below grade level norm in vocabulary and/or comprehension as measured by the *Gates-MacGinitie Reading Test, Survey E.*

**Context Clues:** The verbal context in which a word occurs which helps the student to decipher the meaning of the sentence.

**Structural Analysis:** The ability to break a word into its prefix, root, and suffix in order to determine the meaning of the word.

**Syllables:** The ability to divide words into units of sound in order to determine its correct pronunciation.
CHAPTER II

I. Methods and Procedures

Experimental Design (Remedial Reading Program)

In order to carry out the experimental design used in this study one experimental variable was manipulated, that is, the approach. The method of presentation used in this study was an individual approach rather than a group approach in order to have the reading activity under the control of the experimenter.

Treatment One. This experimental treatment specifically sought to improve the ability of the subjects to use the following selected context aids to meaning: (1) determine how a word changes its meaning by a shift in usage—from one part of speech to another (i.e. noun to verb); (2) by definition—the unknown word is defined in the surrounding sentence or sentences, (3) by direct explanation—examples included or directly explained in the context; and (4) by the meaning expressed in a single sentence and gained through the interpretation of the sentence.

Treatment Two. This experimental treatment sought to improve the ability of the subjects to use the following elements of structural analysis along with dictionary usage to determine meaning: (1) to determine the meaning of compound words by dividing them into their common elements; (2) to determine the meaning of a word by using the dictionary, (3) to determine the meaning of a word by the use of prefixes, roots and suffixes; and (4) to divide a word into syllables with the aid of the dictionary.
Treatment Three. This experimental treatment sought to determine the subject's knowledge of word meaning without the aid of instruction by the experimenter, the use of context clues, the use of structural analysis or without the aid of the dictionary.

Subjects

Grade eight students in a junior secondary school were administered the Gates-MacGinitie Reading Test, Survey E, Form 1, and The School Interest Inventory to determine their level of reading ability and their potential to be school dropouts. Those subjects who scored two grades or more below grade level norm (8.0) in vocabulary and/or comprehension on the Gates-MacGinitie Reading Test and whose raw score on The School Interest Inventory was the same as or greater than thirty were considered for this study. Research indicates that relatively few students who score below twenty drop out of school, and this is especially true of males.27

In order to assess the improvement of comprehension skills made by each subject, the sensitivity of a particular treatment to a group, and the efficacy of each of the three treatments used with each of the three groups of differing characteristics, the subjects were divided into the following three classifications:

Category One - Subjects whose comprehension and vocabulary scores were the same as or less than grade 6.0.

Category Two - Subjects whose comprehension scores were the same as or less than grade 6.0, but whose vocabulary scores were the same as or greater than grade 6.0.

Category Three - Subjects whose vocabulary scores were the same as or less than grade 6.0, but whose comprehension scores were the same as or greater than grade 6.0.

Thirty-six subjects, twelve in each category, were identified on the basis of the criteria stated above. Each subject in each of the three categories was assigned to one of the three treatment conditions on the basis of random selection allowing four subjects in each of the nine cells.

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N = 36

Subjects in each of the three categories and treatment conditions received four treatment lessons, forty minutes each over a period of four weeks.
Tests

The following test was used for subject selection as potential school dropouts:

The School Interest Inventory is a tool used in the early detection of potential dropouts. The Inventory differs from a standardized test in that there are no tables of percentiles, scores, or averages.

The subject's raw scores are arranged from the highest to the lowest, a higher score indicating the probability of the subject's early school leaving.

In a study to evaluate the effectiveness of The School Interest Inventory, Childers concluded that for the purposes of screening potential school dropouts, the Inventory was found to be an effective instrument.28

Material

The instructional materials used in the three treatment conditions consisted of worksheets prepared by the experimenter. The material was chosen from The New Practice Readers. The readability level of the selections was grade six as measured by the Dale-Chall Formula for Predicting Readability. The word count for each selection varied between 215 to 225 words.

Each worksheet for each of the treatment lessons consisted of ten vocabulary words. Subjects in each of the three categories and treatment conditions were exposed to the same vocabulary words.

The reading selection given to each subject was the same for the three categories and treatment conditions.

Procedures

A treatment schedule was devised by the experimenter to allow each subject forty minutes of treatment time. The subjects for each of the three categories and treatment conditions were assigned a treatment time on the basis of random assignment. This procedure was followed to avoid any subject from being assigned the same treatment time throughout the treatment sequence. The experimenter met with the subjects individually in a special room designated for this purpose.

The following procedures were followed for each subject in the three categories and treatment conditions.

Session One. The experimenter introduced himself to the subject. The subject was administered an informal reading test called Comprehension Test "X" to measure his ability to (1) read for specific facts, (2) make inferences from the material read, and (3) identify the main idea.

The subject was instructed to work the practice exercises before working the test items. Forty minutes was allotted to complete this task.

Session Two. The experimenter met individually with the subject and presented him with the first worksheet of
instructional material for his category and treatment group. The subject was given instructions by the experimenter on how to use the worksheet. Twenty-five minutes was allotted to this task. The experimenter was available to the subject for assistance and re-enforcement.

Upon completion of the instructional material the subject was given a reading selection with comprehension questions. He was instructed to read the selection and answer the questions without referring to the selection. Fifteen minutes was allotted to complete this task. The experimenter recorded the time it took the subject to complete the task.

Session Three. The experimenter presented the subject with the second worksheet of instructional material for his category and treatment group. The experimenter gave the subject instructions on how to use the worksheet. Twenty-five minutes was allotted for this task. The experimenter was available to the subject for assistance and re-enforcement.

Upon completion of the instructional material the subject was given a reading selection with comprehension questions. He was instructed to read the selection and answer the questions without referring to the selection. Fifteen minutes was allotted to this task. The experimenter recorded the time it took the subject to complete the task.

Session Four. The experimenter presented the subject with the third worksheet of instructional material for his category and treatment group. The experimenter gave the subject instructions on how to use the worksheet. Twenty-five
minutes was allotted for this task. The experimenter was available to the subject for assistance and re-enforcement.

Upon completion of the instructional material the subject was given a reading selection with comprehension questions. He was instructed to read the selection and answer the questions without referring to the selection. Fifteen minutes was allotted to this task. The experimenter recorded the time it took the subject to complete the task.

**Session Five.** The experimenter presented the subject with the fourth and final worksheet of instructional material for his category and treatment group. The experimenter gave the subject instructions on how to use the worksheet. Twenty-five minutes was allotted for this task. The experimenter was available for assistance and re-enforcement.

Upon completion of the instructional material the subject was given a reading selection with comprehension questions. He was instructed to read the selection and answer the questions without referring to the selection. Fifteen minutes was allotted for this task. The experimenter recorded the time it took the subject to complete the task.

**Session Six.** The subjects in each of the three categories and treatment conditions were given a common transfer task. This common transfer task consisted of a reading selection and comprehension questions written by the experimenter. It included the forty vocabulary words used in the four treatment lessons.

The experimenter instructed the subject to read the selection and answer the questions without referring to the
selection. The experimenter recorded the time it took the subject to complete this task.

Session Seven. The subjects in each of the three categories and treatment conditions were given the post-test form of the Comprehension Test "X". They were instructed to work the practice exercises before completing the test items. Forty minutes was allotted to complete this task.
CHAPTER III

Results of the Study

In order to carry out the experimental design used in this study one experimental variable was manipulated, that is, the approach. The method of presentation used in this study was an individual approach rather than a group approach in order to have the reading activity under the control of the experimenter.

The dependent variables during treatment in this experiment were measured in terms of the number of correct responses to the reading selection which followed each of the treatment sessions, and the total amount of time in minutes it took the subject to read the selection and answer the comprehension questions.

The dependent variables during the common transfer task were the number of correct responses to the questions in the common transfer task with acquired vocabularies and the total amount of time in minutes it took the subject to read the common transfer task with acquired vocabularies and answer the comprehension questions.

In order to assess the improvement of comprehension skills made by each subject, the sensitivity of a particular treatment to a group, and the efficacy of each of the three treatments with each of the three groups of differing characteristics, the subjects were divided into the following three categories:
Category One – Subjects whose comprehension and vocabulary scores were the same as or less than grade 6.0.

Category Two – Subjects whose comprehension scores were the same as or less than grade 6.0, but whose vocabulary scores were the same as or greater than grade 6.0.

Category Three – Subjects whose vocabulary scores were the same as or less than grade 6.0, but whose comprehension scores were the same as or greater than grade 6.0.

Thirty-six subjects were identified on the basis of the criteria stated above. Each subject in each of the three categories was assigned to one of the three treatment conditions at random thus four subjects to each of the nine cells.

Subjects in each of the three categories and treatment conditions received four treatment lessons, forty minutes each over a period of four weeks.

Analysis of Treatment Data

An examination of the subjects' course of practice during the four treatment sessions was needed before the analysis of the transfer effect to the comprehension of reading materials resulting from the vocabulary treatment.

The data in Table 1 represent the mean number of correct responses to the four exposure tests which consisted of a reading selection and comprehension questions.
Table 1

Mean Number of Correct Responses to Four Exposure Tests
(N = 36)

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure</td>
<td>Exposure</td>
<td>Exposure</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Category 1</td>
<td>2.50</td>
<td>2.75</td>
<td>2.50</td>
</tr>
<tr>
<td>Category 2</td>
<td>2.00</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Category 3</td>
<td>3.25</td>
<td>2.75</td>
<td>2.75</td>
</tr>
</tbody>
</table>
The data in Table 2 (page 28) represent the mean time/minutes to the completion of the four exposure tests which consisted of a reading selection and comprehension questions.

An analysis of variance was performed on the dependent variable of the number of correct responses to the four exposure tests. The effect due to the category of the subjects was statistically significant, $F(2, 27) = 4.12$, $p < .05$. (Appendix A; Table 7.) This indicates that Category 3 subjects appear to get most benefit from treatment exposures over other Category subjects. The effect due to the four exposure tests was statistically significant, (Appendix A; Table 7), whereas all other effects were non-significant.

Figures 1, 2 and 3 graphically present that data presented in Table 1 for the three categories and treatment conditions. These data show that by the fourth treatment exposure the subjects' overall performance improved in terms of the number of correct responses to the exposure tests.

The same trends were apparent in Figures 4, 5, and 6, which represent the data in Table 2 for the three categories and treatment conditions. By the fourth treatment exposure the subjects had decreased the amount of time in minutes to complete the exposure tests.

An analysis of variance was performed on the dependent variable on the time/minutes to the completion of the four exposure tests. The interaction effect between treatment and category of the subjects was statistically significant, $F_1(4, 27) = 3.10$, $p < .05$ (Appendix A, Table 8). The main
Table 2

Mean Time/Minutes to the Completion of Four Exposure Tests
(N = 36)

<table>
<thead>
<tr>
<th>Category</th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure 1</td>
<td>Exposure 1</td>
<td>Exposure 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Category 1</td>
<td>5.50</td>
<td>8.00</td>
<td>4.25</td>
</tr>
<tr>
<td>Category 2</td>
<td>9.75</td>
<td>6.00</td>
<td>4.25</td>
</tr>
<tr>
<td>Category 3</td>
<td>9.75</td>
<td>5.00</td>
<td>3.75</td>
</tr>
</tbody>
</table>
effect due to the four exposure tests by subjects was statistically significant, $F(3, 81) = 14.83, p < .01$ (Appendix A; Table 8), whereas all other effects were non-significant. Thus, the analysis of mean correct responses and mean completion time during treatment exposures suggest that there was a general practice effect over four exposures and that the practice effect is remarkable in Category 3 subjects under Treatment 1 and 2.
MEAN NUMBER OF CORRECT RESPONSES TO FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 1
FIGURE 2

MEAN NUMBER OF CORRECT RESPONSES TO FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 2
FIGURE 3

MEAN NUMBER OF CORRECT RESPONSES TO FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 3
MEAN TIME/MINUTES TO THE COMPLETION OF FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 1

FIGURE 4

Treatment 1
Treatment 2
Treatment 3
FIGURE 5

MEAN TIME/MINUTES TO THE COMPLETION OF FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 2
MEAN TIME/MINUTES TO THE COMPLETION OF FOUR EXPOSURE TESTS FOR SUBJECTS IN CATEGORY 3
Analysis of Transfer Comprehension Criterion Measures With Acquired Vocabularies

It was expected that, if there would be any effect of vocabulary treatments it should transfer to the comprehension of reading materials; the vocabularies of which were already made familiar to the subjects. The comprehension performance was observed in terms of two measures: the number of correct responses and the completion time. The mean number of correct responses to the common transfer test with acquired vocabularies of the nine groups are shown in Table 3.

Table 3

Mean Number of Correct Responses to the Common Transfer Test with Acquired Vocabularies
(N = 36)

<table>
<thead>
<tr>
<th>Category</th>
<th>Treatment One</th>
<th>Treatment Two</th>
<th>Treatment Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>5.75</td>
<td>7.25</td>
<td>7.25</td>
</tr>
<tr>
<td>Category 2</td>
<td>7.25</td>
<td>7.75</td>
<td>8.75</td>
</tr>
<tr>
<td>Category 3</td>
<td>7.75</td>
<td>8.00</td>
<td>6.75</td>
</tr>
</tbody>
</table>

An analysis of variance was performed on the dependent variable of the number of correct responses to the common transfer test with acquired vocabularies. The two main effects and interaction effect were not statistically significant. (Appendix A, Table 9.)

The data in Table 4 represent the mean time in minutes to the completion of the common transfer test with acquired vocabularies.
Table 4

Mean Time/Minutes to the Completion of the Transfer Test with Acquired Vocabularies (N = 36).

<table>
<thead>
<tr>
<th>Category</th>
<th>Treatment One</th>
<th>Treatment Two</th>
<th>Treatment Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>5.50</td>
<td>12.50</td>
<td>10.75</td>
</tr>
<tr>
<td>Category 2</td>
<td>9.00</td>
<td>8.50</td>
<td>10.50</td>
</tr>
<tr>
<td>Category 3</td>
<td>7.75</td>
<td>5.25</td>
<td>12.00</td>
</tr>
</tbody>
</table>

An analysis of variance was also performed on the dependent variable of the time in minutes to the completion of the common transfer test with acquired vocabularies. The main effect due to the three treatments was statistically significant, F(2, 27) = 6.40, p < .01. The interaction effect between treatment and category of the subjects was statistically significant, F(1, 27) = 4.855, p < .05, (Appendix A, Table 10).

In order to identify the source of between-treatment variance and also test the two experimental hypotheses, as stated in Chapter 1, within each category of subjects two orthogonal comparisons were made. In Category 1 the first comparison between the combined mean of Treatment 1 and 2 and the mean of Treatment 3 (i.e. mean difference = 1.75) was found to be significant, F(1, 27) = 9.00, p < .01. Although Treatment 1 was entirely responsible for this significant difference, Treatment 2 being lower than Treatment 3. Another orthogonal comparison between the means of Treatment
1 and 2 (i.e. mean difference = 7.00) was found to be significant; $F(1, 27) = 4.33$, $p < .05$.

In Category 2 an orthogonal comparison between the combined mean of Treatment 1 and 2 and the mean of Treatment 3 (i.e. mean difference = 1.75) was found to be non-significant; $F(1, 27) = 1.41$, $p > .05$. An orthogonal comparison between the means of Treatment 1 and 2 (i.e. mean difference = .50) was found to be non-significant $F(1, 27) = .148$, $p > .05$.

In Category 3 an orthogonal comparison between the combined mean of Treatment 1 and 2 and the mean of Treatment 3 (i.e. mean difference = 5.50) was found to be significant; $F(1, 27) = 12.50$, $p < .01$. An orthogonal comparison between the mean of Treatment 1 and the mean of Treatment 2 (i.e. mean difference = 2.50) was found to be non-significant, $F(1, 27) = 3.87$, $p > .05$.

On the basis of the above analysis, it can be said that Treatment 1 was effective to those subjects in Category 1, while both Treatment 1 and 2 were effective to Category 3 subjects who were lacking in vocabularies when the kind of the transfer comprehension test with vocabularies acquired via four sessions of treatment was given.

The above analysis of data based on time measure seems to provide useful information regarding treatment effects, whereas the data of the number of correct responses do not at all, perhaps because of insensitivity to the treatment given the transfer comprehension test.
The Analysis of Transfer Comprehension Criterion Measure With New Vocabularies

In order to evaluate the transfer of vocabulary skill treatments to the comprehension of entirely new reading materials, two parallel forms of paper-pencil tests were given to all the subjects prior to the treatment and after the treatment. Thus, mean numbers of correct responses were observed on performance on pre- and post-comprehension transfer task with new vocabularies, as shown in Table 5.

<table>
<thead>
<tr>
<th>Category</th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>Category 1</td>
<td>33.25</td>
<td>36.75</td>
<td>30.25</td>
</tr>
<tr>
<td>Category 2</td>
<td>29.50</td>
<td>33.00</td>
<td>31.75</td>
</tr>
<tr>
<td>Category 3</td>
<td>34.00</td>
<td>40.00</td>
<td>38.75</td>
</tr>
</tbody>
</table>

An analysis of variance was performed on the pre-test measure, and it was found that only the main effect due to category of subjects was significant, \( F(2, 27) = 5.49, p < .05 \). This means that Category 3 subjects performed best on a comprehension test prior to treatments, which was indicated by the fact that the mean of Category 3 was statistically higher than the other two categories, \( F(1, 27) = 4.74, p < .05 \).

The initial superiority of Category 3 was not unexpected, because Category 3 was originally defined as consisting of
those subjects with high comprehension but with lower vocabulary level. In evaluating the transfer effect of vocabulary treatments properly, it was necessary to eliminate the initially different level of comprehension ability, an analysis of covariance was performed on the post-test measure using the pre-test measure as a covariate. The adjusted mean number of correct responses to the transfer test is presented in Table 6, and the results of the analysis of covariance is shown in Appendix A, Table 11.

### Table 6

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>36.70</td>
<td>38.34</td>
<td>34.52</td>
</tr>
<tr>
<td>Category 2</td>
<td>34.37</td>
<td>39.52</td>
<td>32.71</td>
</tr>
<tr>
<td>Category 3</td>
<td>39.67</td>
<td>38.62</td>
<td>37.00</td>
</tr>
</tbody>
</table>

First of all, variation due to the covariate was significant, $F(1, 26) = 8.90, p < .05$, and the test of equality of regression lines of each of three remedial treatments showed that the three slopes were approximately parallel, $F(2, 30 = 1.43, p = .21$. The main effect due to treatments was found significant, $F(2; 26) = 5.03, p < .05$; whereas the main effect due to category and its interaction with treatments was non-significant.

In order to test the two experimental hypotheses, as stated in Chapter 1, two orthogonal comparisons were made
among adjusted treatment means.

An orthogonal contrast between the combined adjusted mean of Treatment 1 and 2 and the adjusted mean of Treatment 3 was found significant; $F(1, 26) = 7.71, p < .05$. This indicates the first experimental hypothesis can be said to be confirmed. The other orthogonal contrast between the adjusted means of Treatment 1 and 2 was found non-significant, $F(1, 26) = 1.63, p > .05$. The non-significant difference, though in the expected direction, indicates that Treatment 1 is no better than Treatment 2 in producing the transfer effect to the comprehension of reading materials.
CHAPTER IV
Summary and Conclusions

Problem

The purpose of this study was to determine whether a specially designed remedial reading program consisting of intensive training sessions which emphasized the direct instruction of vocabulary skills by the use of context clues or by structural analysis and dictionary usage under an individual rather than a group treatment would improve the comprehension skills of potential school dropouts.

Procedures

The subjects in this study were grade eight students from a junior secondary school in a large metropolitan area. They were divided into three categories: (1) subjects whose comprehension and vocabulary scores were the same as or less than grade 6.0, (2) subjects whose comprehension scores were the same as or less than grade 6.0, but whose vocabulary scores were the same as or greater than grade 6.0, and (3) subjects whose vocabulary scores were the same as or less than grade 6.0; but whose comprehension scores were the same as or greater than grade 6.0. Thirty-six subjects were identified on the basis of these criteria. Each subject in each of the three categories was assigned to one of three treatment conditions at random. They received four treatment lessons, forty minutes each over a period of four weeks.
The instructional materials used in the three treatment conditions consisted of worksheets prepared by the experimenter. Each treatment session was followed by a comprehension test which consisted of a reading selection and comprehension questions.

Each subject was given the Gates-MacGinitie Reading Test, Survey E, Form I, The School Interest Inventory, a pre- and post-test form of a Comprehension Test, and a common transfer task which consisted of a reading selection and comprehension questions constructed by the experimenter.

Findings

It was hypothesized that a specially designed remedial reading treatment as defined in this study and designed to emphasize the direct individual instruction of vocabulary skills by the use of context clues as compared to the direct instruction of vocabulary skills by the use of structural analysis along with dictionary usage would significantly improve the comprehension skills of the potential school dropout.

If there were any effects of the two experimental treatments at all it was also expected that the treatments should significantly improve the comprehension skills of potential school dropouts as compared to the non-direct individual instruction of these vocabulary skills.

The number of correct responses to and the completion time on the four exposure tests during the treatments and on the common transfer comprehension test with the acquired
vocabularies, and the number of correct responses to the final transfer comprehension test with new vocabularies were analyzed, yielding results as follows:

(1) By the fourth treatment exposure the subjects overall performance improved in terms of the number of correct responses to the exposure tests as shown in Figures 1, 2 and 3. The overall observed improvements were found significant; \( F(3, 81) = 6.51, p < .01 \), in terms of the number of correct responses, and \( F(3, 81) = 14.83, p < .01 \), in terms of the time measure.

(2) An analysis of variance was performed on the dependent variable of the number of correct responses to the common transfer test with acquired vocabularies. The two main effects and the interaction effect were not statistically significant.

(3) An analysis of covariance performed on the dependent variable of the number of correct responses to the comprehension transfer test with new vocabularies with the pre-test as covariate was significant; \( F(2, 26) = 5.03, p < .05 \).

(4) An orthogonal contrast between the adjusted means of Treatment 1 and 2 was found non-significant; \( F(1, 26) = 1.63, p > .05 \).

(5) An evaluation of the \( F \) values for the difference between the mean of Treatment 1 and 2 for the mean number of correct responses to the pre- and post- comprehension transfer task with new vocabularies was found non-significant for all three categories of subjects.
Discussion of Results

The effect due to the four exposure tests was statistically significant. By the fourth treatment exposure the subjects' overall performance improved in terms of the number of correct responses to the exposure tests, and the amount of time to complete the exposure tests had decreased. The analysis of the mean correct responses and mean completion time during treatment seems to suggest that there was a general practice effect over four exposures, and that the practice effect was remarkable in Category 3 subjects under Treatment 1 and 2. This effect was to be expected as subjects in Category 3 were classified as those subjects whose vocabulary skills were the same as or less than grade 6.0, but whose comprehension skills were the same as or greater than grade 6.0. The exposure of subjects in Category 3 to vocabulary skill development would tend to improve their vocabulary skills and also help to maintain or improve their comprehension skills.

The analysis of the data based on the time measure to the completion of the transfer task with acquired vocabularies seems to provide useful information regarding treatment effects whereas the data of the number of correct responses do not, perhaps because of the insensitivity to the treatment given the transfer comprehension test.

From the data presented it would seem that if the treatment exposures had been continued the number of correct responses by the subjects to the transfer task with acquired
vocabularies would have been sensitive to the treatment effects, namely the improvement of comprehension through intensive training in vocabulary skills.

The analysis of the pre-test data to evaluate the transfer effect of vocabulary skill treatments on the comprehension of new reading materials indicated that only the main effect due to the category of subjects was significant. In particular, the subjects in Category 3 performed best on a comprehension test prior to treatment. The superiority of Category 3 subjects is not unexpected as Category 3 subjects were defined as consisting of those subjects with high comprehension but a lower vocabulary level.

An analysis of covariance was performed on the post-test measure using the pre-test measure as a covariate. The main effect due to treatments was found to be significant, whereas the main effect due to category and its interactions with the treatment was non-significant.

The data indicated that the pre- and post-test forms of a paper-pencil test measured what it purported to measure, mainly the comprehension skills of the subjects.

An orthogonal contrast between the adjusted means of Treatment 1 and 2, and the adjusted mean of Treatment 3 was found significant. This finding was in opposition to Hafner's findings in his experimental study in which there were no significant differences between the experimental and control groups.

An orthogonal contrast between the adjusted means of Treatment 1 and 2 were found non-significant. Even though
this data indicated Treatment 1 was no better than Treatment 2 the difference was in the expected direction. This finding agrees with Hafner's which suggested that context clues would be more productive in helping students improve comprehension.

Summary of Results

The findings of this experimental study indicate that the treatment effects observed in terms of the number of correct responses on the transfer task with acquired vocabularies were not significant. The treatment effects in terms of the time in minutes to the completion of the transfer task with acquired vocabularies were significant indicating that the treatment with the use of contextual clues was particularly effective to those subjects in Category 3. Both the treatments with the use of contextual clues and structural analysis with dictionary usage were effective to Category 3 subjects who were lacking in vocabulary skills when the kind of transfer comprehension test with acquired vocabularies via four sessions of treatment were given.

The analysis of performance on the transfer test with new vocabularies indicates that the remedial treatments as compared to the non-remedial control treatment are significant. The treatment with the use of contextual clues is no more effective than the treatment with the use of structural analysis with dictionary usage.

The treatment effects on comprehension were interpreted
on the results of the significant practice effects observed over four exposure treatments. These suggest that extended treatments of the kinds used in the present study would have shown significant remedial training effects via the use of contextual clues in the training of vocabulary skills.

**Implications for Further Research**

1. The present study should be replicated after provision has been made for more treatment sessions over a period of one school term (18 weeks).

2. The materials used for the treatment lessons should be taken from the subject matter textbooks used in the junior secondary schools.

3. This type of study should be conducted in the elementary school at the grade six level to determine whether or not early identification and treatment can prevent the potential school dropout from becoming a dropout.
BIBLIOGRAPHY
SELECTED BIBLIOGRAPHY

A. BOOKS


B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES AND OTHER ORGANIZATIONS


C. PERIODICALS


**D. UNPUBLISHED MATERIALS**


APPENDIX A
Table 7

A Summary Table of the Analysis of Variance on the Number of Correct Responses to the Four Exposure Tests (N = 36)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (T)</td>
<td>3.35</td>
<td>2</td>
<td>1.67</td>
<td>1.31</td>
<td>n.s.</td>
</tr>
<tr>
<td>Categories (C)</td>
<td>10.51</td>
<td>2</td>
<td>5.26</td>
<td>4.12</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>T x C</td>
<td>2.11</td>
<td>4</td>
<td>.53</td>
<td>.41</td>
<td>n.s.</td>
</tr>
<tr>
<td>Error/TC</td>
<td>34.44</td>
<td>27</td>
<td>1.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Exposures (E)       | 10.69          | 3                 | 3.56        | 6.51| <.01  |
| T x E               | 4.54           | 6                 | .76         | 1.38| n.s.  |
| C x E               | 3.21           | 6                 | .53         | .97 | n.s.  |
| T x C x E           | 7.50           | 12                | .62         | 1.14| n.s.  |
| Error/TCE           | 44.31          | 81                | .55         |     |       |
Table 8

A Summary Table of Analysis of Variance on the Time/Minutes to the Completion of the Four Exposure Tests (N = 36)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (T)</td>
<td>16.43</td>
<td>2</td>
<td>8.22</td>
<td>1.20</td>
<td>n.s.</td>
</tr>
<tr>
<td>Categories (C)</td>
<td>.85</td>
<td>2</td>
<td>.43</td>
<td>.06</td>
<td>n.s.</td>
</tr>
<tr>
<td>T x C</td>
<td>84.44</td>
<td>4</td>
<td>21.11</td>
<td>3.10</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Error/TC</td>
<td>183.74</td>
<td>27</td>
<td>6.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposures (E)</td>
<td>238.25</td>
<td>3</td>
<td>79.41</td>
<td>14.83</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>T x E</td>
<td>54.29</td>
<td>6</td>
<td>9.05</td>
<td>1.69</td>
<td>n.s.</td>
</tr>
<tr>
<td>C x E</td>
<td>30.87</td>
<td>6</td>
<td>5.15</td>
<td>.96</td>
<td>n.s.</td>
</tr>
<tr>
<td>T x C x E</td>
<td>65.33</td>
<td>12</td>
<td>5.44</td>
<td>1.02</td>
<td>n.s.</td>
</tr>
<tr>
<td>Error/TCE</td>
<td>433.72</td>
<td>81</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

A Summary Table of Analysis of Variance on the Number of Correct Responses to the Transfer Test with Acquired Vocabularies (N = 36)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment (T)</td>
<td>4.056</td>
<td>2</td>
<td>2.028</td>
<td>1.90</td>
<td>n.s.</td>
</tr>
<tr>
<td>Categories (C)</td>
<td>8.389</td>
<td>2</td>
<td>4.194</td>
<td>2.46</td>
<td>&lt;.15 p&lt;.10</td>
</tr>
<tr>
<td>T x C</td>
<td>10.111</td>
<td>4</td>
<td>2.528</td>
<td>n.s.</td>
<td></td>
</tr>
<tr>
<td>Error Within</td>
<td>46.000</td>
<td>27</td>
<td>1.704</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10

A Summary Table of Analysis of Variance on the Time/Minutes to the Completion of the Transfer Test with Acquired Vocabularies (N = 36)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2</td>
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<tr>
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<tr>
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<td>4</td>
<td>31.333</td>
<td>4.855</td>
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<tr>
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<td>27</td>
<td>6.454</td>
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</tbody>
</table>
Table 11

A Summary Table of Analysis of Covariance on the Number of Correct Responses to the Comprehension Transfer Test with New Vocabularies with the Pre-Test as Covariate (N = .36)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
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<td>26</td>
<td>9.94</td>
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</tr>
</tbody>
</table>
A wide-brimmed, high-crowned Mexican sombrero or hat, can have several uses. You can carry water in its deep crown. Pull it down over your face, and you can nap in the bright sunshine. You can carry bananas in its sturdy brim. When the straw finally wears out, you can feed the sombrero to a burro.

1. The paragraph says a sombrero has a high
   _____brim  _____crown  _____decoration

2. The uses for the sombrero are
   _____modern  _____senseless  _____practical

3. The best heading for this paragraph is
   _____A Perfect Water Bucket
   _____A "Multi-Purpose" Hat
   _____A Sun-Protector

On May 1, all Hawaiians celebrate Lei Day, or Friendship Day. On this annual holiday every man, woman, and child wears a lei, or garland of sweet-scented flowers. To Hawaiians, the leis are tokens of love and friendship. These flower rings are also tossed around the necks of visitors to Hawaii when they arrive and when they leave.

1. Visitors to Hawaii are given leis to show
   _____wealth  _____friendship  _____health

2. This story describes one of Hawaii's
   _____customs  _____gardens  _____occupations

3. The best heading for this paragraph is
   _____Hawaii's Abundance of Flowers
   _____A Royal Welcome
   _____A Hawaiian Tradition
1. Some years ago, a lead box was discovered in a wall of an old hospital in Mexico City. Inside was a wooden box—locked. An old key was in the lock and it turned. The lid swung open. The box was the coffin of Cortes, the Spaniard who had conquered the capitol of the Aztecs more than 400 years before.

1. The coffin was found in the wall of an old
   ____capitol       ____city       ____hospital

2. This discovery was related to Mexico's
   ____language     ____history     ____geography

3. The best heading for this paragraph is
   ____Burial Customs in Mexico
   ____An Important Discovery
   ____An Aztec Burial

2. The most important holiday in Korea is New Year's Day, which people start to celebrate on January 22. In preparing for this holiday season, Koreans scrub their houses from top to bottom. During the fifteen-day celebration, they wear remodeled or bright, new outfits and call on friends. At the end of this national holiday, everyone is declared a year older.

1. Korea's New Year's celebration is a national
   ____thanksgiving  ____meeting  ____holiday

2. This winter holiday season lasts over two
   ____months       ____weeks       ____years

3. The best heading for this paragraph is
   ____Korea's Favorite Holiday
   ____Social Life in Korea
   ____Costumes of the Koreans
3. In the 1940's, three Frenchmen sailed down the Niger River in a native canoe. During the 2,600 mile voyage, they stopped often to visit with cooperative African natives. The explorers recorded their interviews and took thousands of photographs that tell about native life along the Niger.

1. The three Frenchmen traveled in the continent of
   ____ Europe   ____ Asia   ____ Africa

2. The natives they visited could be described as
   ____ warlike   ____ helpful   ____ sailors

3. The best heading for this paragraph is
   ____ Ways of Gathering Information
   ____ A Primitive Method of Travel
   ____ An Expedition Into Niger Country

4. A crude picture of a cat on a barn may be a child's drawing or it may be a hobo sign meaning that a kind woman lives in the house. The "knights of the road" have their own secret symbols. Their signs indicate both good and trouble places. Hoboes learn this code in "jungles", or hobo camps.

1. The code of the hoboes is
   ____ secret   ____ solemn   ____ strict

2. A hobo who knows this code is probably
   ____ intelligent   ____ safer   ____ hungry

3. The best heading for this paragraph is
   ____ Code-Making
   ____ How to Read a Code
   ____ An Unusual Language

5. Surprisingly, it is often hard to identify odors of common things when you cannot see them. Try this. Have a friend blindfold you and hold under your nose things with a distinctive odor, such as vinegar, peppermints, or garlic.
Now name each item. You may be wrong. Because you could not see the item, your brain did not know what to get you ready to smell.

1. When blindfolded, it is harder to identify
   _____ideas _____smells _____noises

2. The senses of sight and smell are
   _____connected _____identical _____unrelated

3. The best heading for this paragraph is
   _____A Blindfold Test for Odors
   _____Unusual Odors
   _____The Amazing Sense of Smell

6. Weathermen often use scientific calculations to predict weather. These calculations have to do with the study of air masses. If scientists can figure out at a given time the number, the nature, and the location of air masses, their forecasts can be reasonable accurate.

1. To predict weather scientists often study air
   _____masses _____balloons _____forecasts

2. A high percentage of weather reports are
   _____guesses _____correct _____fair

3. The best heading for this paragraph is
   _____What We Know About Air Masses
   _____Scientific Weather Forecasting
   _____The Peculiar Nature of the Weather Puzzle

7. "SOS - SOS - bow leaking, forward holds flooding." As the captain of a nearby ship reads the urgent message, his own liner is battling fierce gales. Nevertheless, he changed course toward the damaged freighter.

Hours later, he sighted the listing ship. His crew made four unsuccessful attempts to help the distressed ship.
Finally, the rescue was accomplished.

1. The sinking ship was a
   _____destroyer _____freighter _____tanker

2. An SOS is a request for
   _____guidance _____location _____assistance

3. The best heading for these paragraphs is
   _____A Storm on the Ocean
   _____A Rescue at Sea
   _____A Message of Distress

8. Sodium pentothal is an amazing drug. It is sometimes used as an anesthetic in surgery. It can also be injected into a person's veins to cause a hypnotic state. During the time a person is so drugged, he may express subconscious thoughts that can be then interpreted by a physician. As a result, sodium pentothal is often called a "truth serum".

1. Sodium pentothal is a kind of
   _____vein _____serum _____surgeon

2. This drug is most helpful in the treatment of
   _____measles _____pneumonia _____mental illness

3. The best heading for this paragraph is
   _____Studying the Subconscious Mind
   _____Two Uses for Sodium Pentothal
   _____Subconscious Thoughts

9. Strange as it seems, lightning "makes" fertilizer. During storms, lightning sparks cause nitrogen and oxygen to unite. The substance formed dissolves in moisture in the air and forms nitric acid, which falls with rain and fertilizes the soil. Nearly 100 million tons of this acid falls to earth annually.
1. The nitric acid is brought to the ground by __________wind __________rain __________lightning  

2. Nitric acid helps to maintain our supply of __________rain __________oxygen __________food  

3. The best heading for this paragraph is  
   __________Fertilizer From the Air  
   __________Composition of the Air  
   __________Lightning in the Soil  

10. Underlying about 600,000 square miles of the continent of Australia is a vast reservoir of underground water. It formed through the ages as rain fell on the inner slopes of the mountains that encircle the island. The water sank rapidly through the sandy soil until it reached an impervious layer of soil. There the water settled, forming an underground lake.  

   The Australian people have put this underground water supply to work. They have sunk bores, ranging in depth from 50 to 5,000 feet, into the water basin. The artesian water, when tapped, often gushes forth in a continuous stream. However, in the area where a large number of drillings have caused the pressure to be reduced, the water is pumped to the surface. Water from this reservoir has permitted large arid areas in the "outback" to be used for grazing sheep and cattle.  

1. The story tells about Australia's underground __________watershed __________water basin __________mines  

2. Artesian wells have helped Australia's __________livestock industry __________size __________resorts  

3. The best heading for these paragraphs is  
   __________Water Conservation in Australia  
   __________Well-Drilling in Australia  
   __________A Natural Underground Reservoir  

11. The Everglades, a swamp area covering over 5,000 square miles in Florida, is a storybook jungle.
Numerous channels wind through saw grass, and gama grass marshes. Rare fish and alligators live in these murky waters. Some waterways are tunnels walled by tangled roots of mangrove trees. On the roots creep brilliantly banded snails. Scorpions and cottonmouth snakes slither along the logs.

Cypress and palmetto trees form a dense growth, where exotic tropical birds make their nests. Among these are the ibis, egret, and jacana. Biting, buzzing insects fill the air.

As you might expect, few people live in this wild but beautiful region.

1. Much of the Everglades region is
   ___farmland ___swampland ___tableland

2. This area is very appealing to
   ___skiers ___naturalists ___swimmers

3. The best heading for these paragraphs is
   ___A Trip Through the Everglades
   ___The Everglades: A Jungle Wonderland
   ___Waterways of the Everglades

12. Scientists have discovered that chemicals produced by certain microbes in the soil can be used as antibiotic drugs. One such medicine is tyrothricin. It is produced by the common soil germ Bacillus brevis. In English, this name means "short rod".

Tyrothricin by itself is too poisonous to take internally. It must be mixed with distilled water or with other chemicals before it can be used safely.

Tyrothricin is a powerful enemy of certain disease germs that get into the human body. It is used in some nose sprays and throat lozenges to treat sinus and throat infections. It is also used in preparing surgical dressings.

1. Tyrothricin is an antibiotic
   ___microbe ___germ ___drug
2. The soil microbe Bacillus brevis is
   _____immense      _____beneficial      _____useless

3. The best heading for these paragraphs is
   ______An Important Antibiotic Drug
   ______Fighting Diseases with Drugs
   ______Curing Throat Infections

13. Joseph Pulitzer was a lawyer, newspaperman, and a member of the Missouri Legislature. In his public life and through his newspaper, Pulitzer fought corruption. In 1878 he purchased two St. Louis newspapers, the Dispatch and the Evening Post, which he merged to form the great St. Louis Post-Dispatch. He made his fortune with this newspaper.

   Upon his death, Pulitzer left an endowment of $2,000,000 to Columbia University. He specified that a portion of this fund should be used to establish a school of journalism at the University. The remainder of the money was to be used to establish annual awards for Americans who made distinguished achievements in journalism, music, literature, and the arts. In 1917 the trustees of Columbia University awarded the first Pulitzer prizes. Besides the annual awards, special individual citations are presented from time to time to deserving Americans.

1. The Pulitzer prizes are awarded to Americans
   _____annually      _____occasionally      _____secretly

2. Pulitzer's papers fought against corruption with
   _____education      _____rewards      _____facts

3. The best heading for these paragraphs is
   ______A Worthy Contribution
   ______A Great American Journalist
   ______A Money-Making Newspaper

14. The library of the New York Academy of Medicine serves other medical libraries through the Americas. Its comprehensive collection of medical literature is one of the largest in the Western Hemisphere. Its services are so varied that only a small percentage of physicians, even
in the New York area, realize the scope of its facilities.

Requests for professional assistance come from many sources. Some come from physicians in isolated areas. Some come from harassed medical men who are pressed to meet a deadline for a manuscript or a speech. Others come from authors, lawyers, professors, and lecturers who need abstracts of books.

The library offers its service free of charge to physicians and professors. A small fee is usually required for assistance to non-medical people.

1. The services of the library are quite
   _____isolated    _____varied    _____restricted

2. Its richest treasure is its collection of medical
   _____abstracts    _____speeches    _____literature

3. The best heading for these paragraphs is
   _____A Treasury of Medical Literature
   _____Modern-Day Medical Research
   _____Questions Medical Librarians Answer

15. An important agency within the Department of Commerce of the United States Government is the National Bureau of Standards. The primary job of this agency is to set up standards for all weights and measures. Scientists work in the agency's laboratories to obtain more and more accurate measurements of heat, time, volume, and the like.

Besides setting standards for weights and measures, the bureau performs many other tasks. The first time a Government agency purchases any product, the bureau must put the product to extensive tests to see whether it will meet certain specifications. In addition, the bureau deals in basic research in chemistry, physics, mathematics and engineering.

1. All weights and measures must meet certain
   _____products    _____standards    _____functions

2. All manufactured articles purchased by the Federal Government must conform to special
   _____requirements    _____tests    _____prices
3. The best heading for these paragraphs is

   ___ Uncle Sam's Department of Commerce
   ___ The Work of Government Agencies
   ___ The Operations of the Bureau of Standards
Notice the underlined word in the sentences below. Read the sentences carefully in order to determine the meaning of the underlined words as they are used in these sentences.

1. There are gardens today, however, in which no hoes are employed.
   1. hired  2. used  3. work

2. The seeds are planted in sawdust and kept moist.
   1. cool  2. warm  3. wet

3. Tomato plants have grown tall and have produced fine tomatoes.
   1. work  2. grown  3. used

4. Five hundred men are employed or work in the city park system.
   Employed means

5. The produce department at Safeway has a large selection of fruits and vegetables.
   Produce means

6. We keep produce moist by spraying it with a fine spray of water
   Produce means
   Moist means

7. Parts of the interior of British Columbia are arid and have very little or no water.
   Arid means

8. In the arid regions of the world the land is dry.
   Arid means

9. We had very little rain and the land became arid.
   Arid means
10. After the heavy rain there was a great deal of moisture on the grass.

Moisture means _______________________________

11. The plants began to sprout or grow rapidly after they had received some moisture.

Sprout means _______________________________

Moisture means _______________________________

12. In the lumber mills there is a great deal of sawdust.

Sawdust means _______________________________

13. When he finished sawing the board there was a pile of sawdust left.

Sawdust means _______________________________

14. The R. C. M. P. patrol the highway to keep it safe.

Highway means _______________________________

15. The men produced a large pile of logs in a short time.

Produced means _______________________________

16. He produced or made a shoe a second with his new machine.

Produced means _______________________________

17. The employer gave his men a raise in pay.

Employer means _______________________________

18. His employer or boss gave him a weeks vacation.

Employer means _______________________________

19. The boys asked the employer for a job.

Employer means _______________________________

20. The employer expected the men to produce a days work.

Employer means _______________________________

Produce means _______________________________
Look up the meaning of the following words in your dictionary. Also divide the words into syllables. Use your dictionary.

1. arid
2. moist
3. sprout
4. produce

**Compound Words**

Many times smaller words are joined together to make another word. Divide the following compound words into their smaller word parts.

5. sawdust
6. highway

**Root or Base Words**

Many times we add a prefix or suffix to a root or base word and change the meaning of that word. Place the root word on the blank space to the left and what has been added to the root or base word on the blank space to the right.

7. produced
8. employed
9. employer
10. moisture
Study the following list of words carefully. Write the meaning of these words in the blank spaces.

1. sprout
2. arid
3. sawdust
4. highway
5. employed
6. moist
7. produced
8. employer
9. produce
10. moisture
When the word garden is mentioned, most people think of spring planting, of good soil, and of weeds and hoes. There are gardens today, however, in which no hoes are employed and which require no soil for their plants. In place of soil, these gardens have tanks of water containing plant food.

Wire screens are placed over the tops of the tanks and covered with sawdust, moss, or anything which will hold moisture and keep out light. The seeds are planted in the sawdust and kept moist. Heating pipes in the tank below keep the water warm and the air moist. Some pipes may also contain holes to allow air to bubble through the water to bring oxygen to the plants. Soon the seeds sprout and the roots begin to grow. Eventually the roots extend to the water in the tank where they find all of the food they need.

Under this plan, tomato plants have grown tall and sturdy and have produced fine tomatoes. Potatoes, grains, and many kinds of vegetables and flowers have been grown with success in this kind of garden. During World War II many of our troops stationed on arid islands grew fresh vegetables for themselves in this way.
COMPREHENSION CHECK

1. The best heading for this selection is
   a. A New Kind of Garden
   b. Plants and Sawdust
   c. Very Large Tomato Plants
   d. How To Warm Water

2. Which two sentences about the selection are not true?
   a. The water is heated by means of pipes.
   b. The seeds are placed in the sawdust and flooded with water.
   c. The new kind of garden does not need to be hoed.
   d. The plant food is placed in the sawdust.
   e. The seeds are planted in something which will hold water.

3. While not directly stated, it can be reasoned from the article that
   a. gardening has not changed since 1900.
   b. gardening cannot be improved.
   c. ways of gardening affect the size of plants.
Read the following sentences carefully. Pay particular attention to the underlined word in the sentence. Determine the meaning of the underlined word as they are used in the sentence.

1. Your **memory** helps you to remember lessons you have learned in class.
   
   Memory means

2. Your mind's ability to bring back past experiences you have had is your **memory**.
   
   Memory means

3. We have many happy **memories** of our childhood.
   
   Memories means

4. **Recall** is one kind of remembering.
   
   Recall means

5. He could not **recall** the name of the new boy in his homeroom.
   
   Recall means

6. Please **recall** the name of the bus you rode yesterday.
   
   Recall means

7. Do you **recognize** the new boy in your homeroom? You saw him yesterday in the cafeteria.
   
   Recognize means

8. He **recognized** the sweater he had lost last week. It was in the school lost and found box.
   
   Recognized means

9. Do you **recognize** the poem on page 19? You read it yesterday in class.
   
   Recognize means
10. Recognition is another kind of remembering.
Recognition means

11. Having a personal reason for remembering is one of the most important factors or aids in a good memory.
Factors means

12. This problem is made up of many factors or parts.
Factors means

13. One important factor in getting a job is neatness.
Factor means

14. If you understand the entire history lesson before you try to remember any particular dates, your memory may surprise you.
Particular means

15. John could recite the whole poem from memory. He doesn't need to use his book.
Recite means

16. His ability to play baseball was the best in the school.
Ability means

17. That is an unusual or different ending to the story.
Unusual means

18. Concentrate on your ability to recite the poem from memory.
Concentrate means

19. Having a personal reason for remembering your lessons will help you concentrate better.
Concentrate means

20. His unusual ability to concentrate on his running made him the school track star.
Concentrate means
Look up the meaning of the following words in your dictionary. Also divide the words into syllables. Use your dictionary.

1. ability
2. concentrate
3. memory
4. particular
5. factors

Prefixes, Roots and Suffixes

Study the following list of prefixes, roots, and suffixes carefully. Study the following list of words. Determine the meaning of the words listed below by using the prefixes, roots, and suffixes.

<table>
<thead>
<tr>
<th>Prefixes</th>
<th>Roots</th>
<th>Suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>re - again</td>
<td>cognito - remember</td>
<td>ion - result</td>
</tr>
<tr>
<td>un - not</td>
<td>know</td>
<td>cito - say, speak</td>
</tr>
</tbody>
</table>

1. recall
2. recognition
3. recognize
4. unusual
5. recite
Study the following list of words carefully. Write the meaning of these words in the blank spaces.

1. memory
2. recall
3. recognition
4. recognize
5. factors
6. ability
7. concentrate
8. particular
9. unusual
10. recite
Your mind's ability to bring back experiences you have had is your memory. There are two kinds of remembering, recall and recognition. For instance, you may not be able to recall the poem you read yesterday in class, but if you see it again, you will know it instantly because you recognize it.

Some few people have "total recall" often spoken of as photographic memory. A person with total recall can recite a whole page of a book he has read only once, or play a musical composition after hearing it. This is very unusual, however, and most people have difficulty in remembering the names they heard the day before. This is not because most people lack the ability to remember, but because they had not paid much attention to what they heard. They felt no personal reasons to remember. Having a personal reason for remembering is one of the most important factors in a good memory.

When you have a strong reason for remembering, concentrate as you read or listen, and try to connect the new information to things you already know. A detail is easy to remember when it fits into a whole that makes sense. If you understand the entire history lesson before you try to remember any particular dates, your memory may surprise you.
COMPREHENSION CHECK

1. The best title for this article would be
   a. People Who Can Remember Whole Pages.
   b. People Who Can't Remember Names.
   c. Your Memory and How You May Improve It.
   d. Recognition.

2. Which two sentences are not true?
   a. If you can't remember things, you have no memory.
   b. Recognition and recall are two kinds of memory.
   c. Total recall is remembering something in its entirety.
   d. A person can remember anything better if he has a strong reason for doing it.
   e. Your memory has nothing to do with your mind.

3. While not directly stated, it can be reasoned from the article that
   a. If he will try hard enough, one man can remember as well as another.
   b. Recall and recognition are the same thing.
   c. Wanting to do a thing is very important to being able to do it.
   d. Details are more easily remembered by fitting them into a whole.
TREATMENT ONE - SESSION FOUR

WORKSHEET

Read the following sentences carefully. Pay particular attention to the underlined word in the sentence. Determine the meaning of the underlined word in the sentence as it is used in the sentence.

1. A good **transportation** system allows you to travel easily across town.

   Transportation means ________________________________

2. The men wanted to **transport** or move the logs across land to the water.

   Transport means ________________________________

3. An automobile is a good means of **transportation**.

   Transportation means ________________________________

4. The liquid part of your blood, called **plasma**, carries food to the body cells and carries waste products away.

   Plasma means ________________________________

5. As your blood moves through your body, it keeps the body heat **constant**, so that your temperature remains at 98.6 degrees.

   Constant means: 1. moving 2. the same 3. up and down

6. The **constant** ringing of the fire bell brought the fire department to the fire.

   Constant means: 1. moving 2. steady 3. changing

7. Jack was **constantly** pushing other people from behind.

   Constantly means: 1. never 2. always 3. sometimes

8. Your blood stops flowing by **clotting**.

   Clotting means ________________________________

9. You could bleed to death from a little cut on your finger if your blood did not **clot** or stop flowing.

   Clot means ________________________________
10. If your blood did not clot you would bleed to death.
   Clot means ________________________________

11. The red corpuscles in your blood carry oxygen from the lungs to the body cells, and carbon dioxide back from the cells to the lungs.
   Corpuscles means ________________________________

12. When the blood supply is shut off from the brain, a person becomes unconscious.
   Unconscious means ________________________________

13. John was knocked unconscious and did not move.
   Unconscious means ________________________________

14. He remained unconscious for the first three days he was in the hospital.
   Unconscious means ________________________________

15. The blood has protective powers. It protects your body from infection and keeps you healthy.
   Protective means: 1. not safe 2. guard 3. open
   Protects means: 1. guards 2. allows 3. open

16. When you are ill, bacteria or germs enter your body.
   Bacteria means ________________________________

17. Many bacteria are small germs which cannot be seen with the naked eye.
   Bacteria means ________________________________

18. When your heart is functioning it is pumping blood through your body. Your heart always works whether you are sleeping or awake.
   Functioning means ________________________________

19. An infection is a germ which enters the body through an open cut or bruise.
   Infection means ________________________________
Look up the meaning of the following words in your dictionary. Also divide the words into syllables. Use your dictionary.

1. plasma
2. bacteria
3. constant
4. infection
5. corpuscles

Prefixes, Roots, and Suffixes

Study the following list of prefixes, roots, and suffixes carefully. Study the following list of words. Determine the meaning of the words listed below by using the prefixes, roots, and suffixes.

<table>
<thead>
<tr>
<th>Prefixes</th>
<th>Roots</th>
<th>Suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>trans - across</td>
<td>porto- carry</td>
<td>ation - act of</td>
</tr>
<tr>
<td>un - not</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. transportation
2. unconscious

Root or Base Words

Many times we add a prefix or suffix to a root or base word and change the meaning of that word. Place the root word on the blank space to the left and what has been added to the root or base word on the blank space to the right.

1. functioning
2. protective
3. clotting
TREATMENT THREE - SESSION FOUR

WORKSHEET

Study the following list of words carefully. Write the meaning of these words in the blank spaces.

1. transportation
2. plasma
3. constant
4. protective
5. clotting
6. unconscious
7. bacteria
8. functioning
9. corpuscles
10. infection
READING SELECTION - SESSION FOUR

Your blood is a transportation system. The liquid part of your blood, called plasma, carries food to the body cells and carries waste products away.

The red corpuscles in your blood carry oxygen from the lungs to the body cells and carbon dioxide back from the cells to the lungs. As your blood moves through your body, it keeps the body heat constant, so that your temperature normally remains at 98.6 degrees. It keeps the amount of water in the body constant, too, taking water from the intestines and giving it to the lungs, sweat glands, and kidneys.

The blood also has protective powers. When you are ill, bacteria enter your body, and there is danger of infection. Then the white corpuscles in your blood come to your aid by absorbing the bacteria and the broken-down tissue cells.

Another kind of protective power is the ability of your blood to stop flowing by clotting. You could bleed to death from a cut on your finger if your blood did not clot.

The blood is important to every part of the body. When the blood supply is shut off from the brain, a person becomes unconscious.

Your blood is only about eight percent of your body weight, but its correct functioning can mean the difference between life and death.
COMPREHENSION CHECK

1. The best heading for this selection is
   a. The Work of the Red Corpuscles
   b. What Plasma Is
   c. Different Parts of the Body
   d. The Functions of the Blood

2. Which two sentences about the selection are not true?
   a. White corpuscles absorb bacteria.
   b. Red corpuscles carry oxygen.
   c. As your blood moves through your body, it keeps your temperature constant.
   d. Blood does not affect your health.
   e. The brain needs no blood.

3. If a man weighs 150 pounds, his blood would weigh about
   a. 8 pounds
   b. 11 pounds, 8 ounces
   c. 12 and a half pounds
   d. 12 pounds
TREATMENT ONE - SESSION FIVE

WORKSHEET

Read the following paragraphs carefully. Notice the underlined words. Try to determine the meaning of the underlined words as they are used in the paragraphs. The clues to their meanings are contained in the paragraphs.

Although the body's temperature may vary above and below 98.6 degrees, these changes are usually quite small. Most variations or changes above 98.6 degrees tell the doctor that there is something wrong with us. A change in the body's temperature of more than ten degrees would probably cause death. The changes in body temperature happen at varying rates of speed.

1. Vary means_____________________________________________________
2. Variations means_________________________________________________
3. Varying means___________________________________________________

In the body heat is produced at all times. The heat is carried by the blood to the skin surfaces. From there, it passes off into the air. This process is called evaporation, and allows the body heat to evaporate or pass off into the air and helps us to keep cool.

4. Evaporation means_______________________________________________
5. Evaporate means_________________________________________________

Many new wrist watches are automatic which allows them to work by themselves without our winding them. They wind themselves automatically and you do not need to wind them by hand.

6. Automatic means_________________________________________________
7. Automatically means_______________________________________________

The train reversed itself and went back to the station. When a car is in reverse it moves backwards.

8. Reversed means_________________________________________________
9. Reverse means__________________________________________________
Driving **regulations** are laws passed by the Province to govern or rule drivers on the road or in the city.

10. **Regulations** means ____________________________________________

When a student breaks a school **regulation** or rule he hurts himself and others.

11. **Regulation** means ____________________________________________

Traffic lights **regulate** or control the traffic flow on our city streets.

12. **Regulate** means ____________________________________________

The R. C. M. P. constables wear a **uniform** which is the same throughout Canada.

13. **Uniform** means ____________________________________________

Money in Canada is **uniform**. It is the same throughout the country.

14. **Uniform** means ____________________________________________

There was a **continuous** flow of water in the stream. It never stopped running.

15. **Continuous** means ____________________________________________

The air **continuously** blows across the apple orchard. It never stops blowing.

16. **Continuously** means ____________________________________________

The pain was **continuous**. It only stopped after he took the medicine.

17. **Continuous** means ____________________________________________

It had a **delicate** smell of apples. You could hardly tell that there were any used in the mix.

18. **Delicate** means ____________________________________________

The picture had a **delicate** touch of blue, which could hardly be seen.

19. **Delicate** means ____________________________________________
Look up the meaning of the following words in your dictionary. Also divide the words into syllables. Use your dictionary.

1. delicate
2. vary
3. evaporate

Prefixes, roots, suffixes

Study the following list of prefixes, roots, and suffixes carefully. Study the following list of words. Determine the meaning of the words listed below by using the prefixes, roots, and suffixes.

<table>
<thead>
<tr>
<th>Prefixes</th>
<th>Roots</th>
<th>Suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>uni - one</td>
<td>regulo - control</td>
<td>action - act of</td>
</tr>
<tr>
<td>auto - self</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. uniform
5. regulation
6. Automatically

Many times we add a prefix or suffix to a root or base word and change the meaning of that word. Place the root or base word on the blank space to the left and the prefix or suffix that has been added on the blank space to the right.

7. reversed
8. varying
9. variations
10. continuous
TREATMENT THREE - SESSION FIVE

WORKSHEET

Study the following list of words carefully. Write the meaning of these words on the blank spaces.

1. vary

2. variations

3. regulation

4. automatically

5. varying

6. uniform

7. delicate

8. continuous

9. evaporates

10. reversed
READING SELECTION - SESSION FIVE

The normal body temperature of a fully-grown person measures 98.6 degrees on a Fahrenheit thermometer. Although the body's temperature may vary above and below this point, the variations usually are quite small. A change in the body's temperature of more than ten degrees either way would probably cause death.

The regulation of body temperature is a delicate and continuous process. In man and other warm-blooded animals, temperature is automatically kept uniform under normal conditions. In the body, heat is produced at all times, but at varying rates of speed. The heat is carried by the blood to the skin surfaces. From there, it passes off into the air.

If the body becomes too warm, the surface vessels become larger and carry more blood. In this way, more heat can be brought to the surface of the skin and sent out of the body. In addition, as the body becomes warmer, the sweat glands pour out perspiration which evaporates and helps cool the body.

These processes are reversed when the body becomes cold. To keep the body temperature from dropping far below the normal, the surface blood vessels grow smaller and perspiration is checked.
COMPREHENSION CHECK

1. This article is about
   a. Medicine
   b. Science
   c. The Body's Heating and Cooling System
   d. How We Regulate Body Temperature

2. Which two sentences are not true?
   a. The body produces heat
   b. Body heat should be 97°.
   c. Body heat changes are usually slight.
   d. We perspire when we are too cold.
   e. Surface blood vessels get bigger when the body gets too cold.

3. While not directly stated, it can be reasoned from the article that
   a. perspiring is harmful.
   b. body temperature never changes.
   c. the blood serves the body as a transportation system.
The desert is very hot and dry. Because the desert is arid there is very little water available. Today, however, the desert has the ability to produce fruits, vegetables, and a variety of crops. We must recognize that the desert at one time had not produced any crops at all.

You will recall, if you search back into your memory, how the Indians were the first to settle the desert. The Indians were the first people who employed a vast highway of ditches—called irrigation canals—to bring water to the desert from the mountains. Once the Indians had their irrigation system functioning automatically, they produced crops of corn and vegetables for their villages. The ability of the Indians to provide a constant supply of water allowed them to keep their plants and trees moist. By using sawdust and wood chips around the base of trees and plants they could hold the moisture in the ground longer.

Grass began to sprout along the irrigation canals and helped to stop the evaporation of the water. The Indians used this continuous supply of water for their fields, cattle, and personal use.

This particular ability of the Indian to bring water to the desert caused the white man to recognize the advantages of developing the desert regions of the country.
There are varying tales of how the west was settled by the white man. Before the development of an adequate transportation system to the west, few white men settled there. Many factors caused the white man's recognition of the value of the new lands in the west.

There were no regulations set down by the government, nor were there any uniform laws to control the settlement of the west.

Men who had been west would recite tall tales about the free land and gold. There were many variations of the same tale told by different people.

There was an unusual movement west by the white man. Men began to concentrate on building large cattle ranches. Men who owned large ranches became an employer of many ranch hands or cowboys. The barb wire fence offered a protective ring around the ranch. The barb wire fence scratched the hides of the cattle and bacteria entered the open sores and caused infection. Many cattle had to be killed because of these infections.

Range wars broke out between ranchers. The causes of these wars would vary. Many cowboys were found unconscious on the range. Many died because blood plasma had not been discovered. Doctors knew little about the clotting ability of blood or about the red and white corpuscles in our blood that fight infection. There was a delicate balance between life and death in the old west. Now, thanks to modern medicine, that balance has been reversed.
COMPREHENSION CHECK

1. The best title for this selection is
   a. The Development of the Desert
   b. Indians and Irrigation Canals
   c. Development of Cattle Ranches
   d. Modern Medical Discoveries

2. True or False:
   a. Because there was very little water available the desert was hot and dry.
   b. The fence helped to develop large cattle ranches and control the cattle.
   c. The Indians were the first people to settle the desert.
   d. The white man never settled on the desert.
   e. Cattle ranches were developed by the Indians.
   f. Range wars broke out among the cattle ranchers in the west.
   g. Men who settled in the west broke the government land regulations.
   h. Many cowboys were killed during the range wars.

3. Although not directly stated, it can be reasoned from the selection that
   a. the west would have been developed without water and transportation
   b. the Indians would never give up their land to anyone.
   c. white men would have developed the desert even if the Indian had not already done so.
COMPREHENSION TEST "X" - SESSION SEVEN

Samples

Vending machines cause people to use more coins today than ever before. Put coins in certain machines and you can have your picture taken or hear a record. The right coin in the right machine can get you candy, gum, or a drink. For a couple of coins, one machine will even broil hamburgers!

1. Vending machines cause people to use
   ______hamburgers ______coins ______records

2. Vending machines may replace the jobs of some
   ______clerks ______machines ______travelers

3. The best heading for this paragraph is
   ______Service While you Wait
   ______A New Way to Take Pictures
   ______Those Marvelous Vending Machines

One of the rarest birds of North America is the whooping crane. Approximately fifty are alive today. These birds usually nest in Canada and winter in Texas. The adult bird stands four or five feet high and has a wingspread of six to eight feet. Their loud, deep calls can be heard a mile or so away.

1. Whooping cranes usually winter in
   ______Canada ______Texas ______North America

2. Today these birds are nearly
   ______famous ______tamed ______extinct

3. The best heading for this paragraph is
   ______A Rare Bird of North America
   ______Habits of Cranes
   ______The Largest Bird in Texas
1. One of the most important commercial fishing areas in the world is the Grand Banks of the North Atlantic. The banks are broad, underwater plateaus at or near the outer margin of the continental shelf. They extend from Nantucket to the eastern coast of Newfoundland. Many kinds of fish, including cod, haddock, and flounder, can be found in these waters.

1. The Grand Banks are underwater
   _____currents       _____plateaus       _____valleys

2. The boundaries of the Grand Banks are
   _____natural       _____unknown       _____man-made

3. The best heading for this paragraph is
   _____Fishing Regions of North America
   _____An Important Source of Food
   _____North Atlantic Fishing Banks

2. Dogs selected to be "seeing eyes" for blind persons must be dependable and loyal. They must also be very intelligent, for they must learn to obey signs and respond to signals. Seeing-eye dogs are often decision-makers for their masters.

1. Dogs trained to guide the blind must be
   _____friendly       _____big           _____loyal

2. Seeing-eye dogs are actually taught to
   _____fight         _____think         _____track

3. The best heading for this paragraph is
   _____The Importance of Signals
   _____Man's Best Friend
   _____Seeing-Eye Dogs

3. Today most Canadians enjoy fresh, health-giving fruits and vegetables the year around. In areas where winter months are cold, produce is brought in from warm regions of the West and South. The tasty fruits and crisp
vegetables are shipped in railroad refrigerator cars, refrigerated cars, refrigerated trucks or airplanes.

1. Fruits and vegetables are important for
   _____work   _____travel   _____health

2. Fresh fruit is available anytime because of good
   _____transportation   _____markets   _____gardens

3. The best heading for this paragraph is
   _____Gardens of the West
   _____Fresh Produce All Year Around
   _____Transportation of Fresh Food

4. "These are the times that try men's souls." Thomas Paine stirred the feelings of Americans with those words in 1776. Paine might be called the news commentator of this era. The books and pamphlets he wrote to interpret the news and rouse Americans to revolt were best sellers. Some historians say that no one else did so much to bring about the Revolution.

   1. Thomas Paine helped cause people to
      _____reform   _____flee   _____revolt

   2. This man aroused Americans by
      _____guns   _____threats   _____words

   3. The best heading for this paragraph is
      _____Early News Reporting
      _____Thomas Paine: Fighter for Freedom
      _____The Work of Historians

5. The Smithsonian Institute in Washington, D. C. is an important center for research. It was founded as a result of a gift from an Englishman who never visited the United States—James Smithson. He bequeathed money to establish an institution for the "increase and diffusion of knowledge among men".
1. The Institution was founded with money from
   _____taxes  _____a gift  _____the government

2. The Institution's purposes are scientific and
   _____educational  _____literary  _____expensive

3. The best heading for this paragraph is
   _____An Englishman's Fortune
   _____An Englishman's Wonderful Gift
   _____Spreading Knowledge

6. Basenji, which means "bush things", is the name of an unusual breed of dog. The breed is native to Africa and is centuries old. Reportedly, basenjis were pets of the royal Egyptian Pharaohs. Today, also, some people prefer this dog as a pet, for it is "barkless". Usually it expresses itself in noises that resemble cries, whines, or chuckles.

   1. The dog told about in the paragraph cannot
       _____cry  _____whine  _____bark

   2. At one time, basenjis were pets of Egyptian
       _____warriors  _____rulers  _____slaves

   3. The best heading for this paragraph is
       _____Ancient Household Pets
       _____Unusual Varieties of Dogs
       _____An Unusual Dog

7. Every year, shopwindows and catalogs display the latest styles in sandals. Perhaps you have admired this "modern" footwear. In reality, sandals are not modern—they date back to the Egypt of 2000 B.C. The Egyptian papyrus sandals of long ago closely resemble the plaited straw sandals of today.

   1. The Egyptians made sandals of
       _____straw  _____paper  _____papyrus
2. For ages, sandals have had great
   ___appeal   ___secrets   ___significance

3. The best heading for this paragraph is
   ___Keeping Up-to-Date
   ___In the Days of the Egyptians
   ___A New-Old Shoe

8. Silicosis is a lung disease that may develop if a person inhales too much dust containing silics. Quarry workers and miners who work with silics-bearing rock are most likely to be affected. The disease is marked by shortness of breath, coughing, and chest pains. It can develop into tuberculosis.

   1. The paragraph tells about silica dust can cause
      ___dizziness   ___disease   ___disaster

   2. To keep dust from his lungs, a worker could wear
      ___a scarf   ___goggles   ___a mask

   3. The best heading for this paragraph is
      ___Dangerous Occupations
      ___The Spread of Disease
      ___An Occupational Lung Disease

9. Your signature is unique. No one else anywhere has one exactly like it. Be aware of your obligation to it. Once you sign your name to a document, you must fulfill the provisions or terms as stated.

   Always read a paper carefully before you sign it. Read the fine print, no matter how small it is. Take nothing for granted. Use your signature sensibly.

   1. No two people have exactly the same
      ___document   ___provisions   ___signature

   2. By signing a document, you may enter into an
      ___agreement   ___application   ___argument
10. A good cartoonist can get a message across in just a few lines, and by his art he may try to persuade the reader to his way of thinking on a certain subject. In many cases, cartoonists have considerable influence on public opinion.

Often a political cartoonist intentionally "overstates" things in his drawings. If he is sketching a famous person, he may exaggerate one of that person's prominent features. For instance, he may lengthen an already long nose or widen an already broad grin. Such exaggeration of personal characteristics is called "caricature". Many cartoonists, especially political ones, deliberately use caricature to make people or events attractive or unattractive to the public.

1. Exaggeration of a person's features is called
   _____humor     _____caricature     _____political

2. Some cartoonists achieve a serious purpose with
   _____experiments     _____ridicule     _____silence

3. The best heading for these paragraphs is
   _____The Penalty of Prominent Features
   _____Cartoonists Compared to Writers
   _____A Special Technique of the Cartoonist

11. Tin is seldom used in its pure metallic form. Instead it is mixed with other metals to form alloys, or it is used to coat certain metals.

   Tin is alloyed with copper to form bronze for bells, pipes, and castings. When it is mixed with lead, the alloy gives us solder, tin foil, and lead foil.

   Tin plate—that is, sheet metal coated with tin—is manufactured by a simple process. First, iron or steel sheets are thoroughly cleaned with acid. Then they are
dipped into vats of molten tin and palm oil. When the sheets are coated to the required thickness, they are taken from the vats and cleaned.

Tin has numerous industrial uses. It is used in the manufacture of automobile parts. It is also used to coat roofing materials, water spouts, buckets, pans, toys, and many other articles.

1. Tin is used to coat other metals and to form
   ____ fixtures  ____ sheets  ____ alloys

2. These paragraphs show that tin is extremely
   ____ useful  ____ expensive  ____ rare

3. The best heading for these paragraphs is
   ____ Metal Alloys
   ____ The World's Tin Supply
   ____ A Valuable Metal

12. Rubies and sapphires are two of the most important synthetic gems produced today. Such jewels are not imitation precious stones, but gems made by man instead of nature.

Synthetic rubies and sapphires are made of corundum, an aluminum oxide. To form this oxide, pure alum crystals are roasted at 2,400 degrees farenheit to a feathery white powder. To this white powder, a gem maker adds coloring agents—chromic oxide to produce the red of rubies, and iron and titanium to create the blue of sapphires.

The powder is then fed into intensely hot hydrogen furnaces, where the powder melts. The drops of melted powder build up and are formed into small rods on a fireclay base. Then a jewel maker uses a copper-and-diamond saw to slice the rods into discs.

1. Synthetic rubies and sapphires are made of
   ____ copper  ____ corundum  ____ fireclay

2. Extreme ____ is vital in making synthetic gems.
   ____ cold  ____ pressure  ____ heat
3. The best heading for these paragraphs is
   ___Recognizing Imitation Jewels
   ___Two Artificial But Genuine Jewels
   ___Mining Rubies and Sapphires

13. Skin diving, long a popular hobby, has become important
to science and industry. Skin divers lead geologists to
rich oil deposits beneath the ocean. They also assist
marine biologists in studying animals and plants that live
below the surface of the ocean. Skin diving archaeolo­
gists retrieve objects from ancient, sunken ships.

A skin diver can move quite freely when diving. He is not
hampered by cumbersome equipment. Most skin divers use
only a mask, a snorkel, and fins.

But divers who explore depths of more than twenty-five
feet have to have special breathing apparatus called
"lungs". The technical name for this equipment is Self-
Contained Underwater Breathing Apparatus, or SCUBA, for
short. By breathing compressed air from the tank strap­
ped to his back, a skin diver can stay submerged for an
hour or longer.

1. Skin divers help ____ find oil deposits.
   ____geographers  ____marines  ____geologists

2. Skin divers must be skilled
   ____biologists  ____swimmers  ____sailors

3. The best heading for these paragraphs is
   ___Skin-Diving Equipment
   ___Skin-Diving, A Popular Hobby
   ___Skin-Diving, More Than A Hobby

14. For more than a century, audiences have thrilled to the
music of Frederic Chopin. This Polish-born composer
wrote scores for the piano that include romantic waltzes.

Chopin was a child prodigy. He gave his first piano con­
cert when he was eight and began composing soon after.
At the time of his graduation from high school, he was
recognized as the leading pianist in Warsaw, the capital of Poland.

Chopin is regarded by many as the greatest of all composers for the piano. His more than two hundred compositions show his appreciation of the effects that a piano can produce.

1. Chopin composed for the
   _____score     _____piano     _____concerts

2. Chopin could be called a musical
   _____contemporary     _____genius     _____graduate

3. The best heading for these paragraphs is
   _____Famous Piano Compositions
   _____A Talented Composer
   _____Waltzes, Nocturnes, and Mazurkas

15. Millions of earthquakes occur each year. Many cause wide-spread destruction and loss of life.

Scientists who study the causes of earthquakes believe that tremendous stresses and pressures build up inside the earth. These stresses and pressures cause the rocks on the inside to change shape. The rocks bend slowly, storing up energy as they do so. This energy then causes strain in the rocks that form the earth's crust. When the strain becomes too great, the rocks rupture and cause an earthquake.

Ruptures, or faults, are the focal point of an earthquake, but the vibrating earth generates seismic waves that can be felt hundreds of miles away. Seismic waves, of which there are three types—shear, surface, and compressional—can pass through the earth in about twenty-one minutes. The study of these waves has given scientists much information about the core of the earth and about its structure.

1. Earthquakes are due to _____ inside the earth.
   _____surfaces     _____waves     _____stresses

2. Scientists are now able to _____ earthquakes.
   _____produce     _____measure     _____prevent
3. The best heading for these paragraphs is
   ____ Studying Seismic Waves
   ____ When the Earth Shakes
   ____ Destruction of the Earth