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Signature Fredrick Joseph Ramsey  
Date May 30, 1978

CROSSWORD PUZZLES AND VOCABULARY DEVELOPMENT

by

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A professional paper submitted in partial fulfillment  
of the requirements for the degree

of

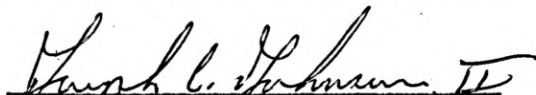
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Abstract

A comparison was made of the general vocabulary level of two fifth grade classes after instruction using two different approaches. One group received a "traditional" approach and the other received a crossword puzzle approach.

The investigator designed an experimental research project in a small school district in Montana utilizing the two fifth grade classes as an experimental and control group. The groups were comparable at the start of the project based on the results of both an IQ test and a general vocabulary test. The instruction took place for 10 weeks and a posttest was administered immediately following the instruction. A retention test was given 3 weeks later. Both instruments were tests of general vocabulary level.

In general, the results showed no significant differences between the two groups on any of the tests. The experimental group showed no significant differences between the general vocabulary scores of the males and females. Within the groups, some significant changes did occur on the scores of the tests. The general vocabulary scores increased significantly in both groups. Both groups also showed an increase in the percent of students who attained 80% or better from the pretest to the retention test.

The crossword puzzle technique seemed to show a minimal advantage over a "traditional" approach during a short period of time; however, after a longer time span, there did not seem to be an advantage on general vocabulary development.

A stable general vocabulary pattern was indicated and the crossword puzzle technique had a short term effect on it during the instruction. However, the general vocabulary level returned to the stable pattern after the instruction was completed.

The researcher recommended the use of the crossword puzzle as a part of a multiple technique approach to vocabulary instruction and students be allowed to choose from activities to develop their vocabularies. In addition, studies should be carried out to examine the effects of instruction on general vocabulary. Specifically, since general vocabulary seems to increase in a stable pattern, this pattern should be studied to determine how it is affected over both short and long term as a result of different instructional technique. Additional recommendations for further research were also given.

## Chapter 1

### Introduction

#### Introduction

The vocabulary development of today's students needs to be given careful, in-depth consideration. A sound, extensive vocabulary is necessary to keep up with the vastly expanding knowledge and information being made available in today's society. Vocabulary is based on the association of words with experiences and the more experiences a student has, the more his vocabulary will grow. Schools should provide these experiences for students by using a variety of approaches to vocabulary development. These approaches can include searching for and discussing "big" words used daily, listing words on cards, drawing pictures of the word, using the dictionary to find meanings, or using games and puzzles. This research was concerned with the effect of the use of the crossword puzzle as one of the approaches to vocabulary development.

#### Statement of Problem

The problem of this study was to compare the vocabulary development of two fifth grade groups using two methods of instruction. One group received a "traditional" approach and the other received a crossword puzzle approach. This chapter will establish a need for the study, ask some questions to be answered, and discuss the general

procedures that were followed. Some limitations, delimitations and definitions will also be established.

### Need for the Study

Petty, Herold, and Stoll (1968), in their review of the vocabulary, suggest that there "need to be more careful studies of the applicability of certain techniques of teaching vocabulary to students at different grade levels" (p. 70).

Edgar Dale in 1965 suggested that one area for further research in vocabulary development is methods of teaching vocabulary.

Several people have suggested the crossword puzzle as one possible device for vocabulary development. McCutcheon and Sholley (1974) suggested that "the use of the crossword puzzle as a teaching device is justified, at least on an occasional basis" (p. 32). David Wolfe (1972) stated that "crossword puzzles are a good means to review vocabulary and structure, and to maintain or improve reading comprehension" (p. 181). Susan Zuckerman (1975) stated that crossword puzzles are "an effective vehicle for strengthening and enlarging vocabulary . . . while simultaneously nurturing a lifetime enjoyment of words" (p. 74).

Three writers have suggested what they feel are positive aspects of crossword puzzle use. Thomas Carter (1974) felt that they add the spelling aspect to practice in language, "provide interesting

opportunity to introduce vocabulary and definitions" and are "adapted to small or large group activities" (p. 115). William Hardin and Raymond Carroll (1974) felt that puzzles are best used:

1. as a matrix of success experiences in manipulating word forms and word meanings . . .
2. to nurture a creative "experiment" mind
3. to polish and apply discrimination skills.
4. to enlarge the referent storehouse of words and skills.
5. to highlight the "game" aspect of word attack while gently eliminating the "threat" potential of failures . . . (p. 1125)

Two authors suggest, however, that the use of only one instructional technique such as the crossword puzzle has some drawbacks. Helen Robinson (1963) suggested that they "be used sparingly and only when they constitute the best method for teaching and learning. Even then their use is probably as an accessory rather than as a major instructional device" (p. 174). Samuel Weintraub (1968) stated that when one technique was used alone, the "vocabulary growth would be subject to the weaknesses and limitations of that particular method" (p. 175).

A carefully designed study of the crossword puzzle as a vocabulary development technique would enhance the vocabulary field by verifying its importance as a reliable tool for learning.

#### Questions to be Answered

1. Does the crossword puzzle approach to specific vocabulary instruction improve the general vocabulary scores of fifth grade students?

2. Three weeks after instruction, is there a difference in the stability of general vocabulary scores of students receiving instruction with crossword puzzles and those receiving "traditional" instruction?

3. Is there a difference in the general vocabulary scores of males and females receiving the crossword puzzle instruction?

4. Is the percent of students attaining 80% or better on vocabulary tests different for each group?

#### General Procedures

The two classes of fifth grade students at Cecilia Hazelton Elementary School in Townsend, Montana, were used as experimental and control groups. An IQ test and pretest were administered to both groups to establish comparability of groups. A posttest and retention test of 90 words were given to both groups. The control group received a "traditional" vocabulary instruction approach and the experimental group received vocabulary instruction utilizing crossword puzzles. Their test results were compared and recommendations made.

#### Limitations and Delimitations

At the time of the study, the researcher was a fifth grade teacher at Cecilia Hazelton Elementary School. Therefore, the groups used in the research were limited to only fifth grade students from this small school district in Montana.

The instruction of the control group was also limited. It had to be under a person other than the researcher.

The words used in the instructional phase of the experiment were restricted to those suggested in the vocabulary lists of the reading text in use by the school district.

### Definitions

The "traditional" approach entailed giving the students the words and having them define the words using the dictionary.

The crossword puzzle approach entailed having the students put the words into crossword puzzles by looking at the definitions and choosing the words from the word list given with each puzzle.

The researcher arbitrarily chose 80% as an attainment level for a study of the percentage of students attaining that level on the vocabulary test.

Each student's general vocabulary score was determined by the number of correct responses given on a 90-word multiple choice test. The words on the test were not used in the vocabulary instruction phase.

### Summary

Vocabulary development techniques are used to give students various experiences with words and to increase their vocabulary. A need was determined to study the crossword puzzle as one technique for vocabulary development. An experiment was designed at the fifth



grade level in a small school district in Montana to study the effects of crossword puzzles compared to a traditional approach. The control group received "traditional" instruction, while the experimental group received instruction using crossword puzzles. Recommendations based on the comparison of each group's test results will be presented.

## Chapter 2

### Review of Related Literature and Research

#### Introduction

Vocabulary development techniques are discussed in a variety of sources in the literature. Articles from the Language Arts, Reading, and Educational Research areas dealing with building vocabularies and various techniques of vocabulary instruction were extensively reviewed. This chapter will give a review of the research on the importance of vocabulary development, what methods have been suggested for developing student's vocabularies, and what research suggests about using crossword puzzles as a specific vocabulary instruction technique.

#### Importance of Vocabulary

Today's schools provide a graphic example of how significant an extensive vocabulary is. Better students are the ones with large vocabularies. Samuel Weintraub, in 1968, suggested that our schools are basically verbally oriented and that knowledge of word meanings is essential to academic achievement. Petty, Herold, and Stoll supported this idea indicating that the achieving students possess the most adequate vocabularies. Because of the verbal nature of most classroom activities, knowledge of words and ability to use language are essential to success in these activities (1968).

Vocabularies are also associated with the mental development of individuals. The range and depth of a person's vocabulary is the best

single index of his mental development (Dale, et al., 1971). Dr. Dale reemphasized this idea in a paper presented to the International Reading Association Convention. He pointed out that the higher mental processes require a higher level of vocabulary (1972).

A number of people have studied the importance of vocabulary as it relates to the field of reading. Harold Karbal feels that vocabulary is the main component of reading comprehension (1975). Ruth Strang noted the contribution of vocabulary improvement to reading by conveying the idea that since both comprehension and speed depend to some extent on vocabulary knowledge, it follows that an expanded vocabulary will contribute to reading improvement (1967).

In 1974, William Rupley expressed his feelings about the importance of vocabulary in reading instruction. He felt that teachers, through development of children's vocabularies, can broaden concepts, improve spelling and perpetuate an interest in reading. Dr. Dale also feels that poor reading ability stems from poor vocabularies (1972).

Closely associated with reading is the area of language. Language is communicating to others with words. Words are the names that we give to our experiences in life. Therefore, rich experiences are a necessity in vocabulary and language development (Dale, 1972). The growth of vocabulary goes hand in hand with the growth of language (Dale, et al., 1971).

Vocabulary development should be the concern of all teachers--not only in order to prepare students to communicate clearly, but because vocabulary development is crucial to learning. Accurate concept formation and maximum learning are dependent on a thorough understanding of vocabulary terms, whatever the field (Dale and Milligan, 1970).

Toussant (1972) felt that words and their meanings are the keys that open the doors to the understanding of the language of science.

In their review of vocabulary studies, Petty, et al. (1968) suggested that after schooling has ended, adequacy of vocabulary is almost equally essential for achievement in vocations and in society.

#### Methods of Vocabulary Development

Since a well-developed vocabulary is of importance in today's society, an attempt should be made to develop students' vocabularies systematically. Therefore, we now need to look at what has been suggested as possible methods of vocabulary development.

Most studies have shown that any attention to vocabulary development is better than none (Petty, et al., 1968).

Dale, et al., in 1971; Dale in 1972; and Karbal in 1975 have emphasized that experiences are necessary for successful vocabulary development to take place. These experiences occur in, what Dale calls, the "communication triad: (a) reading and writing,

(b) speaking and listening, and (c) visualizing and observing"

(Dale, et al., 1971, p. 5).

These experiences can be created through many different methods. Ruth Strang, et al., suggested studying origins of picturesque words, the history of words, the nature of words and their behavior in selected passages, making picture dictionaries, asking comprehension questions, and looking up words in the dictionary as possible methods of vocabulary development (1967).

Petty, et al., suggested using word lists; looking at word parts; making vocabulary notebooks; studying word origins; studying synonyms, homonyms, and antonyms; using word and language games; using programmed teaching and audio-visual materials; studying context clues; and "wide" reading as possible ways to broaden a student's vocabulary.

Another author, Harold Karbal (1975), suggested using "big" words daily through discussion and search, keeping word lists on cards in files or boxes, using pictures and drawings, real objects or photographs, games, studying cliches, and using dictionary work as possible ways to develop good vocabularies.

Experiences are the necessary part of a good vocabulary development program, but interest in words seems to be a key part of all the experiences. Petty, et al., in their review of Deighton's book Vocabulary Development in the Classroom, suggested that the essential

ingredients in a vocabulary development program are a sense of excitement about words, a sense of wonder, and a sense of pleasure (1968).

By creating wonderful, exciting, and pleasing experiences through many different methods, students' vocabularies will have an excellent opportunity to develop fully.

Research also has shown that comprehensive directed vocabulary instruction utilizing numerous useful techniques appears to be the most promising approach (Weintraub, 1968).

Petty, et al., (1968) in their review of 13 of the better vocabulary studies, agreed with this idea. They suggested that the studies have not shown that a particular method is better than any other. However, they also recommended that there need to be more careful studies of the applicability of certain vocabulary techniques to students at various grade levels.

With this in mind and the suggestion of others about using games as a vocabulary technique, the review of literature and research is directed towards the crossword puzzle as one specific technique.

#### Crossword Puzzles as Vocabulary Development Techniques

Abraham Hurwitz and Arthur Goddard (1969) presented the strongest suggestions for using games as learning devices. They suggested that what children learn in their games can add to and is incorporated into the other school instruction they receive. These

games awaken an eagerness to learn, to think, to imagine, to listen, to create, and to express their own ideas. Games also provide an opportunity for students to concentrate; to see relationships and analogies; to be accurate; to form intelligent hypotheses; to follow directions; and to compare and categorize things, ideas, places, people, and words.

Crossword puzzles is a specific type of game that a number of authors have suggested for possible use in vocabulary development.

Susan Zuckerman (1975) felt that crossword puzzles are an effective vehicle for strengthening and enlarging vocabulary, reading and math skills, while simultaneously nurturing a lifetime enjoyment of words.

Thomas Carter (1974) suggested four reasons why crossword puzzles should be used in the classroom. First, they are valuable for promoting student motivation and participation; second, they add the spelling aspect to language practice; third, they provide an interesting opportunity to introduce new vocabulary and definitions; and fourth, they are adaptable to small or large group activities.

In 1974, William Hardin and Raymond Carroll felt that little attention had been given to the crossword puzzle's application in the classroom and they suggested that crosswords be best used as a matrix of success experiences in manipulating word forms and meanings, to nurture a creative "experiment" mind, to polish and

apply discrimination skills, to enlarge the referent storehouse of words and skills, and to highlight the "game" aspect of word attack while gently eliminating the "threat" potential of failures.

Morena Toussant (1972) recommended that crossword puzzles be used as motivators for introduction of units, revealers of students' knowledge in certain areas, indicators of the students' spelling abilities, and tools for review.

David E. Wolfe (1972) concluded that crossword puzzles are a good means to review vocabulary and structure, and to maintain or improve students' reading comprehension of material already known.

Lynn E. McCutcheon and Barbara King Sholley, in their evaluation of the crossword puzzle as a teaching device, justify its use on an occasional basis. They also recommend emphasizing to students its potential as a learning device rather than just a verbal game (1974).

Helen O'Leary (1964) suggested that crossword puzzles be utilized as one activity to get children interested in working with words, in developing more meaningful concepts, in stimulating creative activities, and in attracting and holding attention.

Finally, Dr. Dale, et al., (1971) best summarized the potential of crossword puzzles when they established eight purposes that puzzles serve:



- 1) point up the element of enjoyment or challenge in language study and encourage word play
- 2) require the student to look carefully at words--an important aspect of vocabulary building
- 3) give the student practice in calling up words on the basis of given clues
- 4) require the student to match words with definitions
- 5) provide spelling practice and compel close attention to word formation
- 6) show the student how the letters of many words can be manipulated to form other words
- 7) emphasize the importance of letter position in relation to word meaning
- 8) encourage students to classify and generalize concepts (p. 302).

The crossword puzzle is one specific vocabulary development technique that could be a beneficial part of any vocabulary instruction program and it will provide students with exciting, wonderful, and pleasurable experiences. To determine the significance of the crossword puzzle's effect on vocabulary instruction, it should be studied at a specific grade level.

#### Summary

The review of the literature indicated an importance of having an extensive vocabulary. The literature suggests that students with broad vocabularies are the better students and vocabulary is important in reading comprehension, other academic areas, and society as well.

Many varied vocabulary development experiences were suggested, but the research did not indicate any one single method as being most effective. However, it does suggest that carefully designed studies

testing the applicability of certain vocabulary techniques at various grade levels are needed.

One such technique of vocabulary development is the crossword puzzle. The research suggested that crossword puzzles be interesting, stimulating, and hold children's attention. They offer students a challenge, a chance to practice their spelling and an opportunity to classify and generalize. The crossword puzzle is a potentially effective learning activity as one part of an extensive vocabulary development program.

## Chapter 3

### Procedures

#### Introduction

This study was designed to compare the vocabulary development of two fifth grade groups using two methods of instruction: a "traditional" approach and a crossword puzzle approach. This chapter will detail the procedures followed, the instruments used, the method of collecting and organizing the data, the research questions asked, and the method of analyzing the data.

#### Population Description and Treatment

The two fifth grade classes at Cecilia Hazelton Elementary School in Townsend, Montana were used as experimental and control groups. The experimental group contained 22 students. The control group began with 20 students, but only 18 were used for the research since 2 students moved away and 1 student moved in after the instructional period began.

The control group was given vocabulary instruction utilizing a "traditional" approach and the experimental group received instruction using crossword puzzles. The instruction took place for 30 to 45 minutes a day for a period of 10 weeks. Each group was given the same words each week. These words were selected from the vocabulary words suggested in the Book I Teacher's Edition of the Lippincott Reading series being used by the school system.

An IQ test and pretest were given to both groups prior to the instructional period, a posttest was given immediately following the instructional period, and a retention test was given 3 weeks after the posttest.

#### Instruments and Method of Collecting Data

The World Book Dictionary Vocabulary Inventory for Grade 5, published by the Field Enterprises Educational Corporation, was used to obtain the pre, post, and retention test scores for each group. The Vocabulary Inventory is "based on the work of Dr. Edgar Dale and his associates at Ohio State University" (Kinsey, Note 1) and "the words included are designed to test the range of each person's vocabulary at the grade level indicated" (Barnhart, p. 42).

The Dictionary Vocabulary Inventory Tests were compiled from Dr. Dale's word lists, and the Dictionary editorial staff selected representative words for inclusion in our tests. Each vocabulary test includes words which fall within the norm for the grade level and also some words which are generally not understood until the next grade, so that the test constitutes a real challenge to students. (Kinsey, Note 1)

Dr. Dale's word list, compiled into the book entitled The Living Word Vocabulary: The Words We Know, "includes more than 43,000 items--each identified by a simple word meaning. . . . it also presents a percentage score on those words or terms familiar to students in grade levels 4, 6, 8, 10, 12, 13, and 16" (Dale & O'Rourke, 1976, preface). The percentage score, which was obtained

through extensive testing, indicates the percent of students at a particular grade level that understand the indicated meaning of the word. For example, for the word "bar" at the fourth grade level, 87% of the students should know the word as meaning a piece of soap or candy, while at the sixth grade level, 67% of the students know the word as meaning to block or a barrier. Dr. Dale points out in his appendix to the book that "scores listed between 67% and 84% are desirable" (Dale & O'Rourke, 1976, appendix), but since chance alone would give a score of 33%, any words scoring 50% or less would be considered too difficult for students at that particular grade level and would have to be reconsidered before using it. The Dictionary staff conducted special testing sessions to ensure reliability and validity.

The Vocabulary Inventory was administered by the researcher to both groups at the same time so that any instructions or comments would not bias the results. The Vocabulary Inventory was administered to both groups prior to the instruction as a pretest, immediately following as a posttest, and again 3 weeks after the instructional period as a retention test.

In this research, the Vocabulary Inventory was used to obtain a general vocabulary score for each student and the words on it were distinctly different from those used during the treatment.

The pretest and the Cognitive Abilities Test, published by Houghton Mifflin Company, were given prior to instruction to verify the comparability of the students in both groups since each heterogeneous class was grouped solely by the administration of the school system.

#### Method of Organizing Data

Once the tests were administered, the results were organized in tables showing the IQ test scores, pretest scores, posttest scores, and retention test scores. The mean, standard deviation, and t-test scores are presented.

The tables are set up to show (a) a comparison of the experimental group to the control group on the IQ test and pretest to establish the comparability of each, (b) a comparison of the experimental group to the control group on the posttest and retention test to summarize their differences after the instructional period, (c) a comparison of both group's vocabulary scores from pretest to posttest and posttest to retention test to summarize their vocabulary development, (d) a comparison of the test scores of the males and females of the experimental group to summarize their differences, and (e) a comparison of the experimental group to the control group at the various percentage levels of the test and the percent of students attaining the levels.

### Statistical Hypotheses

Three null hypotheses will be tested at  $p=.05$ . Also there will be a discussion relative to the question on the percent of students achieving certain percentage levels.

1. NULL: There will be no significant difference in general vocabulary scores as measured by the Vocabulary Inventory between those students receiving the "traditional" instruction and those receiving the crossword puzzle instruction, when tested immediately following instruction.

ALTERNATE: There will be a difference in general vocabulary scores as measured by the Vocabulary Inventory favoring the crossword puzzle approach, when tested immediately following instruction.

2. NULL: There will be no significant difference in general vocabulary scores as measured by the Vocabulary Inventory between those students receiving the "traditional" instruction and those students receiving the crossword puzzle instruction, when tested 3 weeks after the instruction.

ALTERNATE: There will be a difference in general vocabulary scores as measured by the Vocabulary Inventory favoring the crossword puzzle approach, when tested 3 weeks after instruction.

3. NULL: There will be no significant difference between the general vocabulary scores of the males and females in the experimental



group as measured by the Vocabulary Inventory, when tested immediately following the instruction and 3 weeks after instruction.

ALTERNATE: There will be a significant difference between the general vocabulary scores of the males and females in the experimental group as measured by the Vocabulary Inventory, when tested immediately following the instruction and 3 weeks after instruction.

PERCENTAGE LEVEL QUESTION: What percent of the students from each group attain 80% or better on the Vocabulary Inventory?

#### Analysis of Data

The three hypotheses were tested by the use of the student's t-test for independent samples. The pretest, posttest and retention test scores were recorded and analyzed. The percentage level question was described by presenting the various percentage levels and the percent of students attaining each level for both the experimental and control groups.

#### Precautions

Every precaution was taken to ensure accuracy of the results. The Sigma 7 computer at Montana State University was used for the data analysis using the Statistical Package for the Social Sciences (SPSS). Immediately after testing, each test was numbered to provide each student an anonymity and to assure that the results were unbiased by being unable to identify any student during and after analysis.



Mrs. Judy Colbert, the instructor of the control group, assisted in verifying the results of all tests.

### Summary

Two fifth grade classes in Townsend, Montana, were used in an experimental research project. An IQ test and a pretest were used to verify the comparability of the two groups. A posttest and retention test were also given to obtain vocabulary scores. To provide a measure of the student's general vocabulary level, a vocabulary instrument was chosen independent of the word lists in the instructional phase. The students received vocabulary instruction for 10 weeks with the control group using a "traditional" approach and the experimental group using a crossword puzzle approach. Each group received the same words to use each week. The retention test was administered 3 weeks after instruction was completed. The t-test was chosen to test 3 hypotheses. The null and alternate hypotheses were presented and an additional question was described relative to the percent of students who attained various percentage levels on the Vocabulary Inventory.

Reference Note

1. Kinsey, Max. Personal communication, August 23, 1977.

## Chapter 4

### Analysis

#### Introduction

The main purpose of this study was to compare the vocabulary development of two fifth grade groups using two methods of instruction. One group received a "traditional" approach and the other received a crossword puzzle approach. This chapter will analyze the data that was collected from the Vocabulary Inventory tests administered to both groups. It will be divided into sections for the discussion of the analysis related to the 3 hypotheses and the additional question.

The first section will describe the comparability of the two groups through an analysis of the IQ and pretests. The second section will describe the first and second hypotheses comparing the experimental and control groups' results on the post and retention tests. The third section will describe the third hypothesis which compares the males and females in the experimental group and their scores of the Vocabulary Inventory tests. The fourth section will present a description of the percent of students from each group that attained certain percentage levels on the tests.

#### Group Comparability

Since the administration of the school system had grouped the fifth grade students heterogeneously, it was believed the groups were

comparable, but the Cognitive Abilities Test and the pretest were administered to both groups to establish this comparability of groups. The mean of the control group on the IQ test was 1.42 points higher than the experimental group's mean (experimental  $M=104.38$ , control  $M=105.8$ ), but when tested at the .05 significance level, the small value of  $t$  ( $t=.38$ ) resulted in no significant difference. The standard deviations of the groups showed a difference of 1.71 with the control group having a larger spread (experimental  $SD=11.4$ , control  $SD=13.11$ ).

Using the Vocabulary Inventory as a pretest, the experimental group's mean was 1.38 points higher than the control group's (experimental  $M=63.31$ , control  $M=61.93$ ), but when tested at the .05 level of significance, the small value of  $t$  ( $t=.266$ ) resulted in no significant difference. The standard deviations show a difference with the control group having the larger spread (experimental  $SD=14.55$ , control  $SD=17.37$ ).

It is to be noted that there is a difference in the number of cases used on both tests. On the IQ test, in the experimental group, one student's IQ was not established. On the pretest, in the control group, two students were absent at the time the test was given and their scores were not recorded in the data analysis.

Since there was no significant difference between the two groups on either test, the research began with comparable groups.

Table 1

Means, Standard Deviations and t-scores  
on the IQ Test and Pretest

|                       | IQ Test   | Pretest   |
|-----------------------|-----------|-----------|
| Experimental<br>Group | M=104.38  | M=63.31   |
|                       | SD=11.4   | SD=14.55  |
|                       | N=21      | N=22      |
| Control<br>Group      | M=105.8   | M=61.93   |
|                       | SD=13.11  | SD=17.37  |
|                       | N=18      | N=16      |
|                       | t=.38     | t=.266    |
|                       | d of f=34 | d of f=36 |
|                       | p=.703    | p=.792    |

#### Vocabulary Change and Retention

The first null hypothesis tested was that there would be no significant difference in general vocabulary scores as measured by the Vocabulary Inventory between those students receiving the "traditional" instruction and those receiving the crossword puzzle instruction, when tested immediately following instruction. The alternate was that there would be a difference in general vocabulary

scores as measured by the Vocabulary Inventory favoring the cross-word puzzle approach, when tested immediately following instruction.

Table 2 presents the mean, standard deviation, and t-score for both groups from their results on the post and retention tests. The experimental group's mean scores (post  $M=68.75$ , retention  $M=67.86$ ) were higher on both tests than the control group's mean scores (post  $M=65.16$ , retention  $M=67.66$ ). The posttest resulted in the biggest difference of mean scores (3.59), while the retention test showed very little difference in mean scores (.20). The experimental group's standard deviations on both tests (post  $SD=10.3$ , retention  $SD=12.34$ ) indicated less variance in this group than in the control group (post  $SD=16.42$ , retention  $SD=15.41$ ). When the means of both groups were tested at the .05 level, the scores were not sufficiently different to yield a significant difference between the two groups (post  $t=.814$ , retention  $t=.448$ ). Therefore, the first null hypothesis is accepted. An acceptance of the null hypothesis means that the differences in the students' general vocabulary as measured by the Vocabulary Inventory could have occurred by chance. Again it is noted that the difference in N is due to the uncontrollable factor of absenteeism by the students at the time of testing and the resulting exclusion of these students' scores from this portion of the analysis.

The second null hypothesis tested was that there would be no significant difference in general vocabulary scores as measured by the Vocabulary Inventory between those students receiving the "traditional" instruction and those students receiving the crossword puzzle instruction, when tested 3 weeks after the instruction. The alternate was that there would be a difference in general vocabulary scores as measured by the Vocabulary Inventory favoring the crossword puzzle approach, when tested 3 weeks after instruction.

A study of the retention test section of Table 2 shows that the mean score of the experimental group ( $M=67.86$ ) was higher than the control group's mean score ( $M=67.66$ ), but only .20 of a point higher. The standard deviation of the experimental group's results ( $SD=12.34$ ) was narrower than the control group's standard deviation ( $SD=15.41$ ). The  $t$ -test ( $t=.448$ ), however, showed no significant difference between the two groups. Therefore, the null hypothesis is accepted. This acceptance means that the differences in vocabulary scores as measured by the Vocabulary Inventory could have occurred by chance.

Table 2

Post and Retention Means, Standard Deviations, and  
t-scores for the Vocabulary Inventory Tests

|                       | Posttest  | Retention Test |
|-----------------------|-----------|----------------|
| Experimental<br>Group | M=68.75   | M=67.86        |
|                       | SD=10.3   | SD=12.34       |
|                       | N=20      | N=22           |
| Control<br>Group      | M=65.16   | M=67.66        |
|                       | SD=16.42  | SD=15.41       |
|                       | N=18      | N=18           |
|                       | t=.814    | t=.448         |
|                       | d of f=36 | d of f=38      |
|                       | p=.421    | p=.964         |

Additional information on the Vocabulary Inventory results relative to changes in performance for each group is presented in Tables 3 and 4.

Table 3 presents information on the Vocabulary Inventory scores of both groups from the pretest to the posttest. The experimental group raised its mean score by 5.15 points (pre M=63.6, post M=68.75) and narrowed its standard deviation by 3.6 (pre SD=13.9, post SD=10.3).



The t-test ( $t=3.63$ ) proved the results to be significant at the .01 level. This means that, in the experimental group, a significant change in general level of vocabulary had occurred from the pretest to the posttest.

The control group also raised its mean score, but only by 2.75 points (pre  $M=61.93$ , post  $M=64.68$ ). Their standard deviation changed slightly (pre  $SD=17.38$ , post  $SD=17.42$ ) and the t-test ( $t=2.21$ ) showed the scores to be significant at the .05 level. This means that in the control group a significant change in the general level of vocabulary had occurred from the pretest to the posttest.

It is again noted that the entries are different in this table than previous tables due to the missing data on certain students during the testing periods.

Table 3

Pre to Post Means, Standard Deviations, and  
t-scores for Vocabulary Inventory Tests

|                       | Pretest  | Posttest |           |
|-----------------------|----------|----------|-----------|
| Experimental<br>Group | M=63.6   | M=68.75  | t=3.63**  |
|                       | SD=13.9  | SD=10.3  | d of f=19 |
|                       | N=20     | N=20     | p=.002    |
| Control<br>Group      | M=61.93  | M=64.68  | t=2.21*   |
|                       | SD=17.38 | SD=17.42 | d of f=15 |
|                       | N=16     | N=16     | p=.043    |

\*\*significant at .01 level

\*significant at .05 level

Table 4 presents the information on the change from posttest to retention test for both groups. The experimental group's mean score (post M=68.75, retention M=68.39) dropped slightly and the standard deviation increased slightly (post SD=10.3, retention SD=11.68). The t-test ( $t=-.335$ ) represented no significant difference in the scores when tested at the .05 level. This indicates that the experimental group's general level of vocabulary as measured by the Vocabulary Inventory did not change significantly. The control

group's results were different from the experimental's results on the post to retention analysis. The mean score increased by 2.5 points (post  $M=65.16$ , retention  $M=67.66$ ) and the standard deviation was narrower by 1.01 (post  $SD=16.42$ , retention  $SD=15.41$ ). The t-test ( $t=2.24$ ) was significant at the .05 level, indicating that the control group was able to significantly change their general level of vocabulary as measured by the Vocabulary Inventory.

Again the differences in this table are due to missing data on students absent during testing periods.

Table 4  
Post to Retention Means, Standard Deviations, and  
t-scores for Vocabulary Inventory Tests

|                    | Posttest   | Retention Test |            |
|--------------------|------------|----------------|------------|
| Experimental Group | $M=68.75$  | $M=68.39$      | $t=-.335$  |
|                    | $SD=10.3$  | $SD=11.68$     | d of f=19  |
|                    | $N=20$     | $N=20$         | $p=.741$   |
| Control Group      | $M=65.16$  | $M=67.66$      | $t=2.24^*$ |
|                    | $SD=16.42$ | $SD=15.41$     | d of f=17  |
|                    | $N=18$     | $N=18$         | $p.039$    |

\*significant at the .05 level

### Vocabulary Scores by Sex

The third null hypothesis was that there would be no significant difference between the general vocabulary scores of the males and females in the experimental group as measured by the Vocabulary Inventory when tested immediately following the instruction and 3 weeks after instruction. The alternate hypothesis was that there would be a significant difference between the vocabulary scores of the males and females in the experimental group as measured by the Vocabulary Inventory when tested immediately following the instruction and 3 weeks after the instruction.

Table 5 presents the mean, standard deviation and t-score of the males and females in the experimental group from their results on the pre, post, and retention tests. Again it is noted that due to the missing data on a couple of students, the N is different on this table than previous tables.

The females' mean scores were higher on all three tests (pre  $M=64.62$ , post  $M=72.57$ , retention  $M=68$ ) than the males' mean scores were (pre  $M=62.57$ , post  $M=66.69$ , retention  $M=67.78$ ). The posttest results showed the biggest difference between mean scores (5.88 points), while the retention test results showed the smallest difference (.22 of a point). On the pretest, the male group had a smaller standard deviation ( $SD=13.99$ ) than the females did ( $SD=16.38$ ).

The standard deviation was much closer together for both groups on the posttest with the male group having a standard deviation of 10.07, while the female group had a standard deviation of 10.34. The retention test standard deviation shows the male group again with a small spread ( $SD=11.96$ ), while the female group was larger ( $SD=13.84$ ). When the  $t$ -test was applied to both group's scores on all three tests, no significant difference between groups was shown (pre  $t=.311$ , post  $t=1.234$ , retention  $t=.382$ ). Therefore the null hypothesis is accepted. This means that within the experimental group, both the males' and the females' general vocabulary level as measured by the Vocabulary Inventory could have occurred by chance.

There was a tendency for the females to increase their general vocabulary level from the pretest to the posttest sharply and then level off 3 weeks after the posttest, while the males tended to increase their general vocabulary level gradually and reach approximately the same level as the females 3 weeks after the posttest. This sharp increase and the resulting small  $t$  values, however, may be attributed to the small  $N$ 's of the groups.

Table 5  
Comparison of Male and Female Test  
Scores in the Experimental Group

|         | Pretest   | Posttest  | Retention Test |
|---------|-----------|-----------|----------------|
| Males   | M=62.57   | M=66.69   | M=67.78        |
|         | SD=13.99  | SD=10.07  | SD=11.96       |
|         | N=14      | N=14      | N=14           |
| Females | M=64.62   | M=72.57   | M=68           |
|         | SD=16.38  | SD=10.34  | SD=13.84       |
|         | N=8       | N=6       | N=8            |
|         | t=.311    | t=1.234   | t=.382         |
|         | d of f=20 | d of f=18 | d of f=20      |
|         | p=.759    | p=.233    | p=.97          |

#### Percentage Level Question

The additional question asked in this research was what percent of the students from each group attained 80% or better on the Vocabulary Inventory.

Table 6 presents a breakdown of each group on each test according to the percent of students that were able to attain various

percentage levels on the Vocabulary Inventory Test. Again the N varies on two of the tests due to missing data on a couple of students.

On the pretest, 14% of the students in the experimental group were at the 90-100 percentage level and 18% were at the 80-89 percentage level, for a total of 32% at 80% or better. In the control group, 12% were at 90-100% and 25% were at 80-89%, for a total of 37% at the 80% level or better.

On the posttest, the experimental group had 35% at 80% or better with 15% at the 90-100% level and 20% at the 80-89% level. In the control group, 33% were at 80% or better with 28% at the 90-100% level and 5% at the 80-89% level.

On the retention test, the experimental group had 41% at 80% or better with 14% at 90-100% and 27% at 80-89%. The control group had 50% at 80% or better with 28% at 90-100% and 22% at 80-89%.

Some additional information relative to the percent of students attaining various levels can be presented by studying other percentage levels of Table 6.

In the experimental group, 100% of the students scored better than 50% on both the posttest and the retention test.

At the 70-79% level, both groups showed a similar change from the pretest to the posttest to the retention test. The experimental group had 23% at this level on the pretest, increasing to 40%

on the posttest and dropping down to 18% on the retention test. The control group had 19% on the pretest at the 70-79% level, raising to 34% on the posttest and dropping down to 17% on the retention test.

In the experimental group, the percent of students attaining 80% or better tended to gradually increase until almost one-half of the students attained 80% or better. In the control group, however, the percent of students attaining 80% or better dropped slightly immediately following instruction, but increased sharply until one-half of the students had attained 80% or better 3 weeks after instruction.

The percent of students at the 70-79% level on the Vocabulary Inventory changed similarly for both groups on each of the tests. On the pretest about one-fifth of the students from each group were at this level, while on the posttest, better than one-third were at this level. On the retention test, the number of students from each group at this level had dropped back down to about one-fifth.

Also, the experimental group had all of the students attain better than 50% on the post and retention tests.



Table 6  
Percent of Students at Various Percentage  
Levels on Pre, Post, and Retention Tests

| Percentage Level | Pre  |      | Post |      | Retention |      |
|------------------|------|------|------|------|-----------|------|
|                  | Exp  | Cont | Exp  | Cont | Exp       | Cont |
| 90-100           | 14   | 12   | 15   | 28   | 14        | 28   |
| 80-89            | 18   | 25   | 20   | 5    | 27        | 22   |
| 70-79            | 23   | 19   | 40   | 34   | 18        | 17   |
| 60-69            | 22   | 19   | 20   | 5    | 27        | 11   |
| 50-59            | 14   | 6    | 5    | 11   | 14        | 16   |
| Less than 50     | 9    | 19   | 0    | 17   | 0         | 6    |
|                  | N=22 | N=16 | N=20 | N=18 | N=22      | N=18 |

#### Summary

The data were analyzed, three null hypotheses were tested, an additional question was asked, and discussion on each was presented.

The groups were compared to establish some similarities prior to the experimental phase of the research. A Cognitive Abilities and a pretest were utilized and the results showed no significant difference between the two groups.

The results presented from the posttest and retention test showed no significant difference between the groups on their

vocabulary as measured by the Vocabulary Inventory. No significant difference was found between the two groups on their retention test results.

Both groups showed significant changes in their general vocabulary levels from the pretest to the posttest. The control group showed a significant change in its general vocabulary level from the posttest to the retention test, while the experimental group showed no significant change in its general level of vocabulary.

There was no significant difference in the vocabulary scores of the males and females in the experimental group after their results were analyzed.

The percent of students in the experimental group that attained 80% or better gradually increased to almost one-half on the retention test, while the percent of students in the control group dropped slightly on the posttest, but increased sharply to one-half on the retention test.

Both groups showed similar changes in the percent of students attaining 70-79% on each of the tests. There was a sharp increase from the pretest to the posttest and a sharp decrease from the posttest to the retention test.

The experimental group had 100% of the students at 50% or better on the posttest and retention test.

## Chapter 5

### Conclusions and Recommendations

Vocabulary development techniques are used to give students various experiences with words and to attempt to increase their vocabulary. A need was determined to study the crossword puzzle as one technique for vocabulary development. An experiment was designed at the fifth grade level in a small school district in Montana to study the effects of crossword puzzles on general vocabulary as compared to a "traditional" approach.

Review of the literature indicated the importance of having an extensive vocabulary. The literature suggests that students with broad vocabularies are better students, and vocabulary is important in reading comprehension, other academic areas, and society as well.

Many varied vocabulary development experiences are suggested, but the literature does not indicate any single method as being most effective. The suggestion is made that more information on the applicability of individual vocabulary techniques at various grade levels is needed.

One such technique of vocabulary development is the crossword puzzle. The literature suggests that crossword puzzles should be interesting, stimulating, and hold children's attention. They offer students a challenge, a chance to practice their spelling, and enables them to classify and generalize. The crossword puzzle

is a potentially effective learning activity as one part of an extensive vocabulary development program.

The experimental research project was set up in Townsend, Montana, with the two fifth grade classes used as the experimental and control groups. An IQ test and a pretest were used to verify the comparability of the two groups. A posttest and retention test were also given to obtain general vocabulary scores. To provide a measure of the students' general vocabulary level, the instrument was chosen independent of the word lists used in the instructional phase of the experiment. The students received vocabulary instruction for 10 weeks with the control group using a "traditional" approach and the experimental group using a crossword puzzle approach. Each group worked with the same word list each week. The posttest was administered immediately following instruction and the retention test, 3 weeks after instruction was completed.

The data were analyzed and tested by the t-test. The tables and discussion of them summarized the results of the experiment.

### Conclusions

Relative to the study, four questions were to be answered. Hypotheses and a question were formulated around these questions. The discussion that follows each question is based on the results of the experiment.

The first question considered whether the crossword puzzle approach to specific vocabulary instruction improves the general vocabulary scores of fifth grade students.

The Cognitive Abilities Test and a pretest were used to establish a comparability of the experimental and control groups. A t-value of .38 on the Cognitive Abilities Test and a t of .266 on the pretest indicated no significant differences between the two groups. Based on these values, it can be stated that the experiment started with comparable groups.

The first null hypothesis dealt with the differences between the two groups when tested immediately following instruction. It was accepted on the basis of the t-score of .814 that indicated no significant difference between the scores of the two groups. The differences that were seen could have occurred by chance. Thus, these results seem to indicate that the crossword puzzle technique of vocabulary instruction has a minimal advantage over the "traditional" approach on the general vocabulary scores of the students immediately following instruction.

The second question considered whether, after three weeks following the instruction, there were differences in the stability of general vocabulary scores of students receiving instruction with crossword puzzles and those receiving "traditional" instruction.

The second null hypothesis considered itself with these differences in stability between the two groups. It, also, was accepted on the basis of the t-score ( $t=.448$ ). This indicated no significant difference between the two groups and any differences that were seen occurred by chance. Again, the results seem to indicate that 3 weeks after instruction, the general vocabulary scores of the students in the crossword puzzle group were nominally higher than those in the "traditional" group. Thus, there seems to be no advantage in using the crossword puzzle approach for general vocabulary development after a long period of time.

Additional information about each group's performance on the pretest, posttest, and retention test indicated some significant changes within each group. With a  $t$  of 3.63, the experimental group showed a significant change in its general vocabulary level from the pretest to the posttest. The control group also showed a significant change based on the results of these two tests. Its  $t$  value was 2.21. These results indicate that during the instructional phase of the experiment, the crossword puzzle has a significant effect on the general vocabulary scores. There was also significant growth in the general vocabulary scores of the "traditional" group. Thus, the crossword puzzle technique does seem to have some merit as a viable activity for vocabulary instruction.

The examination of the post and retention test scores showed the control group had made a significant change in its general vocabulary level as indicated by a t-score of 2.24. The experimental group, on the other hand, did not significantly change its general vocabulary level as indicated by a t of  $-.355$ . These results seem to indicate that the general vocabulary level of students follows a stable pattern and that a specific type of vocabulary instruction may have a short term effect on it and when instruction ceases, the general vocabulary returns to the stable pattern. Thus, by utilizing various techniques teachers might possibly increase students' vocabularies effectively.

The third question to be answered relative to the study was concerned with the differences in the general vocabulary scores of males and females receiving the crossword puzzle instruction.

In the comparison of the general vocabulary scores of the males and females of the experimental group, no significant differences could be found when tested immediately following instruction and 3 weeks after. The t-score on the pretest was  $.311$ ; on the posttest,  $1.234$ ; and on the retention test,  $.382$ . Any differences noted could have occurred by chance. Therefore, the results from this comparison seem to indicate that within the experimental group, the general vocabulary scores follow a stable pattern and are not significantly effected by a crossword puzzle type of instruction. However, the comparison revealed an additional pattern.



The females showed a sharp increase in their general vocabulary level and then leveled off 3 weeks after the posttest, while the males gradually increased their general vocabulary level to approximately the same as the females. These increase patterns seem to indicate that initially the crossword puzzle approach has a more favorable effect on the females than it does the males. The sharp increase and small  $t$  values could also be attributable to the small  $N$ 's of the group.

The fourth question was concerned with the difference between the two groups pertaining to the percent of students attaining 80% or better on vocabulary tests. A question was formulated on this basis.

In the experimental group, the percent of students gradually increased until almost one-half (41%) were attaining 80% or better 3 weeks after the instructional phase was completed. In the control group, however, the percent of students dropped slightly immediately following instruction but increased sharply until one-half (50%) were attaining 80% or better 3 weeks after instruction. Therefore, the stability of general vocabulary scores of students is indicated. The general vocabulary level follows a stable pattern and any specific instructional technique seems only to have a short term effect on this pattern. Thus, a multiple technique approach to vocabulary instruction could possibly be most beneficial.



A final conclusion can be reached based upon the personal observations and notes of the researcher made during the ten-week instructional period. The students in the experimental group showed no indications of being bored with the crossword puzzles and maintained a high interest in solving them. Thus, usage of crossword puzzles on a weekly basis seems to indicate a favorable aspect for this type of vocabulary instruction.

#### Recommendations

Based on the results of the study and the conclusions made, the following recommendations are made:

1. For Instructional and Curriculum Development:

Since the crossword puzzle method of instruction did not have a negative effect on either the general vocabulary level or as a student motivator, it seems reasonable to recommend inclusion of this activity in the curriculum.

Based on the recommendations from the literature, the results of the experiment, and the personal observations of the researcher, it is recommended that the crossword puzzle be used as part of a multiple technique approach to vocabulary instruction. Using several different techniques and varying them throughout a scheduled time period, a teacher might be able to maintain a high interest level among the students and could possibly increase students' general vocabulary levels more than by using one method all the time.

Also recommended is the use of a learning center type of instruction where students would be given a choice of optional activities such as crossword puzzles. A different type of instruction might work better for some students than others, so allowing students a choice of instructional activities might challenge them more effectively and maintain high interest.

## 2. For Further Research:

The stability pattern of the general vocabulary level that was observed from the results of this study could be used as a basis for future studies. The pattern should be studied to see if the short term effect was similar when using different techniques. A study of this type could be of great value for determining the effectiveness of specific instructional techniques on general vocabulary.

The general vocabulary pattern of the males and the females observed in the experimental group could also have indications for future studies.

Another research study recommended is in the area of maximizing the effect of specific vocabulary instruction on the general vocabulary pattern. How can we utilize specific vocabulary techniques to maintain a constant increase in the students' general vocabulary level?

Another recommended research area would concern the multiple technique approach versus the single approach. It could be done to

study specific and/or general vocabulary levels. It is also recommended that these studies be done with specific grade levels.

This study was not concerned with the specific vocabulary knowledge of students, so a study should be designed that would test the long and short term effect of specific vocabulary instruction using the crossword puzzle approach. An instrument would have to be constructed around the specific vocabulary to test the effectiveness of the technique.

A final area for possible research would be the development of a student attitudinal and preference inventory toward specific vocabulary techniques. It could be used to determine how teachers could meet their preferences.

### Summary

Based on the suggestions of various authors and the results of this study, some conclusions concerning the crossword puzzle as a vocabulary development technique were established.

Although the crossword puzzle technique had a minimal advantage over a traditional approach on the general vocabulary level of the students, it seemed to have some positive effects on their motivation and interest and was a successful activity. It was recommended that this type of instruction be utilized as part of a multiple technique approach to vocabulary development.

Further research areas were also recommended, some of which are studying the stability pattern of the general vocabulary level, determining the maximum effectiveness of specific vocabulary on the general vocabulary pattern and studying the multiple technique approach as opposed to a single approach.

Students' vocabularies are very important in all aspects of their educational process. The development of an extensive vocabulary can be a benefit to each student and to society. The crossword puzzle could be a potentially effective part of this development. It provides students with an opportunity to broaden their vocabulary in an interesting and challenging manner. Success in life could be determined by the extent of a student's vocabulary and the crossword puzzle could be an enjoyable and challenging way to develop it.

## APPENDICES

## APPENDIX A

### LETTER TO PARENTS

October 4, 1977

Dear Fifth Grade Parents:

As part of my Master's thesis, I will be conducting research with the 5th grade class to determine the effectiveness of crossword puzzles as a technique of vocabulary development.

The research will consist of two techniques of vocabulary development: 1) a traditional approach where students define vocabulary words and use them in sentences and 2) a crossword puzzle approach where students will put the vocabulary words into a crossword puzzle from their definitions.

If you have any questions concerning your child's participation in the research or if you want to know more about it, please feel free to contact me at school (3942) or at home (5507).

If you wish to see the results of my research, it will be available sometime in January and you could contact me then.

Sign below and return this letter as soon as possible.

Thank you for your cooperation.

Fred J. Ranney

\_\_\_\_\_  
Parent's Signature

\_\_\_\_\_  
Date

## APPENDIX B

### VOCABULARY INVENTORY

Number \_\_\_\_\_

Date \_\_\_\_\_

DIRECTIONS: For each of the words listed below, circle the best definition.

- |                                                                        |                                                                        |
|------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. outstanding<br>a) important<br>b) difficult<br>c) certain           | 8. vanish<br>a) miss<br>b) disappear<br>c) paint                       |
| 2. forbidden<br>a) not allowed<br>b) not clear<br>c) not thoughtful    | 9. enjoyable<br>a) pleasant<br>b) hurtful<br>c) hopeful                |
| 3. bleach<br>a) rip apart<br>b) rub together<br>c) make whiter         | 10. penalty<br>a) gain<br>b) rule<br>c) punishment                     |
| 4. nasty<br>a) not pleasant<br>b) rainy<br>c) healthy                  | 11. truthful<br>a) honest<br>b) frightened<br>c) guilty                |
| 5. sorrowful<br>a) sad<br>b) alone<br>c) mean                          | 12. unsafe<br>a) unlocked<br>b) dangerous<br>c) free of charge         |
| 6. suggestion<br>a) weak excuse<br>b) strict order<br>c) possible idea | 13. zone<br>a) shiny metal<br>b) definite place<br>c) cold air         |
| 7. transfer<br>a) change over<br>b) rub out<br>c) buy                  | 14. advice<br>a) helpful<br>b) unwanted information<br>c) bad decision |

15. combine
  - a) discuss in detail
  - b) join together
  - c) cut apart
16. difficult
  - a) unusual
  - b) simple
  - c) hard
17. effort
  - a) sharp tool
  - b) hard try
  - c) small insult
18. consult
  - a) behave well
  - b) eat up
  - c) seek advice
19. normal
  - a) insane
  - b) funny
  - c) usual
20. notice
  - a) skip
  - b) tell
  - c) see
21. press
  - a) repair
  - b) squeeze
  - c) turn
22. recall
  - a) misplace
  - b) remember
  - c) forget
23. equip
  - a) sell
  - b) give
  - c) furnish
24. greedy
  - a) needing to be cleaned
  - b) wanting too much
  - c) going too fast
25. similar
  - a) alike
  - b) distant
  - c) well-dressed
26. adulthood
  - a) average size
  - b) full growth
  - c) admission price
27. modern
  - a) up-to-date
  - b) official
  - c) regular
28. rude
  - a) not polite
  - b) not sincere
  - c) too proud
29. cruelty
  - a) dishonesty
  - b) deep regret
  - c) unkind treatment
30. defend
  - a) refuse to attend
  - b) search for weapons
  - c) guard from harm
31. forgiveness
  - a) shame
  - b) pardon
  - c) approval
32. furious
  - a) careless
  - b) angry
  - c) sad



33. identify  
a) try  
b) guess  
c) recognize
34. luxury  
a) bad bargain  
b) extra comfort  
c) necessary purchase
35. objectionable  
a) disagreeable  
b) additional  
c) lovable
36. anxious  
a) inactive  
b) sure  
c) eager
37. excellence  
a) below average  
b) one of many  
c) rare goodness
38. dramatize  
a) talk about  
b) act out  
c) change over
39. flexible  
a) very strong  
b) easily bent  
c) higher than others
40. expand  
a) make larger  
b) release pressure  
c) tighten up
41. gossip  
a) unfriendly talk  
b) happy event  
c) complete explanation
42. paralyze  
a) act slowly  
b) make powerless  
c) speed up
43. pledge  
a) promise  
b) request  
c) faith
44. replacement  
a) ruined material  
b) substitute  
c) worn part
45. unfamiliar  
a) not well-known  
b) much the same  
c) connected to another
46. unsatisfactory  
a) not good enough  
b) man-made  
c) more than needed
47. clatter  
a) evil talk  
b) slow movement  
c) confused noise
48. carefree  
a) without authority  
b) honest  
c) without worry
49. delay  
a) tie together  
b) shake slowly  
c) put off until later
50. powerless  
a) unsure  
b) tired  
c) weak

51. postpone  
a) delay  
b) send  
c) quit
52. threat  
a) reasonable request  
b) helpful offer  
c) possible harm
53. amuse  
a) make smile  
b) strike back  
c) treat badly
54. boldness  
a) seriousness  
b) good sense  
c) courage
55. compress  
a) squeeze together  
b) take prisoner  
c) stretch out
56. grief  
a) sorrow  
b) fear  
c) excitement
57. simplify  
a) smooth out  
b) make easier  
c) figure out
58. account  
a) something extra  
b) short term  
c) business record
59. deadline  
a) end of a race  
b) time limit  
c) fishing equipment
60. unmerciful  
a) serious  
b) thankful  
c) cruel
61. bewilder  
a) lose  
b) puzzle  
c) put aside
62. attractive  
a) different  
b) pleasing  
c) unusual
63. opinion  
a) purpose  
b) belief  
c) test
64. secure  
a) inspect  
b) loosen  
c) fasten
65. discourage  
a) spend foolishly  
b) talk at length  
c) lessen hope
66. generally  
a) in part  
b) usually  
c) entirely
67. ambition  
a) desire for success  
b) fear of others  
c) lack of confidence
68. advisable  
a) honest  
b) useless  
c) wise

69. condemn  
a) consider guilty  
b) forget  
c) knock down
70. motto  
a) nickname  
b) story  
c) saying
71. accomplish  
a) seek  
b) finish  
c) hope for
72. distress  
a) trouble  
b) debate  
c) sadness
73. victorious  
a) has won  
b) has fought  
c) has watched
74. pace  
a) price  
b) silence  
c) rate
75. reasonableness  
a) foolish for no reason  
b) making good sense  
c) ability to work
76. captivity  
a) officer's rank  
b) being held against one's will  
c) goods taken illegally
77. ignorance  
a) knowing little  
b) belief of everything  
c) goal to work for
78. advertisement  
a) paid announcement  
b) newspaper essay  
c) life story
79. blunder  
a) stupid mistake  
b) loud noise  
c) low hedge
80. reexamine  
a) solve without doubt  
b) prove by reason  
c) test again
81. brutal  
a) cruel  
b) large  
c) clever
82. visual  
a) can be divided  
b) can be heard  
c) can be seen
83. exile  
a) bring supplies  
b) send from country  
c) wear away
84. fragile  
a) lovely  
b) heavy  
c) weak
85. eternal  
a) ending quickly  
b) rushing wildly  
c) lasting forever
86. amendment  
a) short discussion  
b) change in a law  
c) minutes of a meeting

87. confederation  
a) act of conquering  
b) states joined together  
c) disagreement among partners
88. prosperous  
a) happy  
b) successful  
c) poor
89. rouse  
a) wake up  
b) soak with water  
c) speak quietly
90. confused  
a) set apart  
b) mixed up  
c) acting natural

## APPENDIX C

### CROSSWORD PUZZLES

ESTEBAN

#### ACROSS

1. troublesome
6. greenish-blue semi-precious stones
7. kind of spiders
8. shouted
10. hot land near the Equator (2 words)
12. spread around
13. tropical storm
16. animals like woodchucks (2 words)
18. amazing
19. vultures

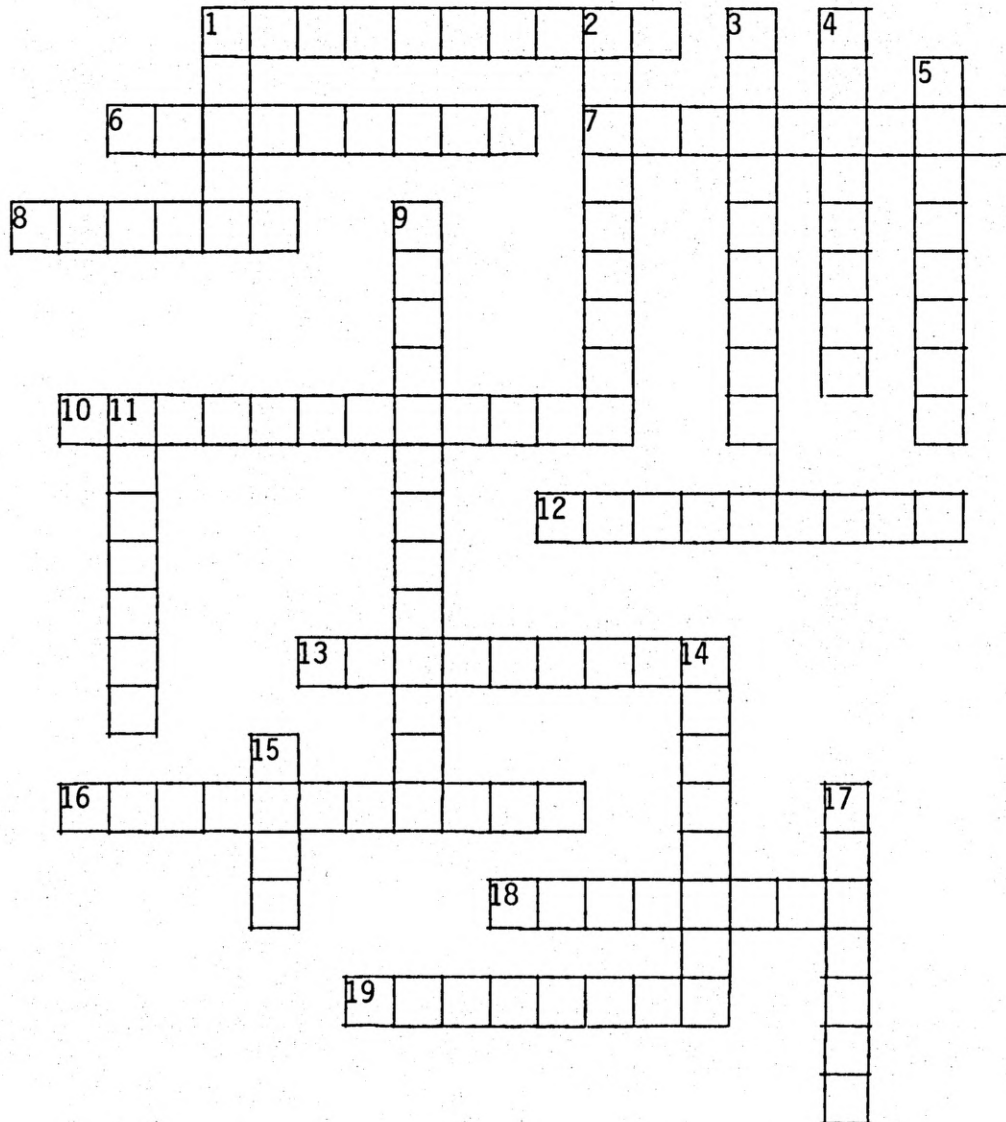
#### DOWN

1. dry; not able to produce anything
2. killed
3. persons left alive
4. main part of the continent
5. priceless; beyond measure
9. injured or marked in battle
11. real life
14. bright green precious stones
15. journey
17. unfriendly

#### Word List

emeralds  
turquoise  
tropical land  
hurricane  
mainland  
hostile  
bothersome  
howled  
survivors  
fabulous  
trek  
barren  
buzzards  
scorpions  
prairie dogs  
reality  
circulate  
massacred  
battle-scarred  
invaluable

ESTEBAN



## ADVENTURES OF NEGRO COWBOYS

ACROSS

1. evil; wicked
5. keep away from
6. series of connected activities  
to do or get something
9. cut or tear roughly
10. destroying; causing destruction
11. a start; a beginning
12. trouble or disturb in large numbers

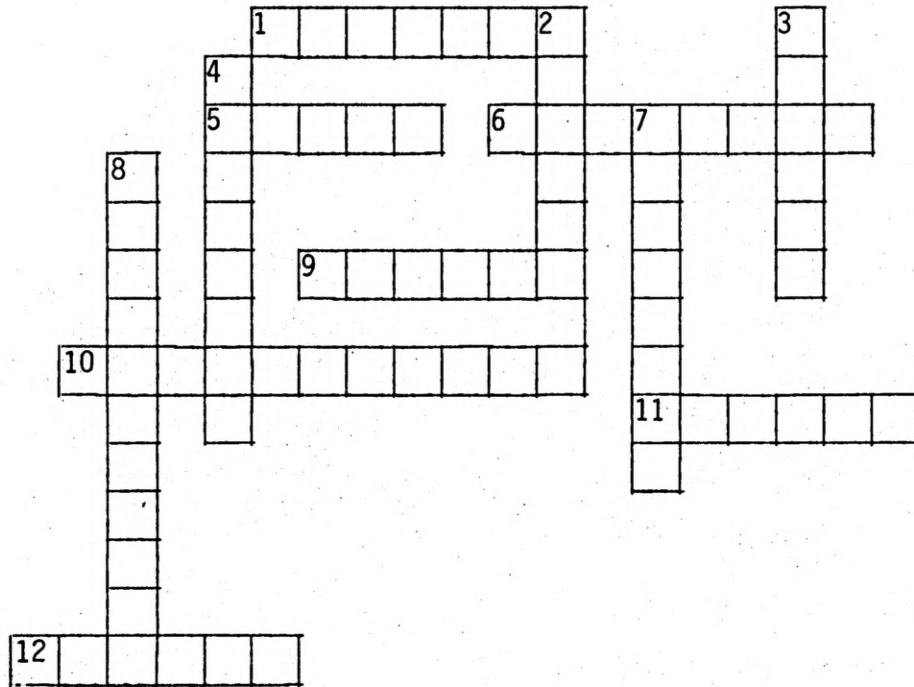
DOWN

2. a sudden headlong flight of animals
3. obstinate; persistent
4. the greater number or part
7. an animal that hunts other animals
8. a timber wolf

Word List

infest  
loafer wolf  
destructive  
predator  
mangle  
avoid  
vicious  
stampede  
campaign  
outset  
majority  
dogged

## ADVENTURES OF NEGRO COWBOYS





## DIME'S WORTH FOR FREE

ACROSS

4. essentials, basics
7. really; almost; nearly
9. very great pain or grief
11. a shop selling prepared foods
14. goods for sale
15. spoke in a sharp, angry tone

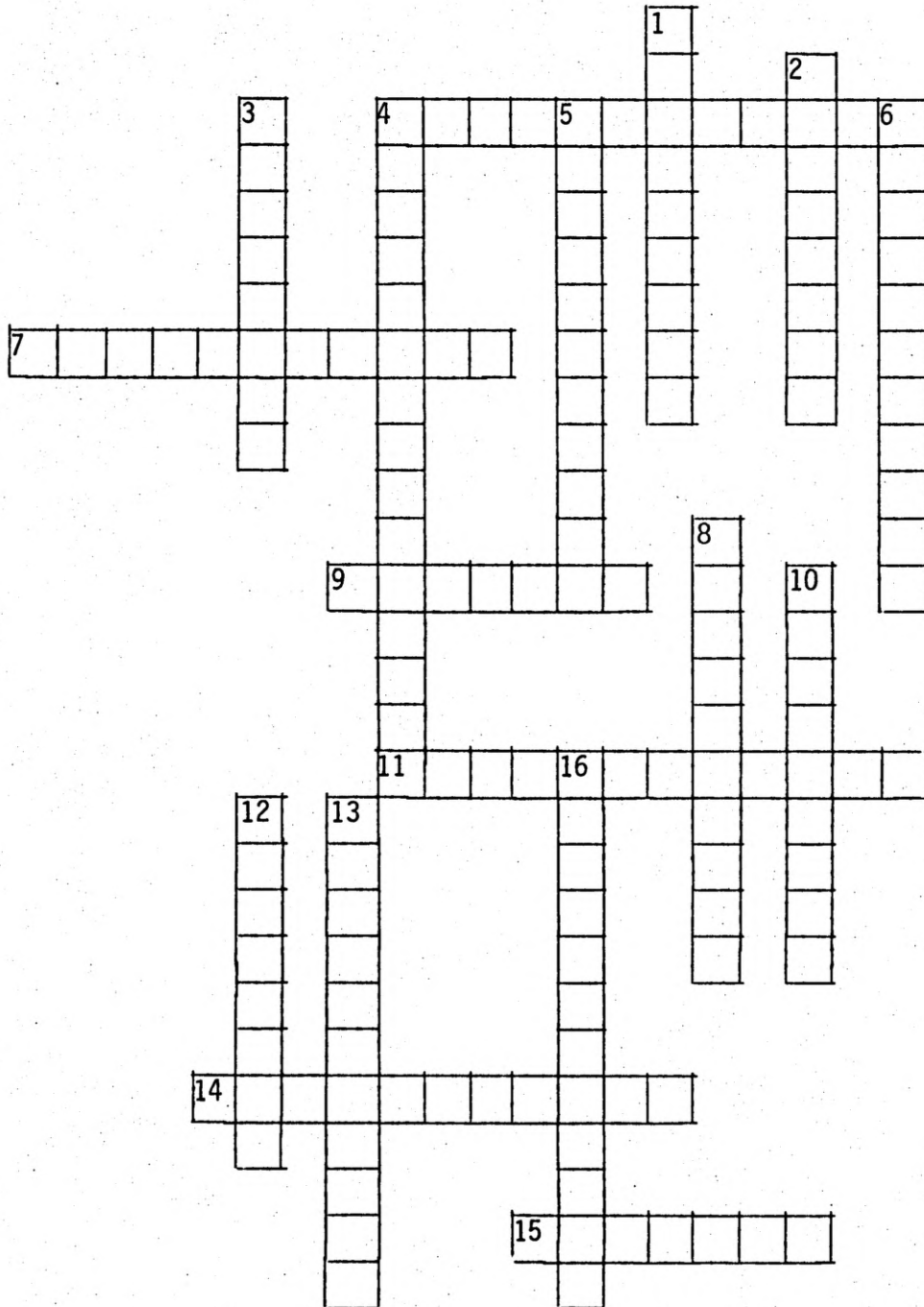
DOWN

1. remains of something destroyed
2. small water fall
3. discussing with someone who disagrees
4. weak in mind; lacking normal intelligence
5. having strong desire for fame
6. crushed; squeezed
8. speaking low; grumbling
10. having ones hair stand on end
12. say words in haste or confusion
13. polite
16. finding fault

Word List

feeble-minded  
ambitious  
practically  
fundamentals  
delicatessen  
complaining  
arguing  
bristled  
muttering  
respectful  
snarled  
cascade  
anguish  
scrunched  
wreckage  
sputter  
merchandise

## DIME'S WORTH FOR FREE



## BALTO'S RACE WITH DEATH

ACROSS

2. outside of something
3. infection of the throat
6. journey on foot with dog sled
7. brave
9. used great effort
11. plunge forward
12. skin of fur seal prepared for use
15. dim, like a shadow
16. strong, firm
17. climbing, crawling

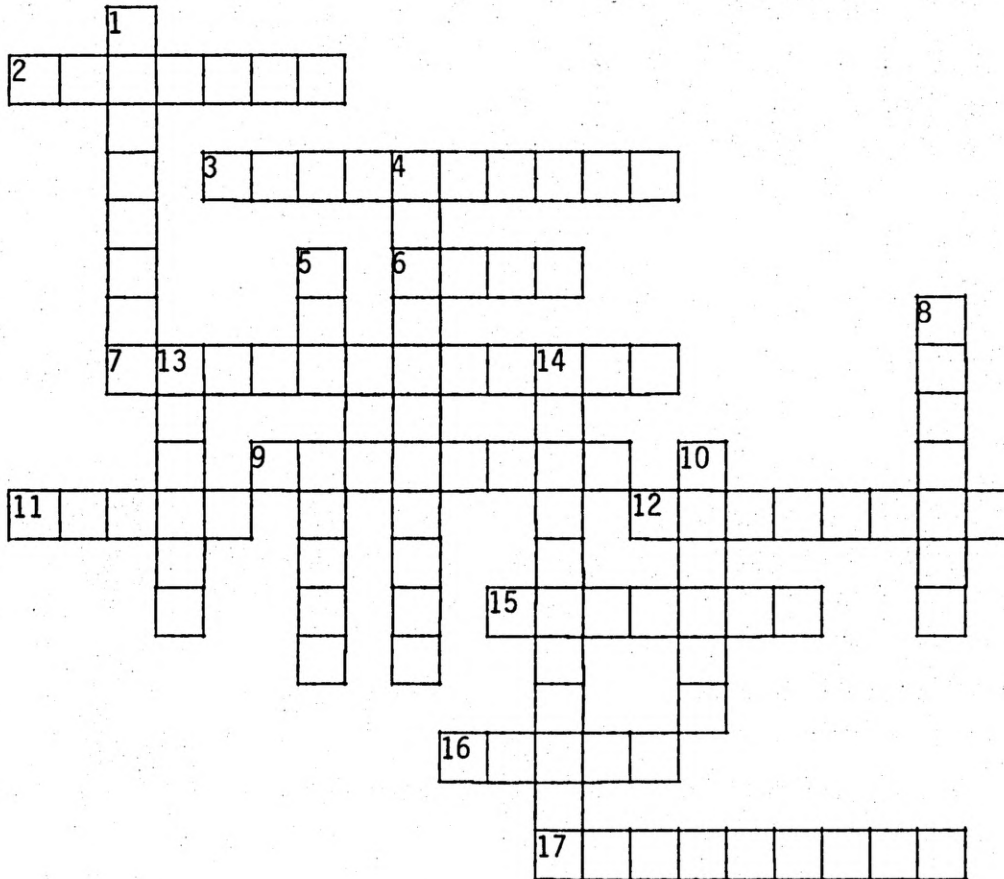
DOWN

1. having great value
4. degree of heat or cold
5. medicine to cure disease
8. very bright; dazzling
10. brave
13. two straps for pulling
14. not trusted

Word List

diphtheria  
antitoxin  
precious  
stout  
temperature  
surface  
shadowy  
pitch  
treacherous  
stouthearted  
scrambled  
mush  
sealskin  
strained  
heroic  
glaring  
traces

## BALTO'S RACE WITH DEATH



## FREDDIE APPLEGATE

ACROSS

4. a group of Eastern Indians
7. very great
10. platform for loading ships
12. completely
13. slow moving ice
16. machine for moving and lifting
17. something that adds flavor

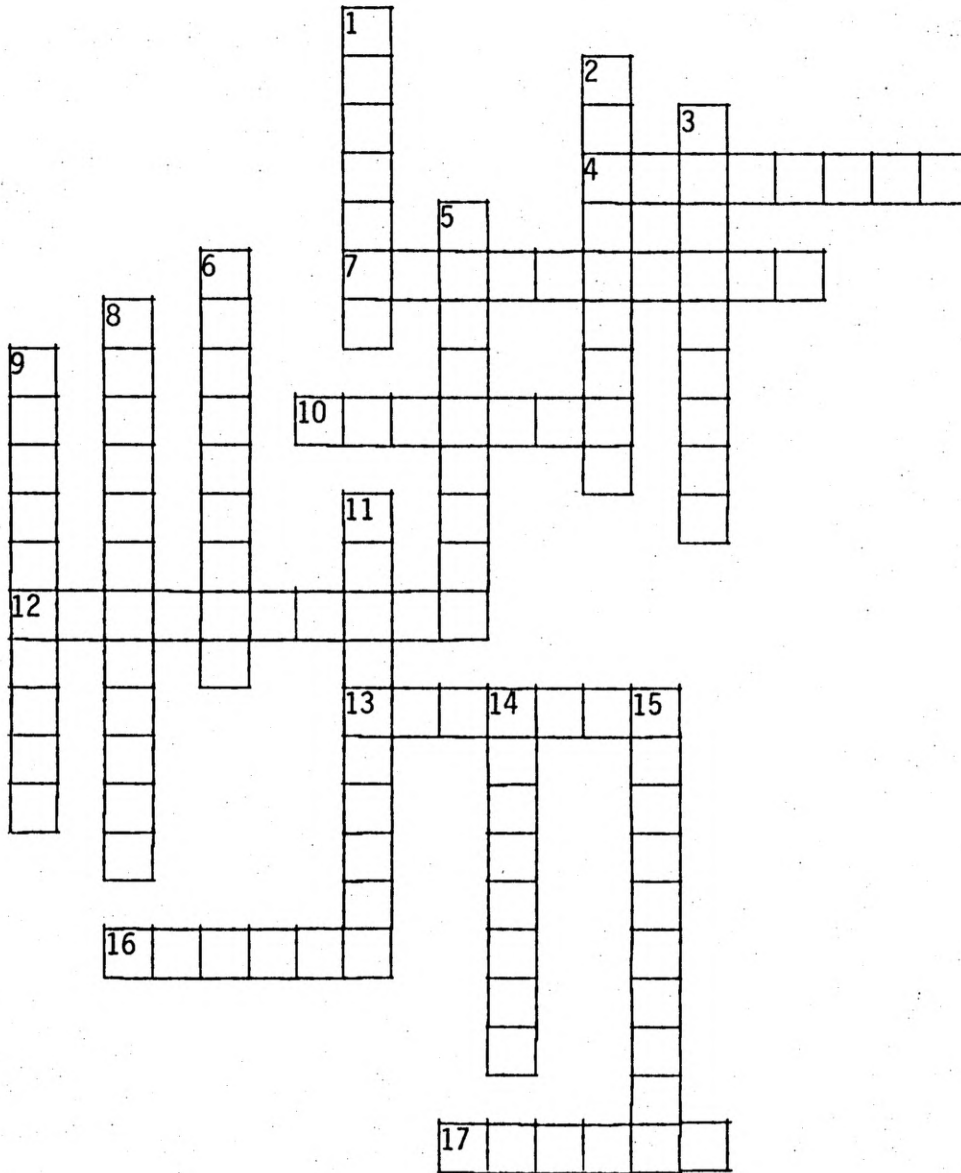
DOWN

1. weak; liable to breakdown
2. expert person in science
3. settlers
5. study of the earth's features
6. showing steady effort
8. making a business or trade
9. not together
11. ship carrying freight
14. fresh-water shellfish
15. sensible; not foolish

Word List

freighters  
absolutely  
cranes  
scientist  
wharves  
separately  
glacier  
spices  
Iroquois  
rickety  
crayfish  
professional  
tremendous  
geography  
colonists  
patiently  
reasonable

## FREDDIE APPLEGATE



## CLARA BARTON

ACROSS

2. foodfish found in Atlantic Ocean
3. several companies of soldiers
7. holding out; bearing up
8. permission with authority
10. moved unsteadily
12. shook because of fear
13. speech; planned talk
15. get together and arrange
16. lack of food someplace
17. defeat of an opponent
18. oversee and direct
21. food
22. uneasy and awkward near strangers
23. title of honor

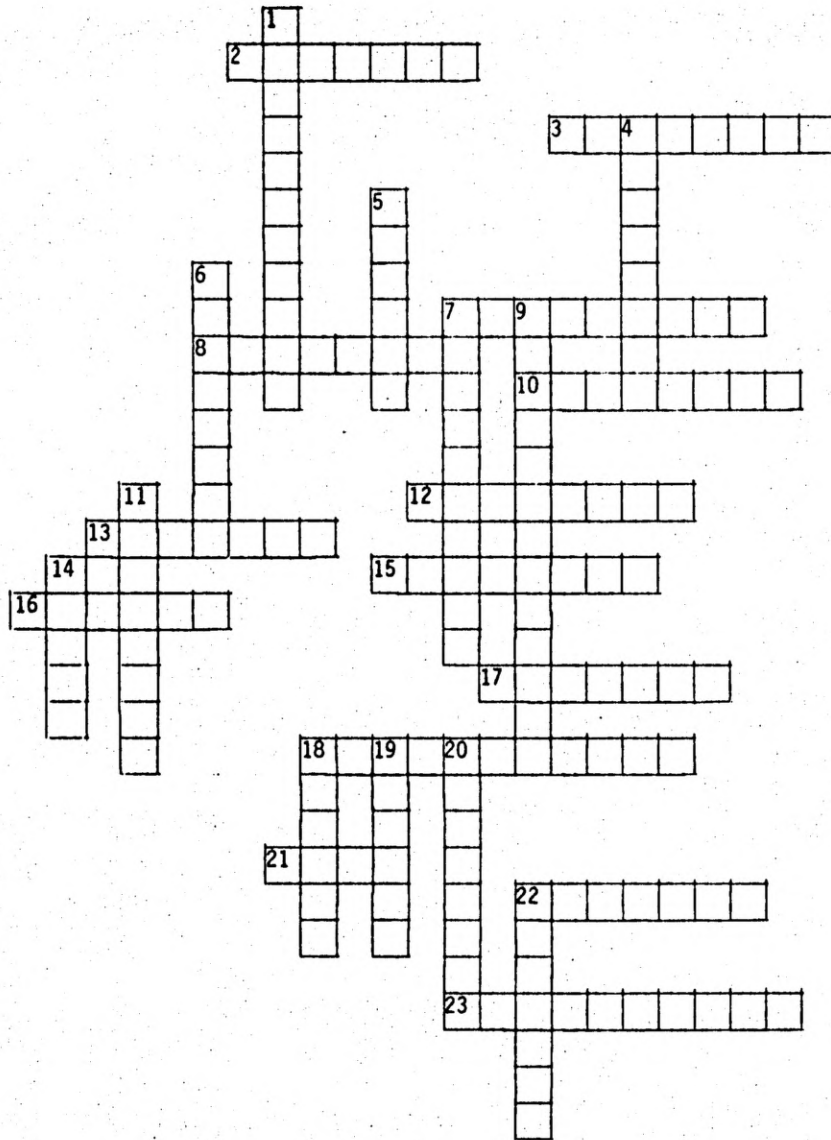
DOWN

1. looking dangerous or unpleasant
4. brave; noble in spirit
5. very brave; noble
6. person living in a place
7. give hope; urge on
9. great firmness in carrying out purpose
11. gave up; submit
14. rows of soldiers; grade
18. drew back
19. grant to person for only one invention
20. an answer by word or act
22. railroad freight cars

Word List

bashful  
boxcards  
codfish  
determination  
encouraged  
endurance  
excellency  
famine  
fare  
forbidding  
gallant  
heroic  
lecture  
organize  
patient  
ranks  
regiment  
resident  
resigned  
response  
sanction  
shrank  
superintend  
teetered  
trembled  
victory

## CLARA BARTON





## COSMIC COMIC

ACROSS

4. a lustrous, hard, brittle metal
7. beyond belief
10. causing to believe; persuading by proof
12. the main office
13. a person's initials combined in one design
15. each; for each one
16. huge, gigantic; vast
20. applied, stained; painted unskillfully
21. terrible; dreadful; frightful; shocking
22. well-known because of something bad
23. warned
24. withstood; resisted; challenged

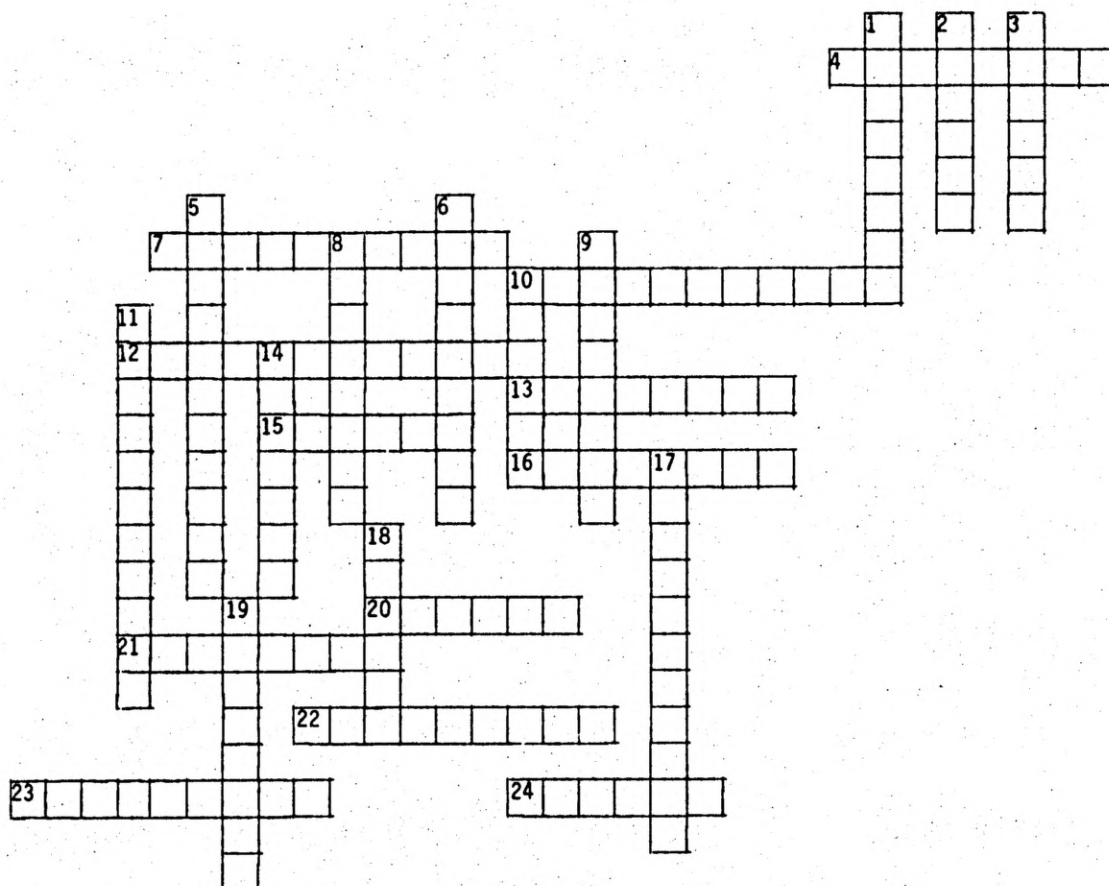
DOWN

1. moving with a humming sound
2. a substance used in medicine, photography and in making dyes
3. wicked person
5. one of several parts issued at different times
6. the forces of the air
8. the material used in blasting rocks
9. straighten out
10. having to do with the whole universe
11. the process of producing images by light
14. shaking tremendously
17. having a shape that is least resistant to air
18. bashful; shy
19. a person who has committed a crime

Word List

cautioned  
 installment  
 chromium  
 colossal  
 defied  
 modest  
 headquarters  
 incredible  
 criminal  
 untangle  
 whizzing  
 daubed  
 streamlined  
 monogram  
 horrible  
 cosmic  
 villain  
 elements  
 notorious  
 photography  
 iodine  
 quavery  
 convincing  
 dynamite  
 apiece

## COSMIC COMIC



## NIGHT BEFORE CHRISTMAS BOY

ACROSS

1. settled cozily
7. things seen in dreams
9. odd and amusing
10. hair from a horse
15. holders for candles
17. boats carrying mail, passengers, etc.
19. swift horses
21. brown metal made from copper and tin
22. split or broken into tiny pieces
24. shelf above a fireplace
25. a group of buildings and the people living there
27. fear
28. moving forward orderly
29. pen made from a goose feather
32. movable covers for windows
33. frame for the glass of a window
35. handkerchief
36. four British pennies
37. officer of a church

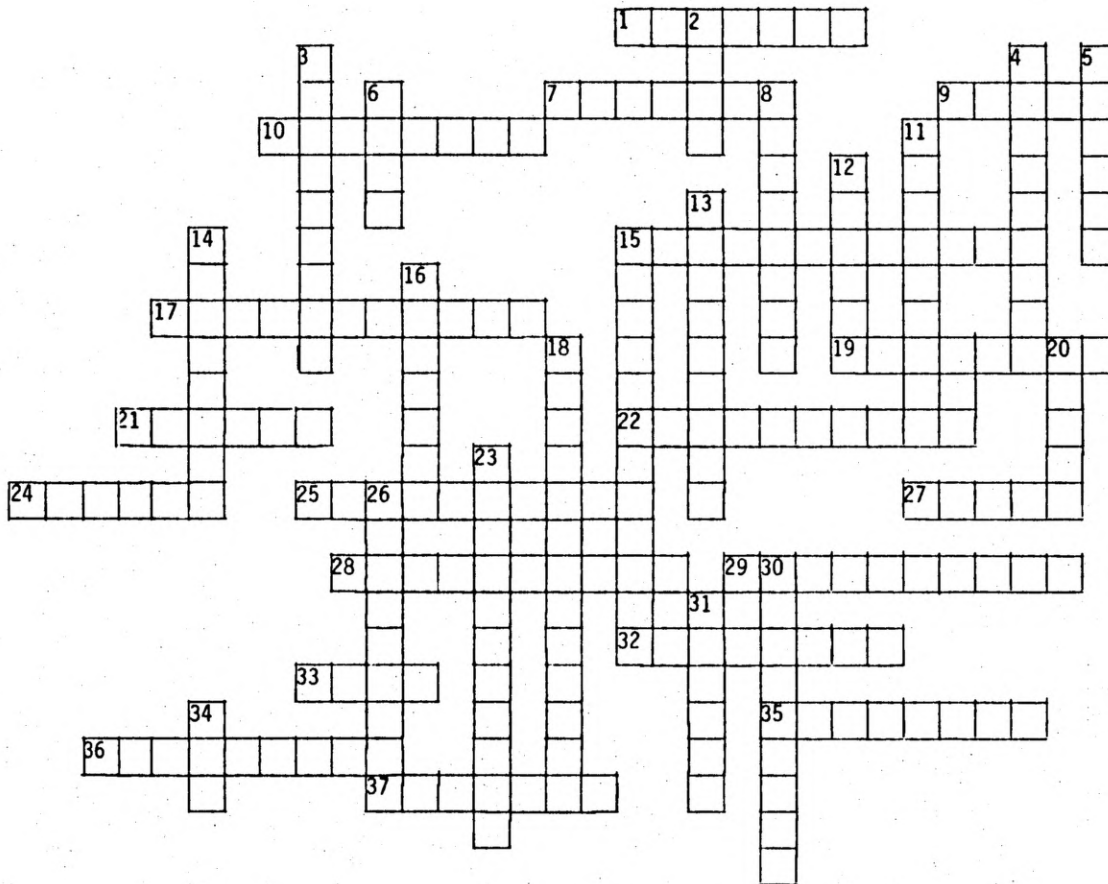
DOWN

2. black substance in smoke
3. not allowed
4. tasting good
5. ministers, pastors, priests, and rabbis
6. benches in churches
8. a British silver coin
11. tiny
12. hindrance
13. surrounded
14. black substance made partly burning wood
15. thing composed
16. a bunch of flowers
18. a clear, hard candy
20. swift
23. memory
26. dulled the brightness
30. edges of a town
31. brightness
34. before

Word List

clergy  
 pews  
 deacons  
 settlement  
 outskirts  
 four pence  
 packetboats  
 toothsome  
 forbidden  
 horsehair  
 bouquet  
 mantel  
 candlesticks  
 splintered  
 soot  
 goose-quill  
 barley sugar  
 shilling  
 compositions  
 nestled  
 visions  
 kerchief  
 shutters  
 sash  
 charcoal  
 luster  
 miniature  
 rapid  
 coursers  
 obstacle  
 droll  
 tarnished  
 encircled  
 dread  
 bronze  
 ere  
 procession  
 remembrance

## NIGHT BEFORE CHRISTMAS BOY



## APPENDIX D

### VOCABULARY QUIZ

Complete each sentence with one word from the word list.

1. \_\_\_\_\_ is often used as a command for a dog team.
2. \_\_\_\_\_ is very bright; shining so brightly that it hurts your eyes.
3. \_\_\_\_\_ are straps, ropes or chains by which an animal pulls a wagon or carriage.
4. Skin of the fur seal is \_\_\_\_\_.
5. To use great effort is to \_\_\_\_\_.
6. \_\_\_\_\_ is the quality of being very brave.
7. \_\_\_\_\_ is a dangerous, infectious throat disease.
8. Degree of heat or cold is \_\_\_\_\_.
9. Fat, large, strong and bold is \_\_\_\_\_.
10. \_\_\_\_\_ is another word for terrible, dreadful and shocking.
11. Having great value is \_\_\_\_\_.
12. \_\_\_\_\_ is to make one's way by climbing or crawling.

#### Word List

precious  
diphtheria  
antitoxin  
scramble  
treacherous  
sealskin

stout  
temperature  
surface  
horrible  
shadowy  
mush

pitch  
traces  
glaring  
heroic  
strain

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